Transport Emissions: Pathways to Net Zero by 2050

Consultation Question 1. Principle 7

We know all we need to know now to de carbonise the transport sector and any further delay in the hope that some miraculous technology will turn up to make the political decisions needed more palatable only delays the inevitable.

Do the things we know work and leave the far flung technology for another day, if it turns up and it works then great but if it doesn't then we haven't squandered more time waiting for it.

Consultation Question 4.

The government needs to have a clear carrot and stick approach with local councils and Road Controlling authorities to prevent the constant backsliding on projects we see now and eliminate the need for endless consultation.

The government also needs to follow through on projects it announces and not quietly file them once it has received the plaudits.

Actions to be prioritised

- Prioritise the need to reallocate street space and to create connected networks for delivering transport mode shifts in the next GPS on land transport, and/or for any additional funding for active modes and public transport.

 Set higher Funding Assistance Rates for walking and cycling investments and dedicated/priority bus lanes to strongly incentivise Road Controlling Authorities to prioritise and accelerate street changes.

 Investigate if regulatory changes are needed to empower Road Controlling Authorities to more easily consult on and make street changes to support active travel, public transport, and placemaking.

 Set targets for councils to deliver public transport and active travel networks that require street changes (e.g. dedicated/priority bus lanes on some routes; connected cycling networks) by a specific date. There could be funding consequences if Road Controlling Authorities do not deliver these changes within these timeframes.

 Make changes to policy and funding settings to ensure Waka Kotahi and Road Controlling Authorities maximise opportunities to 'build back better' when doing street renewals (to improve streets for people walk, cycling, and using public transport).

Consultation Question 6.

It is inevitable some sort of pricing mechanism will be needed to speed up behaviour change and those that can afford to keep emitting carbon will need to be prevented doing so by a certain date i.e. no longer able to use ICE vehicles on public roads by 2050.

Consultation Question 13

Pathway 4, the CCC was set up to provide the advice to government and it is not clear why that advice would be ignored, if it was thought that the MOT or any other organisation had better advice why did we bother with the CCC.

Consultation Question 14
Do not pin all our hopes on high tech solutions i.e EV's, Hydrogen fuel cell cars ect, NZ may not be able to get them as richer countries snap them up or production cannot keep up with demand.
There should be more of a focus on doing the things we know will work like walking, cycling, public transport, rail/shipping for freight.

[redacted]
[redacted]
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Email: [redacted]
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17 June 2021

Transport Emissions
Ministry of Transport
PO Box 3175
Wellington, 6140

Submission on Hikina to Kohupara Discussion Document

I make this submission based on my experience as a town planner and resource management consultant having worked for local government and as a consultant over the past 42 years. As well as my experience in Aotearoa, over that period I have lived and worked in Western Australia and the United Kingdom, and also lived for a period in Switzerland. I have been driving an EV for the past 18 months.

I am supportive of efforts to reduce the greenhouse gas emissions from the transport sector. The purpose of my submissions is to increase the likelihood and rate of the transport sector becoming emission-free. There are areas within the discussion document, however, where I think the Ministry is placing too much reliance on actions outside the transport sector to achieve that, and other areas where it appears to display a bias against certain transport modes, particularly rail.

Intensification of Urban Form

It is apparent that the Ministry is relying on the intensification and densification of Aotearoa's main urban areas by 2050 to contribute substantially to the reduction in transport emissions. I commence by stating that both professionally and personally I support the concept of increasing the population and activity densities of all Aotearoa settlements. However, I have watched the failure of policies to achieve such ends under both the Town and Country Planning Act 1977 and the Resource Management Act 1991 over the past 40 years. The reasons they have failed, in my view, mean that replacement legislation for the Resource Management Act is unlikely to have any better outcome in this respect.

Achieving a density of development that is sufficient to support public transport at a level that ownership or use of a private car is unnecessary means achieving urban densities similar to those in Switzerland. Those densities are based on the vast bulk of the population living in 3 – 5 floor apartment buildings, only a few of which have basement car parking. In 2017 I met

with the Verband für Raumplanung (Swiss Planning Association) in Bern in an attempt to understand how such urban densities had been achieved. One factor in particular differentiated the construction of apartments in Switzerland versus the same in Aotearoa: the lack of need to fire separate every apartment from each other within an apartment block, although fire separation is required between apartment blocks. Swiss apartments are not full of sprinkler systems either. Those factors would have a major influence on the cost of apartments. It raises the question as to whether we try too hard to legislate away all risks in Aotearoa.

Other factors which make apartment living in Aotearoa less desirable at present are:

i. The lack of a broad market of good quality rental apartments;

ii. The inability of apartment owners to have pets due to body corporate rules;

Beyond those factors, the regulatory process for urban development in Aotearoa is enabling. Thus rules in district plans set densities and building envelopes that can be built up to, and minimum areas of new sites. There is nothing in the regime (including in the legislation) which requires a developer to utilise the full potential of the rules. New urban development, then, occurs in a way each particular developer perceives the market for their properties with the least risk. The one developer that could lead the way and accept the development risk is the government. That is clearly outside the mandate of the Ministry of Transport but demonstrates that too much reliance on urban intensification for achieving dramatic reductions in transport emissions may be unsuccessful unless a whole of government approach is taken to the problem. This would have to include achieving significant societal behavioural change.

Public Transport

I agree with the proposition put forward in the discussion document that providing good quality public transport services (both intra-regional and inter-regional) can influence how people travel. The example of the dramatic jump in passenger numbers following electrification of the Auckland suburban rail service is the most recent example of this. However, a public transport network that provides a service at a level sufficient to move substantial numbers of people from their individual vehicles will require a great deal of effort and investment, and possibly some regulation.

Frequency or regularity of service and hours of service are important. If the service is sufficiently frequent (such as the bus services along Dominion Road in Auckland), one need merely walk to the nearest stop and catch the next service. Where that frequency of service is not practicable, knowing that the service is always at a fixed time past the hour, every hour (and not too many minutes apart) also provides a good service. However, if that consistency cannot be achieved people will not use it: a missed bus may mean a missed appointment of being late for work.

The interconnectedness of public transport is also important. It appears that public transport timetables are often developed for the convenience of the operator rather than the patrons, and that there is too much concern about how much goes into the farebox at every stage of a trip than the convenience to a user of getting from A to B using more than one service and/or mode. Connections between services should be reliable, not require too much waiting and in an urban environment, should not require double (or triple) payment.

One of the problems that has developed in Aotearoa is that we have several different fare cards which do not seem to be compatible. Thus, as I live in Tauranga I need a Bee-card to use the public transport. However, when I travel to Auckland I need a Hop-card, and in Wellington yet another card. That actually discourages the use of public transport when away from home base. There are only 5 million of us. One public transport card should be sufficient for the entire country, including for inter-regional travel.

Turning to inter-regional public transport, other than domestic airlines there is no inter-regional public transport network to speak of, and what there is does not provide a better option than the private car. Opportunities exist to improve this, but investment is required in such things as rail electrification. The Climate Change Commission has recommended electrification of the remainder of the North Island Main Trunk (NIMT) rail line and the rail line from Hamilton to Tauranga in the context of moving more freight with less emissions. I agree with that but also consider that such a move, plus completion of double tracking between Hamilton and Auckland, would provide the opportunity for a high quality passenger rail service between Tauranga Hamilton and Auckland. I note that Queensland, where the railways have the same track gauge as Aotearoa, runs an electric tilt train at up to 160 kph between Brisbane and Rockhampton. Such a service on the Auckland – Hamilton - Tauranga route would provide a better service than private vehicles and possibly better than that which Air New Zealand provides. While Te Huia is a start, it is not yet better than taking your own car. There is also a level of commuting between Tauranga and Hamilton, and towns in between (particularly Matamata – Tauranga) which could be better served by a frequent fast rail service. A similar service between Palmerston North and Wellington would improve the options on that route also.

I note on page 93 of the discussion document the comment that rail electrification would cost in the order of $2.5 million per kilometre of track. The phraseology used implies that the Ministry considers that an excessive number. However, I note that based on that figure the remainder of the NIMT could be electrified for about half the cost of the Transmission Gully roading project[1], and would provide a means of reducing emissions which would be an additional benefit. The cost of electrifying the remainder of the NIMT, on the figure provided, is less than the estimated cost of the proposed cycle/pedestrian crossing of the Waitemata Harbour. Electrification of the railway lines would provide a more productive infrastructure investment than something which can be catered for by more ferries or regular bike shuttles over the existing Harbour Bridge.

[1] I use this merely as an example. I have no opinion as to whether the Transmission Gully project is desirable or not.

In addition to a single or integrated fare card for public transport, the Ministry could enable the development of a single app which would contain all the nation's public transport timetables and fares enabling point to point routing (and ticketing) via public transport throughout the country. For example an app that enabled me to enter my address in Tauranga, destination address in Auckland and expected departure time so as to provide a list of public transport service (and fare) options available. An example of such an app is the Swiss Railways "SBB Mobile".

Active Transport

Other than my opinion expressed above regarding the proposed cycle bridge in Auckland, I support proposals to improve accessibility such as cycle paths. I also think this is another area where a free public app which mapped all the open walking and cycling paths throughout Aotearoa would be extremely useful. Finding such information at present requires searching a multitude of websites, not all of which are up-to-date. Again the Swiss can show us how this can be done: Switzerland Mobility is a free app which maps all walking, cycling, mountain biking and canoeing routes in Switzerland[2]. This app is also updated in real time with current route closures etc.

Risk of Transport Poverty

I agree with the discussion document analysis on page 103 but note that it fails to take account of the fact that petrol and diesel prices will rise as the price of NZ units under the ETS increase. A two-pronged approach is required. First, more and better public transport throughout Aotearoa so that a personal vehicle is less of a necessity and to provide for those who cannot rely on private vehicles. Second, drive the uptake of low emission vehicles such that fleet vehicles get recycled into the second-hand market faster. The feebate scheme announced yesterday is a start on this, but it the possibility of more rapid depreciation of EVs (say straight line over 3 years) would encourage business fleet owners (including rental car fleets) to renew their vehicles more regularly, pushing more into the market. This may have the ancillary benefit of reducing the cost of second-hand EVs also.

Yours faithfully

[redacted]

[redacted]

[2] It also maps a few other routes which are not so relevant to Aotearoa such as cross-country skiing and ice-skating.

Guardians of the Bays Inc.: Submission on the Kia mauri ora ai te iwi - Transport Emissions: Pathways to Net Zero by 2050

Submitter details

Full name: [redacted]
Submitting on behalf of organisation: Yes
Name of organisation: Guardians of the Bays Inc.
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Introduction

Guardians of the Bays Inc (GotB) was set up as a citizens' group in Wellington's eastern suburbs in July 2013. It now has a membership of over 500 including citizens and voluntary organisations from all over Wellington. Its motivation initially was the protection of the environment that would be at threat from plans by WIAL (Wellington International Airport Limited) to extend the airport runway at first into Evans Bay and later into Cook Strait. GotB's goals have widened in a way that is consistent with the original environmental objective. Those goals might be summarised now as:

- protection of the marine life and coastline adjacent to the airport
- concern about climate change which would be exacerbated by continuing promotion of air travel, and increased emissions from aircraft and transport to/from the airport
- the real danger of sea-level rise which puts at risk many low-lying areas, including the airport itself
- concern that ratepayers' and taxpayers' money should not be expended on airport expansion when many other pressing human, social, resilience and infrastructure challenges confront Wellington.

Feedback on options to accelerate the transport sector to meeting the draft advice and recommendations of the Climate Change Commission, and moving to a net zero carbon transport system by 2050.

- We are satisfied that the report acknowledges the role of aviation in climate change;
- We would like to point that it does not articulate how much more polluting aviation is compared to other transport options;
- We would like to point that aviation is a transport mode only available to middle-class to high income households, thus fuelling inequality;
- Since climate change has to be addressed through the lens of social justice, addressing aviation emissions has to be top-priority (or on par with other transport modes such as private cars);
- We are not satisfied with the suggestion that biofuel is seen as a solution, since it does not address any of the adverse effects endured by communities living next to airports;
- We would like to see a sinking cap placed on air traffic emissions per airport, across the country, if climate change is to be addressed seriously;

- Additionally, every airport expansion project (such as Tarras' or Wellington's) should be frozen until flying sustainably is a reality, as bigger airports enable more traffic thus increasing emissions;
- We also expect every government organisations, local and central, to bring their air travel to the bare essentials, to lead by example.

We thank you for your time.

Submission

By

THE NEW ZEALAND INITIATIVE

To the Ministry of Transport

on

Transport Emissions: Pathways to Net Zero by 2050

22 June 2021

Prepared by:
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PO Box 10147
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s 9(2)(a)

For the first time since it was introduced in 2008, we will actually be able to cap emissions covered by the [ETS]. This limit is likely to reduce steadily over time in line with the emissions budgets set under the zero carbon bill. This will create a predictable sinking lid on climate pollution.

– Hon James Shaw, Minister for Climate Change, 5 November 2019, First Reading of the Climate Change Response (Emissions Trading Reform) Amendment Bill[1]

The most cost-effective way to reduce greenhouse gas emissions is for there to be a price on those emissions that reflects the true cost that pollution imposes on future generations and is sufficient to induce investment in and adoption of cleaner alternatives. That is what this bill aims to achieve. Once this bill passes, our emissions trading scheme (ETS) will be one of the most efficient and effective tools that we have for meeting our climate targets.

– Hon James Shaw, Minister for Climate Change, 2 June 2020, Second Reading of the Climate Change Response (Emissions Trading Reform) Amendment Bill[2]

1. INTRODUCTION AND SUMMARY

1.1 Thank you for the opportunity to submit on "Transport Emissions: Pathways to Net Zero by 2050," a green paper by the Ministry of Transport ("MoT").

1.2 This submission is made by The New Zealand Initiative, a think tank supported primarily by chief executives of major New Zealand businesses. The purpose of the organisation is to undertake research to contribute to the development of sound public policies in New Zealand to help create a competitive, open, and dynamic economy and a free, prosperous, fair, and cohesive society.

1.3 The New Zealand Initiative supports the government's emissions targets, including the Paris climate agreement and net zero emissions of long-lived greenhouse gases from 2050. The question now is how to deliver these targets.

1.4 MoT proposes a target of zero gross emissions from transport. MoT's strategy does not contribute towards our emissions targets:

1.4.1 **Transport is covered by the ETS**.[3] The ETS caps emissions. Transport is within the cap. Lower transport emissions does not mean lower overall emissions.

1.4.2 Given transport's size and role in the New Zealand economy, **a zero gross emissions target risks substantial costs and threatens national emissions targets.** MoT should be aware of the risk of doing too much to reduce transport's emissions at the expense of national targets.

1.5 The government's emissions strategy gives each sector of the economy responsibility for reducing emissions. This strategy depends on two factors. First, on understanding the relationship between sector emissions and national emissions which is intermediated by the ETS. Second, that diminishing returns means there is a risk that a sector does "too much" to

[1] Hansard is available here.
[2] Hansard is available here.
[3] MoT's strategy excludes international aviation.

reduce emissions in the sense that far greater reductions could be achieved elsewhere for the same cost.

1.6 We think the key question for MoT is its treatment of offsets.[4] MoT targets zero gross emissions by treating offsets as if they do not exist. However, offsets do exist. They will almost certainly have some role in reducing net emissions and should cap willingness to pay for gross reductions in emissions. MoT will therefore need a more nuanced position on offsets.

1.7 We suggest two principles should guide MoT's treatment of offsets:

1. **Offsets are a matter of government policy which MoT takes as given.** MoT should not form its own view on offsets since co-ordination between sectors is not supported by each sector deciding its own offsets policy.

2. **Offsets cap abatement costs in transport.** MoT will not support policies that reduce transport emissions for a higher cost than available offsets over an appropriate time horizon.

1.8 These principles help to align efforts to reduce emissions in each sector with our national targets.

1.9 Our submission proceeds as follows:

- Section 2 argues co-ordination is a key issue which MoT acknowledges in its green paper but does not resolve.
- Section 3 opposes sectors adopting national emissions targets as their own.
- Section 4 shows a target of zero gross emissions in transport is not compatible with national emissions targets.
- In section 5 we argue a carbon price solves co-ordination and sequencing problems.
- Section 6 suggests principles to guide MoT's efforts to reduce emissions.
- In section 7 we argue MoT does not consider the consequences of the ETS for its strategy, and
- Section 8 concludes.

1.10 In the Appendix, we reply to MoT's questions, respond to common concerns about the ETS, and provide indicative estimates of the effects of the ETS at current prices.

2. A SECTOR-BASED EMISSIONS STRATEGY MUST CO-ORDINATE WITH OTHER SECTORS

2.1 Co-ordination has different meanings, but perhaps the most important for successful delivery of our targets is co-ordination on costs.

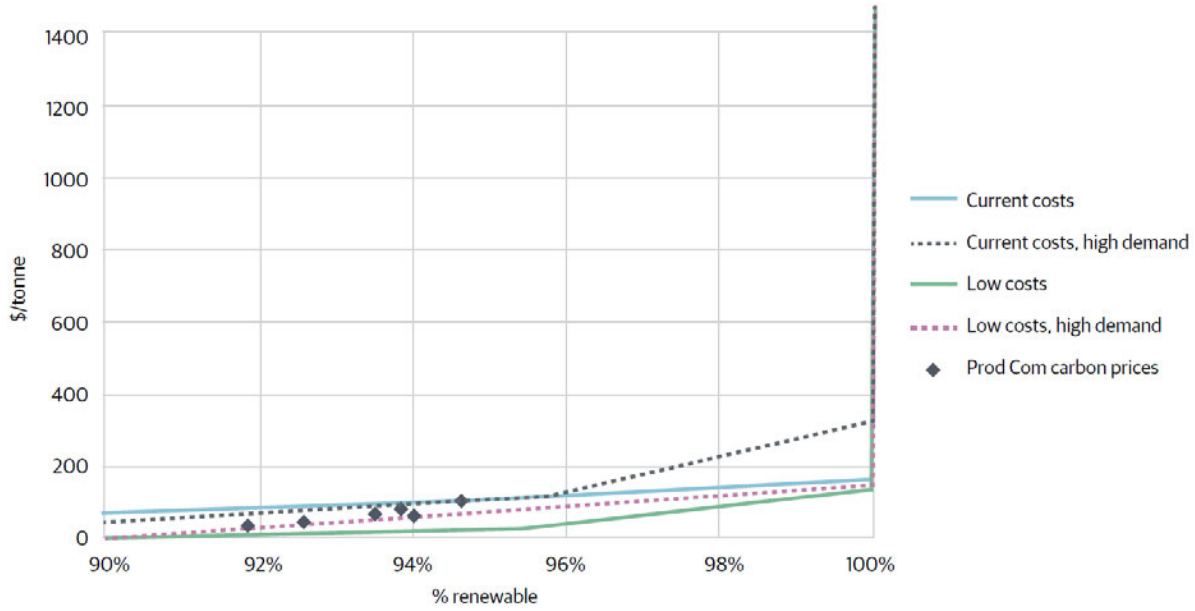
2.2 Diminishing returns make cost-effectiveness critical to the successful delivery of our emissions targets. For any technology, fuel, activity or sector, there comes a point at which further reductions in emissions from a source reaches diminishing returns. Once this point is reached, further emissions reductions can become prohibitively difficult. We call this the '80/20 problem.'

2.3 The 80/20 problem can dramatically affect the performance of climate change policies. For example, studies of the government's 100% renewable electricity policy show sharply

[4] We use the term offsets to refer to negative emissions technologies in all forms including carbon capture by forests.

diminishing returns as the share of renewables approaches 100% (Figure 1).[5] The government could cut many times more emissions for the same cost as the 100% renewables policy if it left the last thermal generators in place and reduced emissions from other more effective sources instead.[6]

Figure 1: Diminishing returns on the government's 100% renewable electricity policy as renewables' share approaches 100%



Source: New Zealand Initiative (2019), Switched On!, Figure 10.

2.4 Given the severe penalties that diminishing returns can impose on emissions policies, delivering our emissions targets will require an approach that is sensitive to diminishing returns. Policies must not attempt to force further emissions reductions from sources after diminishing returns have set in. This is why co-ordination between sectors on a principle of cost minimisation is important.[7]

2.5 The decision rule that minimises exposure to diminishing returns is to equalise the marginal cost of abatement across sectors. This decision rule is what we mean by co-ordination between sectors.

2.6 While MoT refers to co-ordination throughout its green paper, it does not define the term, or discuss diminishing returns, or propose a mechanism to deliver co-ordination. MoT's proposed zero gross transport emissions target implies a siloed approach that in principle removes the need for co-ordination between transport and other sectors. Zero gross emissions means MoT can target any or all transport emissions regardless of opportunities for far greater reductions in other sectors.

[5] For example, see the analysis by the Interim Climate Change Committee in 2019 available from here.
[6] Diminishing returns can set in long before 100% in other sectors.
[7] Diminishing returns also explain why emissions targets for sectors can be counterproductive. Targets are rarely set with diminishing returns in mind.

3. INDIVIDUAL SECTORS SHOULD NOT ADOPT NATIONAL EMISSIONS TARGETS

3.1 Sectors should not adopt national emissions targets as their own. This approach pre-empts co-ordination and sequencing of efforts to lower emissions in different sectors.

3.2 Not all sectors are equal. Sectors subject to high innovation rates could plausibly make a greater contribution to emissions targets by leaving their contribution until later. Transport may be one of those sectors. If transport has high abatement costs currently but lower expected costs in the future then MoT and the government should be open to the possibility that transport makes its contribution later than other sectors. MoT considers timing with respect to policy targets and vehicle lifetimes but we think the analysis should also include costs and innovation rates relative to other sectors.

3.3 MoT can better support national emissions targets by considering the timing of transport's contribution.

4. ZERO GROSS EMISSIONS IS NOT COMPATIBLE WITH EMISSIONS TARGETS

4.1 MoT's proposal to target zero gross emissions from transport is not consistent with national emissions targets. In a large capital-intensive sector like transport, a zero gross emissions target is almost certainly counterproductive:

- Zero gross emissions enables MoT to target every emissions source in transport regardless of cost or disruption.
- In principle, removes any obligation to prioritise emissions reduction efforts within transport or to co-ordinate with other sectors.
- Given the size of the transport sector, could lead to substantial, possibly ruinous, costs due to the 80/20 problem, threatening our emissions targets, and
- Will not reduce overall emissions.[8]

4.2 MoT's justification for zero gross emissions is unconvincing. MoT says (p106):

> *While the Government has committed to reducing all GHG emissions (excluding biogenic methane) to net zero by 2050, it is still unclear to what extent carbon offsetting will help to achieve this target. This means that we do not know the extent to which we may or may not be able to offset Aotearoa's transport emissions going forward. Other sectors in Aotearoa may find it harder or take longer to reduce emissions in comparison to transport, and therefore may be prioritised over transport when it comes to carbon offsetting. Given this uncertainty, these pathways explore what could be required to take us as close to zero transport GHG emissions as possible.*

4.3 While uncertainty about the availability of offsets is a challenge, it is not clear how zero gross emissions represents a proportional or reasonable response to that uncertainty.

4.4 Offsets are significant as a yardstick for the minimum performance of emissions policies, measured by cost per tonne of abated emissions. It will not generally be in a country's

[8] A zero gross emissions strategy has no overall emissions benefits because a) the extra reduction in emissions from transport due to zero gross emissions target could have been achieved in another sector at lower cost (unless every other sector also pursues zero gross emissions), and b) the ETS caps emissions and transport is in the cap. We consider the latter point in section 7.

interests to spend more than $1,000 to reduce each tonne of emissions if offsets can do the same job[9] for less than $100.[10]

4.5 We think the key question for MoT is its treatment of offsets, specifically the interaction between transport and offsets. Offsets will almost certainly play some role in delivering our emissions targets. This was made clear in the analysis by the Climate Change Commission.[11] MoT will therefore need a position on offsets that is more nuanced than its current position of ignoring offsets. MoT should treat offsets in a way that means transport best contributes to national emissions targets.

4.6 We think two principles should guide MoT's treatment of offsets:

> 1. **Offsets are a matter of government policy which MoT will take as given.** MoT should recognise it does not need to take any position on access to, or the merits of, offsets. New Zealand can make more progress towards emissions targets with a single, consistent position on offsets. Accordingly, the treatment of offsets appropriately determined by Cabinet rather than government agencies.
>
> 2. **Offsets cap the cost of abatement in transport.** MoT will not support any policy that reduces transport emissions for a higher cost than can be achieved with available offsets.[12]

4.7 Once the government of the day has formed a view on the available quantity and type of offsets, officials in each sector should take that view as given and treat offsets as a cap on willingness to pay for emissions reductions in each sector on a cost per tonne basis. This need not be a hard rule, but the onus would rest with officials to show why spending more to reduce emissions than can be achieved with offsets is justified.

4.8 The two principles we propose would organise the relationship between offsets and emissions policies simply, rationally and predictably. Regardless of whether MoT accepts our suggested principles, MoT needs some position on its treatment of offsets.

5. A CARBON PRICE SOLVES THE CO-ORDINATION PROBLEM

5.1 A carbon price co-ordinates efforts to reduce emissions within and between sectors. Whether in the form of an ETS or a carbon tax, a carbon price works by raising the cost of emitting greenhouse gases. Under the ETS, the carbon price rises to whatever level is necessary to bring overall emissions within the cap set by the government.

5.2 Using a carbon price to reduce emissions, as opposed to command and control, has the advantage of avoiding, or minimising exposure to, the 80/20 problem. For any given carbon price, sources that can reduce emissions for less than the carbon price will do so. Other sources will pay the carbon price, since that is cheaper than reducing emissions. Thus, using prices to reduce emissions has in-built protection against diminishing returns.

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[9] Under the Climate Change Response Act and the Paris climate agreement, each tonne of reductions and removals contributes equally to emissions targets.

[10] Throughout this submission, offsets only refers to robust removals recognised by the ETS and consistent with government policy.

[11] Climate Change Commission (2021), "Ināia tonu nei: a low emissions future for Aotearoa," p78.

[12] Over an appropriate time horizon, and not limited just to the short run.

5.3 Carbon prices also solve the related problem of sequencing emissions reduction efforts by sector. Given differences between sectors in abatement costs and innovation rates, there may be emissions benefits as well as economic and social benefits if some sectors wait to reduce emissions while others go early. Carbon prices can exploit benefits from sequencing emissions-reduction efforts in different sectors.

5.4 MoT should be open to the possibility that the ETS may be doing more work than MoT thinks. There may be information contained in the limited apparent effects of the ETS in transport so far. The limited ETS effects in transport likely reflects fundamentals – that there is value in transport's contributions to lower emissions coming later. *If* the ETS is sequencing transport's contribution for later, then MoT should be aware of the risk that overriding the ETS detracts from rather than supports New Zealand's track to net zero emissions.

5.5 Of course, sequencing transport's emissions reductions is likely to raise other concerns, such as how a sector can credibly promise future reductions as other sectors reduce emissions now. However, given what is at stake, the sequencing question is worth further investigation.

6. SUGGESTED ALTERNATIVE PRINCIPLES

6.1 MoT lists seven guiding principles at pages 10-11 of their green paper. Principles 1 and 2 do not support New Zealand's emissions targets. Other principles appear vague or irrelevant. We suggest the following alternative principles in their place:

1. **Reduce emissions at least cost, within the constraints set by Parliament and local councils.**
2. **Co-ordinate with other sectors by equalising marginal abatement costs.** MoT will not force emissions reductions from transport when the same quantity of emissions can be reduced or removed from other available sources for a lower cost.
3. **No policy recommendations without cost-benefit analysis.** MoT will only recommend policies after a cost-benefit analysis. Any analysis must include the effects of the ETS. Emissions policy is hard. Analysis is essential to identify effective emissions policies.
4. **All analysis takes into account the effects of the ETS.**
5. **A level playing field** supports discovery of the most effective ways to reduce emissions. As far as possible, MoT should be technology- and fuel-neutral because that best supports lower emissions.
6. MoT will take **a rules-based approach** to reducing transport emissions. As far as possible, MoT will avoid ad hoc policies, recognising the value of predictable, credible emissions policies especially in a major sector such as transport. If climate policy substantially depends on the whims of political leaders then New Zealand will miss its targets. The emissions problem is well defined, so use systems.
7. **Offsets are a matter of government policy which MoT will take as given.**

6.2 We were pleased to see passing references to some of these principles in MoT's green paper.

7. THE ETS NEUTRALISES ALL COMPLEMENTARY POLICIES OPERATING WITHIN ITS CAP

> *Carbon pricing broadly follows two forms: a carbon tax or a cap and trade approach. Twelve years ago, New Zealand opted for a cap and trade scheme. But previous Governments left out one crucial part: the cap. We got a cap and trade system*

without a cap, meaning that emissions permitted under the scheme were, in effect, unlimited… [This bill] include[s] a cap on the total emissions allowed in the ETS.

– Hon James Shaw, Minister for Climate Change, 2 June 2020, Second Reading of the Climate Change Response (Emissions Trading Reform) Amendment Bill[13]

7.1 Up until now, we have ignored the highly significant fact that the ETS caps emissions and transport is within the cap. As the quote from the Minister for Climate Change makes clear, the ETS cap is government policy and, since June 2020, the law.[14] If the ETS caps emissions then it is not clear how MoT's emissions strategy lowers emissions.

7.2 MoT does not seem to realise the effect of the ETS cap on the emissions benefits of its strategy. Nor does MoT consider the risk that if its strategy overrides a properly-functioning ETS then it detracts from our emissions targets. The crucial question for the merits of MoT's strategy is whether the ETS works.

7.3 MoT should be aware that the neutralising effect of the ETS probably applies under quite general conditions. The ETS neutralises other policies whenever its cap is 'binding' i.e. low enough to force emissions below what they would be without the cap.[15] The cap is binding whenever the ETS price is materially above zero. In 2020, the government introduced a minimum ETS price of $20. In effect, the government's policy is that the ETS is always binding. Thus, MoT's strategy is always neutralised. [16,17]

7.4 We recommend MoT read our primer on the ETS which provides a more detailed explanation of why a binding ETS neutralises complementary emissions policies.

7.5 While it may be passé by now to say complementary emissions policies cannot reduce emissions under a binding ETS, officials have not persuasively rebutted the point. Before the government commits to policies costing billions of dollars, it would seem important that it first establish the foundation for its strategy by showing how it can reduce emissions under a binding ETS emissions cap. We seek a step-by-step explanation before the government tables its Emissions Reduction Plan in Parliament later this year.

7.6 As it stands, MoT's strategy appears likely to only raise the cost of achieving our emissions targets without contributing to lower overall emissions.

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[13] Hansard is available here.

[14] https://www.parliament.nz/en/pb/bills-and-laws/bills-proposed-laws/document/BILL_92847/climate-change-response-emissions-trading-reform-amendment

[15] A "binding" ETS means the ETS constrains overall emissions from the areas it covers. For example, if the economy produces 100 tonnes of emissions, an ETS cap of 50 tonnes would be binding since emissions must fall to 50 tonnes. An ETS cap of 200 tonnes would not be binding and emissions would remain unchanged at 100 tonnes.

[16] International aviation is outside the ETS. MoT's strategy does not include international aviation.

[17] We note that the ETS's limited effects on transport so far does not prevent the ETS from neutralising MoT's strategy. We further note that the test for whether complementary policies reduce emissions is that the ETS is binding, not whether the ETS is enough on its own to reach our emissions targets. Political constraints could prevent the ETS price from rising enough to achieve emissions targets. Even then, it is not clear whether the combination of ETS and complementary policies would reduce emissions by more or less than the ETS alone. Like the ETS, complementary policies burn political capital too. If the basis for complementary policies is political constraints that could affect the ETS, the government must state its argument, explaining the combination of events which must occur for complementary policies to lower emissions.

8. CONCLUSION AND RECOMMENDATIONS

8.1 The New Zealand Initiative supports the commitment to lower emissions and our national emissions targets.

8.2 MoT's strategy to reduce transport emissions is incompatible with national targets. A target of zero gross emissions in a large, capital-intensive sector such as transport risks ruinous costs for no emissions benefit, threatening our emissions targets. MoT has not established how its strategy lower emissions under a binding ETS.

8.3 Diminishing returns mean MoT should be concerned about doing too much to reduce emissions in transport. MoT should aim to optimise rather than maximise transport's contribution to national emissions targets. Rapid innovation in low-emissions transport technologies should lead MoT to consider the timing of transport's efforts to lower emissions.

8.4 We urge MoT to:

- Reconsider its proposal to target zero gross emissions from transport.
- Form a view in principle about the relationship between transport emissions policies and offsets.
- Recognise how the ETS could neutralise MoT's strategy, and
- Investigate the performance of the ETS, recognising this is critical for MoT's strategy.

8.5 Thank you for reading this submission. Our responses to questions follow.

9. RESPONSES TO QUESTIONS

We respond to selected questions below.

1. Do you support the principles in Hīkina te Kohupara? Are there any other considerations that should be reflected in the principles?

No. MoT's principles do not appear to be consistent with New Zealand's emissions targets. We suggest alternative principles for MoT on page 7.

2. Is the government's role in reducing transport emissions clear? Are there other levers the government could use to reduce transport emissions?

The government should consider the possibility that emissions reduction may be better served by using fewer levers.

3. What more should Government do to encourage and support transport innovation that supports emissions reductions?

We urge the government to recognise carbon prices promote innovation. It is well-established in the academic literature that a carbon prices have supported innovations in emissions reductions.[18]

[18] For examples and citations see Appendix 2 of New Zealand Initiative (2019), *Switched On!*, Wellington.

The government should then consider how further encouragement for innovation in transport can lead to lower emissions under a binding ETS. The government has not established a pathway from complementary policies to lower overall emissions under a binding ETS.

4. Do you think we have listed the most important actions the government could take to better integrate transport, land use and urban development to reduce transport emissions? Which of these possible actions do you think should be prioritised?

No. It is not clear how the actions can contribute to New Zealand's emissions targets.

5. Are there other travel options that should be considered to encourage people to use alternative modes of transport? If so, what?

No. Please refer to our answer to question 3.

6. Pricing is sometimes viewed as being controversial. However, international literature and experiences demonstrate it can play a role in changing behaviour. Do you have any views on the role demand management, and more specifically pricing, could play to help Aotearoa reach net zero by 2050?

We suggest MoT focus on the on consequences of a carbon price under the ETS. The ETS almost certainly has both demand- and supply-side effects which are relevant to MoT's emissions strategy.

We support the government progressing congestion charging as transport demand management. Congestion leads to higher emissions. Congestion charging is worthy on its own grounds, as our submission to the consultation on Auckland congestion charging made clear. It would also allow the government to reduce the overall emissions cap more quickly, if it chose to. Of course, the government could choose to reduce the ETS cap more quickly regardless of whether congestion charging were in place.

7. Improving our fleet and moving towards electric vehicles and the use of sustainable alternative fuels will be important for our transition. Are there other possible actions that could help Aotearoa transition its light and heavy fleets more quickly, and which actions should be prioritised?

MoT has not established that "improving our fleet" and "moving towards electric vehicles" and "sustainable alternative fuels" are important under a net emissions targets. We urge MoT to allow discovery of optimal solutions in transport and elsewhere, and be wary of the emissions penalty and other dangers of favouring a few technologies. We encourage MoT to take a more analytical approach under the principles we suggested earlier in this submission.

8. Do you support these possible actions to decarbonise the public transport fleet? Do you think we should consider any other actions?

No. It is unclear how these actions contribute to New Zealand's emissions targets under a binding ETS.

MoT has not established its proposed actions are competitive with alternative ways to reduce emissions in transport and other sectors. It is not clear whether MoT has recognised its actions may be vulnerable to diminishing returns. We urge MoT to propose a mechanism for managing the 80/20 risks in its approach. In view of diminishing returns, the emissions problem is not just a question of 'which technology?' but also 'how much?' Again, we urge MoT to be aware of the risk that it could inadvertently impose huge costs on the New Zealand economy for no emissions benefit.

9. Do you support the possible actions to reduce domestic aviation emissions? Do you think there are other actions we should consider?

No. Domestic aviation is covered by the Emissions Trading Scheme. We support the inclusion of international aviation in the ETS.

We encourage MoT to concentrate on removing unnecessary barriers to the introduction of lower-emission fuels and technologies.

MoT should be aware of the risk that forcing those developments through regulatory mandates could increase the overall cost of reducing emissions.

10. The freight supply chain is important to our domestic and international trade. Do you have any views on the feasibility of the possible actions in Aotearoa and which should be prioritised?

No. Please refer to our answer to question 3.

11. Decarbonising our freight modes and fuels will be essential for our net zero future. Are there any actions you consider we have not included in the key actions for freight modes and fuels?

MoT has not established that "[d]ecarbonising our freight modes and fuels will be essential for our net zero future." Freight can emit greenhouse gases at the same time as net emissions are zero.

We encourage MoT to develop an alternative view about transport emissions and offsets. Under what circumstances should positive gross emission from freight be tolerated? In our view, MoT should answer that question in the way that best support's New Zealand's progress towards our net emissions targets.

We refer to the two principles suggested earlier a) MoT take the government's offsets policy as given and b) treat the cost of available offsets as an upper bound on abatement costs in transport.

12. A Just Transition for all of Aotearoa will be important as we transition to net zero. Are there other impacts that we have not identified?

Yes. We ask MoT to estimate the out of pocket costs of its strategy for average and especially low-income New Zealand households. It is possible that MoT's strategy based on a target of zero gross transport emissions could cost households thousands of dollars each year. We urge MoT to be transparent about the effects no households, and consider more affordable ways to reduce emissions.

13. Given the four potential pathways identified in Hīkina te Kohupara, each of which require many levers and policies to be achieved, which pathway to you think Aotearoa should follow to reduce transport emissions?

MoT has not shown how any of the pathways can reduce emissions. We suggest MoT adopt a principle that it will reduce emissions at least cost.

14. Do you have any views on the policies that we propose should be considered for the first emissions budget?

We strongly urge MoT, before any decisions or recommendations are made, to subject all of its recommendations and policies to cost-benefit analysis, taking into account the effects of the ETS on the emissions benefits of those policies. Emissions reduction is very difficult. Policies often fail. That is why we think analysis of each proposed policy is critical.

APPENDIX 1: RESPONSE TO CRITICISMS OF THE ETS

MoT does little more than acknowledge the ETS exists. MoT does not make a case for complementary policies alongside the ETS. MoT merely asserts complementary policies are necessary but without being clear why.

Officials argue for complementary emissions policies on various grounds. These include:

The ETS price is not high enough to reduce emissions from a sector.[19]

This argument is particularly relevant to transport. Many see the ETS as having too-limited effect on the cost of petrol.

The limited effects of the ETS on petrol prices is a non-problem. The ETS treats each tonne of greenhouse gas emissions equally (after adjusting for their effectiveness as a greenhouse gas). ETS effects in any one sector, or on any one product, says little about the effects of the ETS on net emissions overall.

Concerns about effectiveness of the ETS seem to be based on either an inference that weak ETS effects in one place means weak effects everywhere, or perhaps as a by-product of a determination that emissions should come down from a particular technology or fuel regardless of the merits.

If the government's goal is to reduce national net emissions, the lack of a response to the ETS in any one place is a non-problem *provided* this is the product of the ETS reducing emissions elsewhere in the economy for a lower cost.

Since the ETS selects for least-cost emissions reductions, using policy to override a functioning ETS a) does not reduce overall emissions and b) raises the cost of delivering our targets.

MoT should recognise the benefits for emissions and prosperity of allowing the reduction in emissions from transport according to transport being the next most effective way to reduce emissions. Instead, MoT's strategy forces emissions reductions from transport regardless of merit. This approach jeopardises our emissions targets due its potentially very large emissions penalty.

The government's siloed emissions strategy divides the economy into sectors and has each sector planning how to emissions should come down in that sector. That strategy is massively wasteful if it leaves no room for 'overs and unders' between sectors according to the costs and difficult of reducing emissions. MoT should recognise rising transport emissions is consistent with a functioning, effective ETS and with New Zealand's track to its emissions targets. After adjusting for population growth, gross emissions including agriculture have fallen 13% since 2008; net emissions have fallen 8%.

Firms are myopic or do not prioritise sustainability. Even if this is true, the ETS still reduces emissions and complementary policies cannot affect overall emissions. Mistakes by businesses and consumers (e.g. a consumer's failure to buy an EV when it is in their interests) leads to a higher carbon price, but emissions still come down. We explain why here.

Barriers prevent the ETS from reducing emissions. It is important to distinguish between a) regulatory barriers which inadvertently prevent uptake of new technologies, and b) costs.

[19] We infer from MoT's statements that it sees the ETS price as too low to have sufficient effect on transport emissions. At page 9, MoT says, "All users of fuel for vehicles pay an Emissions Trading Scheme levy, approximately 9 cents per litre for petrol, and 10 cents per litre for diesel. This is a fuel tax, but it is very low."

We support the removal of regulatory barriers as this is consistent with a level playing field. However, we oppose the use of policy to overcome "barriers" that are costs. Costs inform where emissions can be most effectively reduced or removed.

MoT does not seem to understand how overriding costs in the name of removing barriers likely jeopardises our emissions targets. MoT says the government "need[s] to focus on mitigating the most significant barriers to the purchase of low emission vehicles… [including] high upfront purchase costs, range anxiety, and the availability and cost of relevant infrastructure." (p67). MoT should recognise these barriers as information about the merits of EVs as an emissions reduction technology relative to alternatives elsewhere in the economy. MoT should realise the danger of its "barriers" approach is that it likely forces spending on lower emissions into high cost channels for no emissions benefit. The same resources applied elsewhere in the economy, harnessing costs as a guide rather than overriding them, could reduce far more emissions.

Complementary policies are needed to prevent further investment in high-emissions assets. This is questionable for three reasons.

- Such investments do not raise emissions if the ETS caps emissions. The cap is the cap.
- A functioning ETS deters investment in high-emissions assets and supports investment in low-emissions alternatives.
- If investors' ignore the ETS – which requires they calculate the ETS-exclusive price of products and services, then respond to that calculated price – they make malinvestments at their own expense not the public's.

Officials should understand how a credible carbon price can influence investment. In order to deter investment in high-emissions assets, carbon pricing must be credible. That is, investors must be convinced that future governments will continue to support a policy of putting a price on carbon, whether via the ETS or another mechanism. Officials should also recognise that even with a carbon price, some high-emissions assets will still be built if they add sufficient value and there is no available low-emissions alternative. The government should investigate the effects of the ETS on investment before it commits to further policies.

Stranded assets justify complementary policies. In its recent consultation document on process heat, the Ministry for the Environment said, "The establishment of new fossil fuel assets is likely to increase the costs of transitioning and the risk of stranded assets, and make it significantly harder to achieve New Zealand's emissions reduction targets".[20]

As we have already noted, a credible ETS ameliorates stranding. Furthermore, complementary policies also risk stranding assets. MoT's decision to pursue zero gross transport emission in less than 30 years has clear stranding risks.

Any case for complementary policies based on stranding must show a) complementary policies are a lesser risk and carbon pricing, and b) rule out the alternative of strengthening the ETS's credibility as a better way to manage stranding risks.

While we recognise the losses from stranding can be acute, the government's emissions strategy should consider all costs not just costs from stranding.

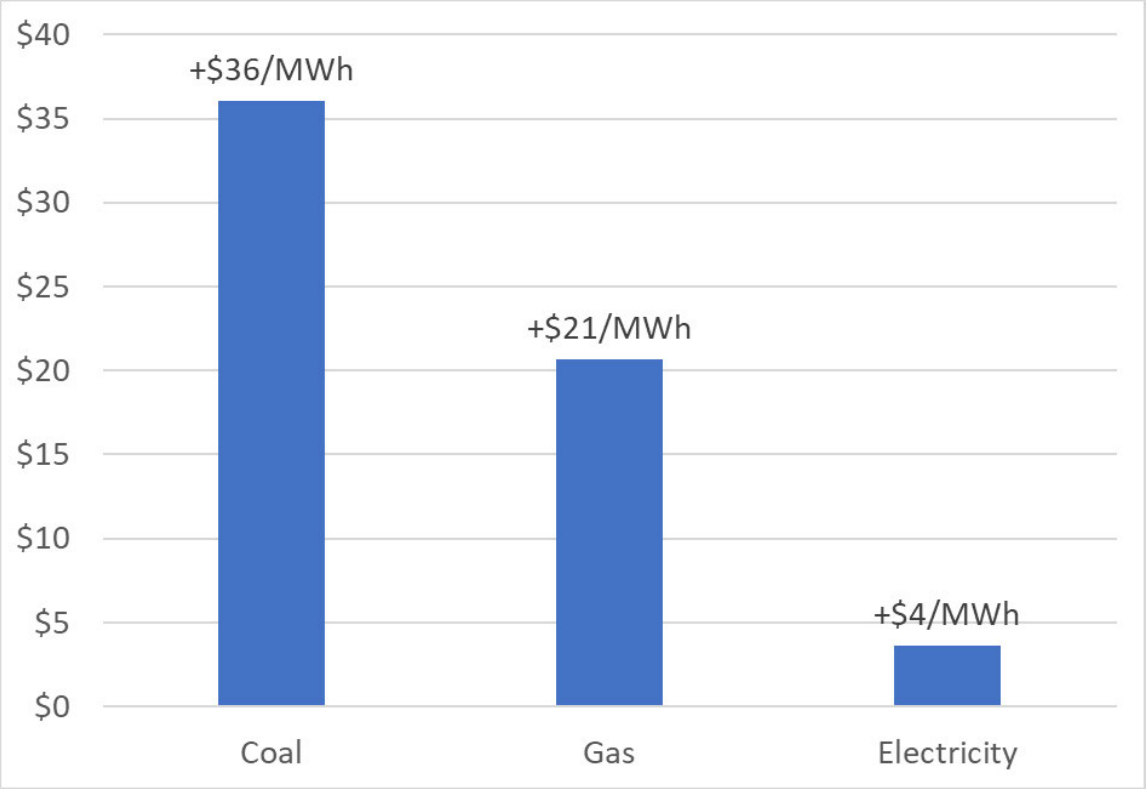
[20] Ministry for the Environment (2021), *Phasing out fossil fuels in process heat: national direction on industrial greenhouse gas emissions consultation document*, Wellington, p.16.

APPENDIX 2: EFFECTIVENESS OF THE ETS

At a New Zealand Unit ("NZU") price of $37, the ETS has only a moderate effect on the retail price of petrol as MoT correctly notes. This is not the result of any special treatment for petrol, but because the carbon content of petrol per dollar is low due to excise and costs besides petrol.

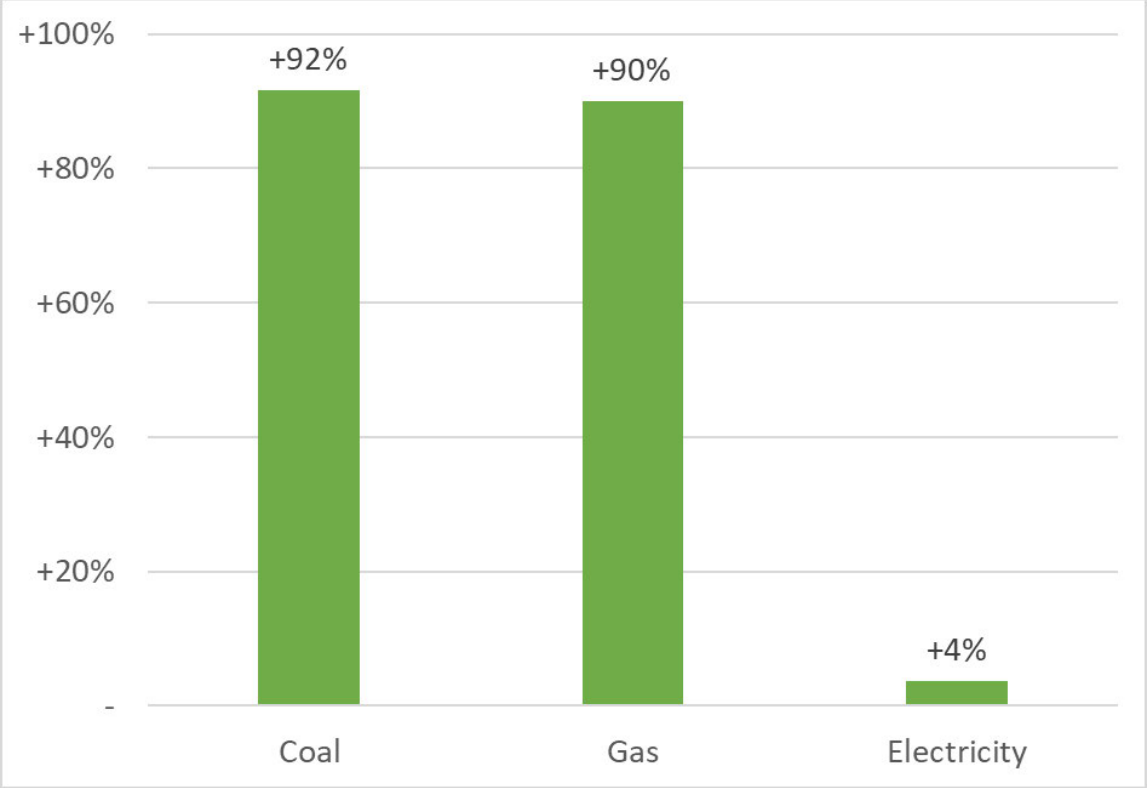
However, MoT should be aware the ETS has more pronounced effects in other sectors. For example, the ETS has a substantial effect on the costs of generating electricity with gas and especially coal. By contrast, the ETS has only a muted effect on the wholesale cost of electricity reflects, which reflects the high share of renewables in the electricity system (see Figure 2 and Figure 3).[21] These costs differences encourage substitution.

Figure 2: Indicative estimated ETS effect on electricity generation costs (NZU=$37)



[21] Our estimates of the percentage change in the wholesale cost of each fuel is relative to the average 5-year cost of each fuel type. Estimates should be treated as indicative only.

Figure 3: Indicative estimated ETS effect on wholesale costs of each fuel per megawatt-hour (NZU=$37)[22]



At a wholesale level, analysis suggests at NZ$37 the ETS nearly doubles the cost of coal and natural gas. This is based on average wholesale prices over five years. Anecdotally, the ETS is having a substantial effect on investment decisions in the energy sector.

These indicative estimates suggest the effects of the ETS on the cost of petrol do not reflect its effects elsewhere in the economy. MoT should have some confidence that:

- The ETS is reducing emissions in other sectors.
- The limited apparent effects of the ETS in transport, so far, usefully informs transport's relative merits as a source of lower emissions, and is not any failure of the ETS, and
- Accordingly, overriding the ETS to promote transport's contributions to lower emissions may detract from New Zealand's emissions targets by displacing emissions reductions from more affordable sources. MoT's strategy may do no more that rearrange the merit order of emissions reductions.

It is not necessary to make any assumptions about the ETS's effectiveness. The performance of the ETS can be tested. We suggest MoT urgently seek testing, specifically the effects of the ETS on overall emissions, and on investment and consumption decisions in every sector. Testing must be independent, expert and fully transparent. Since a functioning ETS removes all of the emissions benefits of MoT's emissions strategy, MoT has reason to be interested understanding whether the ETS works.

[22] The proportional effect of the ETS on gas is comparable to coal because although gas is less emissions-intensive per unit of energy, the average wholesale price for gas is approximately half of coal.

Road Transport Forum NZ Submission to:

Ministry of Transport

on:

Hīkina te Kohupara – Kia mauri ora ai te iwi

Transport Emissions: Pathways to Net Zero by 2050

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June 2021

Road Transport Forum (RTF) submission on:

Hīkina te Kohupara Kia mauri ora ai te iwi

Transport Emissions: Pathways to Net Zero by 2050

1. Representation

1.1 Road Transport Forum New Zealand (RTF) is made up of several RTF members include Road Transport Association NZ, National Road Carriers, and NZ Trucking Association. The affiliated representation of the RTF is some 3,000 individual road transport companies which in turn operate 16-18,000 trucks involved in commercial road freight transport, as well as companies that provide services allied to road freight transport.

1.2 The road freight transport industry is 3.0% of New Zealand's gross domestic product (GDP) and it carries 93% of the nation's freight. We employ around 26,000 people and vocational education is of growing importance in our industry due to a shortage of drivers and other workers.

2. Introduction

2.1 The RTF recognises the considerable work done by Ministry of Transport Te Manatu Waka (MoT) on Hīkina te Kohupara - Kia mauri ora ai te iwi Transport Emissions: Pathways to Net Zero by 2050 (the Paper) in proposing four potential pathways.

2.2 The RTF provides sector leadership and believes we all need to operate in an environment where the following must be managed and co-exist:

2.2.1 The safety and wellbeing of our drivers and other road users. Our drivers are our most valuable asset.

2.2.2 The impacts of transport on our environment.

2.2.3 The transport of goods by road is economically feasible and viable and it contributes the best way it can to benefit our economy.

2.3 The RTF has been participating in government conversations on transport emissions over a prolonged period of time and our most recent substantive formal feedback includes:

2.3.1 The Green Freight Project, background paper on reducing greenhouse gas emissions from road freight in NZ through the use of alternative fuels (October 2019)

2.3.2 Climate Change Commission 2021 Draft Advice (March 2021)

2.4 The RTF has a number of policy positions related to transport emissions and modes and these are summarised as follows:

2.4.1 New Zealand's transition to a low or zero carbon emissions economy will occur over the next 30 years. Reducing fossil fuel use by the transport industry is essential for a low carbon economy.

2.4.2 New Zealand's trucks will move to using fossil fuel alternatives once those fuels are available via reliable long-term supply; meet performance standards; and are cost-competitive. Ultimately the market should decide the direction.

2.4.3 Having a road freight industry that is reliable, cost effective and flexible is essential for New Zealanders.

2.4.4 Our geography and low population density mean New Zealand businesses, and our economic activity in general, need the flexibility and geographical reach that only road freight can provide.

2.4.5 We believe the freight market is customer driven and ultimately, the customer, whether in New Zealand or in our export markets, will decide on price, convenience and/or time, and what is the best mode of transport for their freight.

2.4.6 Competition between both road freight companies and other modes of transport (road/rail/coastal shipping) has served New Zealand and its economy better than governments 'picking winners' and favouring one transport mode over another.

2.4.7 Government interventions to advantage one transport mode over another inevitably create unnecessary additional costs and lower overall economic prosperity, because it removes the choice to use the most cost-efficient freight solution.

2.4.8 Government interventions to advantage one transport mode over another also introduce risk of unexpected perverse social cost outcomes.

2.5 The predominant lens and scope of our submission is the impacts and risks related to commercial (road freight) traffic and the economy that traffic serves.

2.6 To supplement this submission the regional trucking associations for which the RTF provides unified national representation may, at their discretion, provide local submissions.

3. Responses to the Green Paper consultation questions

For the convenience of the reader, immediately prior to our response we have repeated the respective questions in the same order as the Paper. Those questions and quotes from the Paper are in italicised text.

3.1 Question 1: Do you support the principles in Hīkina te Kohupara? Are there any other considerations that should be reflected in the principles?

3.1.1 In general, we support the principles, albeit they are very high level and somewhat ethereal.

3.1.2 With respect to MoT Principle 5 and the comment, on page 11 of the Paper, "*some people may be more impacted – for example, people who already experience social/economic disadvantages could be disproportionately affected if transport costs increase*.", we believe the MoT is being unrealistically risk-averse. In our view, transport costs will unavoidably increase and those cost impacts will not be shared equally. Our recommendation is that going forward the MoT be much more realistic with its commentary on the likely impacts to society while reducing emissions, and that they substantiate this with an evidence base of costs versus benefits.

3.1.3 We do not believe reflecting additional considerations in these principles will add meaningful value or make a substantive difference.

3.2 Question 2: Is the government's role in reducing transport emissions clear? Are there other levers the government could use to reduce transport emissions?

3.2.1 Page 20 of the Paper refers, "*Government needs to influence change where it can*," and "*The Government has an important role to ensure our institutions…….support transport emission reductions*" and "*this will require leadership by Government,*". In our view, the only tangible activity the Government appears to be obligated to is preparing an Emissions Reduction Plan under the Climate Change Response Act. Putting aside the rhetoric in Chapter 3, to date the rest of the Government's role has been relatively ineffective in creating meaningful change.

3.2.2 We do not believe there is value in considering any further levers.

3.3 Question 3: What more should the Government do to encourage and support transport innovation that supports emissions reductions?

3.3.1 We believe the Government's approach to date, and particularly its lack of tangible action, creates an environment of uncertainty in our sector. The Government should be more decisive and fast acting in advising the sector on its plan.

3.3.2 We believe the Government should refocus its efforts and provide support to industry wide and sector led initiatives rather than its tendency to date to develop its own ideas or support niche products. New Zealand is largely a technology taker and the vast majority of expertise on the feasibility and viability of transport innovation lies within the market and transport sector leadership groups like ourselves and not with Government.

3.4 Question 4: Do you think we have listed the most important actions the government could take to better integrate transport, land use and urban development to reduce transport emissions? Which of these actions do you think should be prioritised?

3.4.1 The list of proposed actions is relatively broad and vague and there is insufficient information to determine the effectiveness of either one of the explicit actions or the collective actions, therefore we cannot comment on the importance or priority of those actions. We would however remind the Government that the Resource Management Act and a lack of integrated planning of urban development and land use have been significant ongoing problems for many years.

3.5 Question 5: Are there other travel options that should be considered to encourage people to use alternative modes of transport?

3.5.1 We do not believe other travel options should be considered. In our view there has been excessive effort and investment contributed by central and local government on alternative modes over the last several years. There has also been a lack of rigour and transparency in reporting back on the effectiveness of that public funding.

3.6 Question 6: Pricing is sometimes viewed as being controversial. However, international literature and experiences demonstrate it can play a role in changing behaviour. Do you have any views on the role demand management, and more specifically pricing, could play to help Aotearoa reach net zero by 2050?

3.6.1 We agree that pricing could play a role in kerbing emissions and we are aware that pricing has been used in many international jurisdictions.

3.6.2 Pricing and demand management can be interpreted very differently. For example, some may consider the availability to travel on an alternative route toll road as demand management, whereas other people consider demand management to have a more limited scope, for example, charging vehicles a higher price to travel in a city during peak hours. We therefore request that with any future discussions, the MoT be very clear on the scope and definition of pricing and demand management.

3.6.3 Our understanding, and we believe this is supported by many transport experts, is that there have been varying levels of success with international experience. Furthermore, whilst there may be benefit to emission reduction it is important to bear in mind that many of the overseas initiatives have not been underpinned by emission reduction as the primary objective. Government should recognise there is considerable risk following international practice unless it has been successful in delivering the same goals as those we seek.

3.6.4 We believe that it is almost impossible to use a Government intervention like pricing and still genuinely honour Principle 5, a Just Transition, as proposed in the Paper.

3.6.5 For the economic and social wellbeing of the economy an essential service such as freight transport will need continued general access to its customers. We are concerned that the administrative burden associated with pricing regimes is invariably understated and consequently this places more stress and strain on transport operators. We therefore request that in the event we go down this path, those administrative impacts are duly considered.

3.6.6 Currently, there are unprecedented levels of volatility, uncertainty, complexity and ambiguity in the environment and the Government needs to be mindful of adding even more.

3.7 Question 7: Improving our fleet and moving towards electric vehicles and the use of sustainable alternative fuels will be important for our transition. Are there other possible actions that could help Aotearoa transition its light fleet and heavy fleet more quickly, and which actions should be prioritised?

3.7.1 We have limited our comments on this question to heavy fleet.

3.7.2 We were pleased to see the Climate Change Commission recently acknowledge that in essence, there has not been sufficient progress anywhere in the world to identify a realistically effective replacement power train to the current diesel engine for trucks.

3.7.3 There is scientific evidence to show that changes to diesel fuel can reduce emissions. In the simplest terms, and in no order of priority, the two mechanisms are the use of additives and changing the composition of the fuel. Additives can improve the cleanliness and efficiency of the induction system and/or reduce friction thereby, in effect, reducing fuel consumption. Biodiesel can be blended with mineral diesel and the corresponding change in fuel composition reduces CO_2 emissions.

3.7.4 The practices in subclause 3.7.3 have been used overseas for several years and a biodiesel blend is seasonally mandated in parts of Europe. Our understanding is that some New Zealand fuel suppliers already provide addivated diesel therefore, the cost difference is likely to be relatively small. For example, less than 1 cent per litre, and the reduction in fuel use is in the order of 2 percent. The costs associated with biodiesel blends are higher however, biodiesel is a simple drop-in solution with guaranteed and significant reduction in CO_2 emissions for every litre of fuel used. For example, a B5 blend of biodiesel reduces CO_2 emissions in the order of 5 percent.

3.7.5 We believe the above practices could be implemented almost immediately, or over a relatively short term and providing there is good management of the willingness to pay, they would begin delivering benefits to emission reductions much faster than any of the current Government initiatives being considered. We recommend that implementation of these initiatives be prioritised.

3.8 Question 8: Do you support these possible actions to decarbonise the public transport fleet? Do you think we should consider any other actions?

3.8.1 With the exception of sub-clause 3.8.2 below, we will refrain from commenting as we believe our colleagues at Bus and Coach Association have more expertise in this area.

3.8.2 The Government appears myopically obsessed with electrifying buses however, our comments in section 3.7 above regarding the potential to make relatively small changes to diesel apply equally to diesel powered buses and trains.

3.9 *Question 9: Do you support the possible actions to reduce domestic aviation emissions? Do you think there are other actions we should consider*?

3.9.1 With the exceptions of sub-clauses 3.9.2 to 3.9.4 below we will limit our comments as aviation is not an area that we have much expertise in.

3.9.2 We have earlier stated that we support the proposed Principle 4 of the Paper, that is, co-ordinated action is required across the transport system. We therefore agree that aviation should reduce its emissions.

3.9.3 Aviation appears to face similar challenges to the trucking sector in so far as despite billions of dollars of investment across the globe, to date no one has been able to identify a realistically effective and sustainable aviation fuel to replace Jet A1, or an alternative power train to the jet engine.

3.9.4 With regard the possible key action to, "Invest *in, produce and mandate sustainable aviation fuels….*" we are concerned at the scope of this action and particularly, the elements of investment and production. We believe the production and supply of fuel is best left to the market and government would be introducing considerable new risks by being at the bleeding edge and venturing too deeply into this area.

3.10 Question 10: The freight supply chain is important to our domestic and international trade. Do you have any views on the feasibility of the possible actions in Aotearoa and which should be prioritised?

3.10.1 In principle, we agree that a more efficient supply chain will lead to lower emissions. However, we are concerned with the MoT's suggestion to examine efficiencies with a view to optimising payloads. It is inherent that such intervention involves arbitrary, meaningless target setting and implementing such control over transport operations involves draconian regulatory interventions. We strongly oppose any progress down such a path and we urge government to refrain from imposing more constraints on customers' demand and instead allow normal market forces to drive those efficiencies.

3.10.2 We support your intent to consider further opportunities with high productivity motor vehicles (HPMV). On multiple occasions our sector has raised concern with Waka Kotahi NZ Transport Agency (Waka Kotahi) that the current permit administrative demands placed on transport operators are an unnecessary burden and add little value to managing the risk. In addition, Waka Kotahi do not

appear to have the resource to manage the volume of permits in a timely fashion. Further analysis is not required to deliver quick wins in this area, it is more a case of Waka Kotahi being more receptive and getting into action on the remedies we have been suggesting.

3.10.3 We strongly support your intent to provide driver training programmes implemented by the industry. Alongside Social Development and Employment Minister Carmel Sepuloni and Transport and Workplace Relations and Safety Minister Michael Wood, we recently launched our Te ara ki tua Road to success industry traineeship. We are also currently in discussion with Waka Kotahi on its support of a Master Code to promote safe and sustainable transport. We are concerned that to date government agencies and departments do not appear to have taken either a strategic or coordinated approach in how industry initiatives are supported. We request you give high priority to further discussion with us on this issue.

3.11 Question 11: Decarbonising our freight modes and fuels will be essential for our net zero future. Are there any actions you consider we have not included in the key actions for freight modes and fuels?

3.11.1 Page 87 of the Paper refers, "We *can improve the resilience and reliability of less carbon intensive transport modes to improve modal choice".* We also note further down that page the acknowledgement that the amount of freight that can be shifted to rail or coastal shipping is limited due to our geographical characteristics and market expectations. We have several serious concerns with the MoT's policy thinking in this section.

3.11.1.1 Firstly, the concept of comparing the emissions performance of the respective modes is fundamentally flawed. Whilst theoretically one can calculate a CO_2(e) output per tonne-kilometre, it is a purely academic exercise of little value because each mode delivers a very different service and therefore, it is meaningless to compare them. We have raised this with government previously and we are concerned that such flawed thinking continues.

3.11.1.2 Secondly, from a basic good policy making perspective the MoT's continued discussion about modal share and shifting freight to rail or coastal shipping is irrational and a nonsense. Fundamental to the MoT's notion is that there exists an ideal proportion of the respective share across the mode. However, there is no such thing as an ideal share to target and therefore, it is futile for the MoT to continue discussion on this concept and we urge it to stop. Our view is that at any point in time modal share is driven by the customer and the respective mode's offer. The latter will be determined by a complex set of factors, both internal and external, such as but not

limited to: geography, population, infrastructure, technology, the strength of the economy and culture. With that in mind, rather than consider the share as right or wrong for a respective mode, which is an inherent inference by government and underpins its desire to intervene and drive some other hypothetical sharing, the split should simply be viewed as "it is what it is". Taking a look at developed and developing international jurisdictions, there is a diverse range of modal share respectively. In some countries that are arguably not dissimilar to us and ones that we might aspire to, road has a greater share of the modal split and in others there is less. We contend this demonstrates the irrationality of the MoT's misguided obsession to direct modal share and urge it to stop any further thought on determining the amount of freight that can be shifted to rail or coastal shipping.

3.11.1.3 Thirdly, and supporting our view in the MoT's erroneous thinking on modal share, we note that the MoT's understanding and data on modal share is inaccurate, or at least inconsistent. Page 87 of the Paper refers to rail carrying 11.5 percent of the tonne-kilometres freight task, yet page 17 refers, "*Rail carries 16 percent of freight in tonne kilometres within Aotearoa".* The current sparseness of quality, evidence-based data on modal share of the freight task presents considerable risk to further government policy development in this area.

3.11.1.4 Page 89 of the Paper refers, "*There are about 150,000 trucks on the road, travelling a combined total of nearly three billion kilometres. These heavy vehicles, the majority of which are freight vehicles, are responsible for almost a quarter of Aotearoa's transport GHG emissions".* The RTF disputes this claim and instead our view, and one supported by independent research such as that undertaken by Transport Engineering Research NZ, is that a small number of the larger, high-use vehicles account for a large proportion of the payload transported. We are concerned at the MoT's misunderstanding of the transport environment and the risk that poses to any further policy developed based on incorrect evidence.

3.11.1.5 Page 87 of Paper refers, "*Our rail has suffered from a lack of long-term investment and inadequate planning and funding frameworks. There have been issues around resilience and reliability of the rail network to support supply chains*". We contend this demonstrates further flawed logic from the MoT. Our view is that rail has not suffered from a lack on long-term investment, in fact, it is the contrary. Despite there being insufficient business demand for it, Governments have invested in rail on multiple occasions. The underlying issues around resilience and reliability are more due to there being insufficient demand for the market to justify the

necessary investment. Any further flow of government funding exacerbates the current debacle and is likely to be another regret cost.

3.11.2 In addition to our comments above on modal share, we provide the following comments on other parts of Chapter 8 of the Paper:

3.11.2.1 *Possible key actions: "Introduce vehicle CO_2 standards".* Our advice from manufacturers is that while the relatively recent introduction of a mandatory CO_2 rating was well intended, it is a pragmatic political solution and it is unlikely to be effective in making any change. Unlike with light vehicles where there is relative certainty and consistency in the final product, the nature of truck engines and their application is very different. A given truck engine may be used in a wide variety of applications, for example, the same engine could be used in a bus or a semi-trailer tractor unit, or a rigid truck, or a truck trailer combination. The fuel consumption will vary significantly which poses considerable risk to the effectiveness of using CO_2 standards.

3.11.2.2 *Possible key actions: "Implement Euro 6".* We agree that Euro 6 will reduce harmful emissions, in particular nitrogen oxides and particulate matter, however, there is not a correlation between harmful emissions and CO_2 output therefore, introducing Euro 6 could in fact increase CO_2 emissions.

3.11.2.3 *Possible key actions: "Investigate the viability of introducing a penalty or financial disincentives system for high GHG emitting heavy trucks*". We do not support this because identifying high GHG emitting trucks is complex and fraught with issues.

3.11.2.4 *Possible key actions: "Phase out the registration of diesel heavy vehicles beyond a certain date, e.g. from 2035"*. As was pointed out by the Climate Change Commission recently, there are currently no feasible alternative power trains to the diesel engine. With that in mind, we believe the Government is being grossly irresponsible in signalling a phase out. The associated uncertainty that government creates when undertaking consultation like this is not at all helpful.

3.12 Question 12: A Just Transition for all of Aotearoa will be important as we transition to net zero. Are there any other impacts that we have not identified?

3.12.1 In regard to the Just Transition, we believe this is nothing more than an unachievable ideology. We repeat the comment we made earlier in 3.1.2. Page 11 of the Paper refers, "*some people may be more impacted – for example, people who already experience social/economic disadvantages could be disproportionately affected*

if transport costs increase.", we believe the MoT is being unrealistically risk-averse. In our view, transport costs will unavoidably increase and those cost impacts will not be shared equally. Our recommendation is that going forward, the MoT be much more realistic with its commentary on the likely impacts to society while reducing emissions, and that they substantiate this with an evidence base of costs versus benefits.

3.12.2 In terms of other impacts, we do not believe the MoT has given due consideration to the social and economic impacts on Aotearoa and this is not only a major gap in its policy development, but it presents significant risk.

3.13 Question 13: Given the four potential pathways identified in Hīkina te Kohupara, each of which require many levers and policies to be achieved, which pathway to (sic) you think Aotearoa should follow to reduce transport emissions?

3.13.1 We believe this is very much a case of choosing between a number of evils, and we are concerned at the threat the MoT's approach presents to personal mobility. However, we also do not want to be a "fence sitter". We recommend the pathways in order of highest to lowest priority are: Pathway 2; Pathway 3; Pathway 4. Our thinking and caveats are explained below.

3.13.1.1 We believe Pathway 2 *(increasing the share of EVs and the use of biofuels)* is likely to have the least adverse impact on personal mobility. Our caveat is that industry leaders such as ourselves should lead the "improve' initiatives for freight.

3.13.1.2 We believe Pathway 3 is the next priority. There appears little difference between Pathways 2 and 3 however, we ranked this behind Pathway 2 because biofuels are available in the reasonably short term.

3.13.1.3 We have ranked Pathway 4 *(reduce nearly 40 percent of the light vehicle kilometres travelled by 2035)* as the last priority because this has the largest impact on personal mobility.

3.13.1.4 For the reasons provided in sections 3.11.1 to 3.11.1.5 above, we have excluded Pathway 1 *(reduce nearly 30 percent of the light vehicle kilometres travelled by 2050 ……..and requires higher mode-shift from road to rail and coastal shipping*) as being a plausible option.

4. Summary

4.1 We are concerned that the Executive Summary of the Green paper refers, "*Decarbonising our transport system will be challenging. However, this transition could make Aotearoa a healthier, safer, more vibrant, resilient and prosperous place to live and work."* Our view is that rather than potential outcomes, these should be at the forefront and the raison d'etre for the transition.

4.2 Government climate change policies will have an impact on the cost competitiveness of new fuels through excise taxes, licensing costs, and the Emission Trading Scheme (ETS). Our view is that the Government should not pick a technology for its support prematurely, but instead allow technological developments and industry response to find the best solutions.

4.3 Competition between both road freight companies and other modes of transport (rail and coastal shipping) has served New Zealand and its economy better than Governments 'picking winners' and favouring one transport mode over another. RTF wants to see continued investment by the Government in the infrastructure that supports road freight, given its dominance of the freight task that keeps the economy moving. The MoT's continued discussion about modal share and shifting freight to rail or coastal shipping is irrational and a nonsense.

4.4 Prior to going much further, we urge MoT to undertake a comprehensive and transparent cost impact analysis of the pathways presented in Hīkina te Kohupara. That analysis is desperately needed so the full impacts and risks, particularly with the longer-term solutions, can be gauged with a reasonable degree of confidence.

4.5 There are a number of approaches, particularly with fuel and driving, that could be implemented in the short term. The industry has suggested these and we are getting increasingly frustrated that rather than get after some tangible returns, the Government appears to continue with some fundamentally flawed policy idealisms and search for an unobtainable nirvana.

4.6 RTF welcomes ongoing discussion with Government and its advisors on reducing emissions. We can add considerable technical and policy expertise to MoT's thinking and we urge it to work more closely with us so we can get into action much more quickly and reduce emissions.

Submission from Climate Justice Taranaki on Ministry of Transport Hīkina te Kohupara discussion document, June 2021

1. Climate Justice Taranaki Inc. (CJT) is a community group dedicated to environmental sustainability and social justice. This includes issues of inter-generational equity, notably in relation to climate change, which will impact future generations' inalienable rights to safe water, food and shelter, crucial to sustaining livelihoods and quality of life. CJT became an incorporated society on 26 February 2015.
2. CJT notes that addressing the many issues presently making our transport system inequitable, inefficient, polluting and unsustainable is crucial for both social justice and climate change. We also note that transport forms an integral part of creating more connected, supportive communities, and hence are supportive of careful integration with other key aspects, including energy, housing, water and food supply and waste management.

Chapter 1: Introduction

Consultation Question 1: Do you support the principles in Hīkina te Kohupara? Are there any other considerations that should be reflected in the principles?

3. Over the last three decades, international negotiations and policy settings based on assumptions over large-scaled carbon removal and offsets have perpetuated burning of fossil fuels, delayed real actions and squandered much of our chance of reducing emissions to safe levels. "*The only way to keep humanity safe is the immediate and sustained radical cuts to greenhouse gas emissions in a socially just way*," (Dyke, Watson and Knorr, 2021)[1]. The New Zealand government's 2050 zero emission target, mirroring global agreements, is thus both too far away and unrealistic. CJT has produced a more time-sensitive strategy '*Toitū Taranaki 2030 – A Community Powered Strategy for a Fast and Just Carbon Neutral Transition*' that includes a significant section on Transport, appended herewith as an integral part of our submission.
4. While it is understandable that Hīkina te Kohupara has been drafted to align with the 2050 target (Principles 1 & 6), it is crucial that te Manatū Waka work with other agencies, Māori and territorial authorities, industries, businesses and communities, to move as fast and as effectively as possible.
5. Not relying on emissions offset is indeed wise and an illustration of commitment (Principle 2).
6. A strategic approach that prioritises initiative with "*the largest impact on avoiding and reducing emissions, while delivering value for society*" is good (Principle 3) although "value for society" is open for interpretation.
7. Co-ordination and collaboration are indeed essential to deliver the expected outcomes (Principle 4), as are major education and advocacy campaigns to bring everyone along.
8. Overall the 7 principles are well crafted. Leadership and dedication that put words to actions will be the key.
9. It is noted that international travels and embodied emissions in transport infrastructure are outside the scope of this document (Page 9). Although the Paris Agreement is silent on international aviation and maritime emissions, that should not stop Aotearoa New Zealand leading the way in limiting such emissions, and/or to work with other nations to make it happen. The document states that transport infrastructure emissions will be captured elsewhere in the Emissions Reduction Plan. There is thus a risk

[1] https://theconversation.com/climate-scientists-concept-of-net-zero-is-a-dangerous-trap-157368

that such inherently related emissions could be omitted or forgotten when making policy considerations, plans and decisions for low emissions transport.

Chapter 3: The Government's role and levers for reducing transport emissions

Question 2: Is the government's role in reducing transport emissions clear? Are there other levers the government could use to reduce transport emissions?

10. The role of the government and the levers that could be used are well covered. Moreover there has to be genuine openness and readiness to let Māori take the lead and make decisions on policies that directly affect them. It is not clear how much input Māori has or will have in the current and follow up process.

Chapter 4: The role of innovation in the transport system

Question 3: What more should Government do to encourage and support transport innovation that supports emissions reductions?

11. The government should support community and business initiatives that localise production of goods and markets, to substantially reduce the need for long-haul freight and the associated emissions and wastage, while building local community resilience (Climate Justice Taranaki, 2021)[2]. A shift away from the reliance on export-import to a more domestic and community focussed economy would benefit the environment and people. Building thriving, community-focused, local economies would create jobs and other opportunities in regional areas, helping to meet the needs of rising population including immigrants.
12. Another important, related initiative that would help 'avoid' and 'shift' transport mode is to bring good quality, essential services to communities outside of towns and cities, and to invest in social, arts, education and leisure amenities in regional and rural areas. Supported by effective public transport links notably electric rail, and quality digital connectivity, such investments would help reduce strains on towns and cities and the associated high emissions. This would help to counter the 'urban creep' of past decades, in part driven by the amalgamation of family-operated agriculture and local processing into large conglomerates, and the replacement of many rural schools by just a few larger schools.
13. However, while digital technology has important roles to play in emissions reduction (e.g. in decentralised renewable energy generation, sharing and management, and in enhancing connectivity to reduce the need to travel), the energy, resources and emissions involved must also be considered. With few exceptions, global data centres and internet servers are extremely energy intensive and substantial green-house gas (GHG) emitters[3, 4]. Local innovations in this area using sustainably sourced renewable energy and relying on local entrepreneurs and workforce deserve government support.

Chapter 6: Theme 1 – Changing the way we travel

Question 4: Do you think we have listed the most important actions the government could take to better integrate transport, land use and urban development to reduce transport emissions? Which of these possible actions do you think should be prioritised?

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2 https://climatejusticetaranaki.files.wordpress.com/2021/05/toitu-taranaki-2030-just-transition-community-strategy-apr21-web.pdf

3 https://www.nature.com/articles/d41586-018-06610-y

4 https://www.computerworld.com/article/3431148/why-data-centres-are-the-new-frontier-in-the-fight-against-climate-change.html

14. Of the urban development actions proposed, making transport investments conditional on supporting 'quality compact, mixed use urban development' is of high priority, as Councils are currently revising their Regional Land Transport Plans (e.g. in the case of Taranaki). Investment decisions made through the transport plans will have long-term implications on urban development and emissions.

15. Likewise, requiring transport GHG emission impact assessments for proposed urban developments and subjecting them to redesign and/or mitigation where necessary, is also of high priority because of their long-term implications.

16. When designing or remodelling cities and towns into compact, mixed use urban development to support low emissions transport, other sustainability issues must be assessed to ensure that the quest to lower transport emissions does not inadvertently increase emissions or impact on the sustainability of other sectors. These include building materials and energy efficiencies, green space, and supply of food, goods and services. Notably, it is important to consider the impacts on three waters (water supply, wastewater treatment and stormwater management) to avoid shortfall due to increased populations in such urban areas.

17. Another big challenge is how to stop house prices from skyrocketing, in part to recover the costs of remodelling urban designs and putting in place new amenities to make them compatible to multiple-mode, low emissions transport. One of the main reasons why people live outside of cities is because city dwellings are far more expensive than suburban or rural living. Many families choose to live in the suburbs and commute to work or schools because of this reason. The assumption that housing intensification can help make urban land markets more competitive, increase housing supply and reduce costs associated with land required per housing unit, etc, need to be scrutinised carefully.

18. The University of Auckland Public Policy Institute recognised that "*housing cannot be thought about in isolation from other policy areas, such as social security or tax or financial regulation*" (Paul, et al. 2020)[5].

19. The quickest way to end skyrocketing house prices could be for Parliament to intercede to end the Reserve Bank of New Zealand inflationary Quantitative Easing (QE)[6] programme and introduce direct monetary finance as advocated by former Finance Minister Sir Michael Cullen[7]. One advantage of direct monetary financing RBNZ is an additional funding source to speed up construction of the 100,000 state houses needed to meet the housing needs of low income earners.

20. In terms of actions proposed under place-making and street design, setting targets and timelines for councils and Road Controlling Authorities to deliver public transport and active travel networks

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[5] https://www.policycommons.ac.nz/2020/10/06/transformative-housing-policy-for-aotearoa-new-zealand/

[6] Quantitative Easing (QE) has caused the biggest percentage increase in house prices (and rents) ever since it was first implemented in March 2020. It has come under increasing criticism, most notably from former Finance Minister Sir Michael Cullen, who advocates serious consideration of using direct monetary finance (ie allowing the Reserve Bank to fund the Covid recovery via direct purchase of Treasury bonds). With the launch (QE), RBNZ has shown it has power to create money. However instead of using the money they create to directly fund government programmes and infrastructure, they are using it to buy back Treasury Bonds the government sells (mainly to private banks) to finance its spending program. The problem with using private banks to introduce new money into the economy (as we do with QE) is that very little of it goes to the productive economy to help businesses and create jobs. Instead most of it goes into the speculative economy, pushing up the share market and causing house prices to skyrocket.

[7] https://www.stuff.co.nz/national/politics/300160059/reserve-bank-fuelling-housing-boom-with-printed-money-says-former-finance-minister-michael-cullen

is of high priority. The lessons and momentum gained from Covid-19 focusing on creating healthy urban environments, car free or car-lite spaces and re-purposing on-street car parks for pedestrians, recreation and/or green space, should be given extra impetus to continue and expand across all towns and cities.

21. Another simple and inexpensive way to reduce transport emissions is to reduce speed limits, especially on highways (reduce to 80 km/hr). This has been done before during the oil shock in the 1970s, and should be resumed in view of our climate crisis, and much more vigorously without all the exemptions that made the previous move ineffective[8].

Question 5: Are there other travel options that should be considered to encourage people to use alternative modes of transport? If so, what?

22. It is disappointing to see the down-play of interregional rail while domestic air travel is being justified as important for businesses and regional development (page 50 of document).
23. Trains are the most energy efficient form of interregional travel, especially when well run, electrified with clean renewable energy, and taking into account the reduced costs and emissions from road construction and maintenance. Notably the revival of the sleeper train service[9] between Auckland to Wellington could significantly reduce the need for air and road travel between the major cities, especially when proper fares in line with emissions pricing are imposed on air travels.
24. If we are serious about our climate crisis, domestic air travels (e.g. by electric planes) will have to be reserved for medical and emergency services, not for those who are 'time poor'. We cannot rely on so-called 'sustainable aviation fuels' because of the technical uncertainties and the landuse demand to grow such fuels when there are far greater demands on land for sustainable food, fibre and timber production, and for rewilding Aotearoa and the world.
25. On public land transport, there is huge need for improvement (eg. in Taranaki), in terms of frequency, route coverage, quality and reliability, both for within cities (like New Plymouth) and for linking townships and rural communities. The two crucial ways of making public transport popular are to improve the service and to bring costs down, so that it is worth the inconvenience when compared with private cars. Priority needs to be readjusted when ratepayers are asked to pay three times more on a sports stadium than on public transport, as in the case of Taranaki. Reducing emissions and providing accessibility are local government's responsibilities – funding needs to support these. Effective collaboration is needed among departments and councils to make it work. Government support for on-demand shared shuttle, building on lessons learnt from Timaru, would also be useful to some marae and rural communities, ensuring accessibility to those most in need.
26. It is good to see statistics from Wellington's commercial car-share providers, replacing every 11 private vehicles with just one. Financial and technological support for non-commercial, community car-share initiatives, especially shared EVs in less populated provincial districts (e.g. New Plymouth) where companies are less inclined to invest, would be very much welcomed. Development of procurement guidelines for All of Government vehicle fleet, with flexibility for car-sharing, expansion to include schools and other educational institutions (e.g. WITT), and priority for electric vehicles, would be useful.
27. When resources are limited, cycling infrastructure development is better to be utility or commuting focussed, rather than recreational, to achieve bigger emission reduction. Other transport options

[8] https://www.stuff.co.nz/motoring/115929541/friday-flashback-remember-the-oil-crisis-and-carless-days

[9] https://www.stuff.co.nz/travel/back-your-backyard/122296375/aucklandtowellington-sleeper-train-could-happen-without-kiwirail

that may be looked at are coastal voyages and sailing, with opportunities for low emission, adventure and/or cultural tourism.

Question 6: Pricing is sometimes viewed as being controversial. However, international literature and experiences demonstrate it can play a role in changing behaviour. Do you have any views on the role demand management, and more specifically pricing, could play to help Aotearoa reach net zero by 2050?

28. We do not support transport pricing because of the disproportionate impacts on low-income earners and families who have no or little choice over the mode of transport, at least until there is adequate and affordable public transport (including on-demand services) to support them. The effectiveness of pricing is limited without the successful implementation of other strategies mentioned earlier. It is highly likely that the top income earners would not be deterred by rising prices while middle income earners are likely to complain initially but get used to it gradually, without enduring behavioural change. Low-income earners often live far from essential services, schools and public transport network, or work night shifts when there is no regular public transport and have to rely on their old, inefficient cars. Hence we think that support and incentives which enable the low and middle-income earners to travel less and take part in low carbon transport would be more effective than pricing, when complemented by strict regulations such as car-free days or zones.
29. If the purpose of increased pricing is to raise funds for accessible, efficient and affordable low emissions transport, then we need to look at how bus services are owned and run at present. The Green Party recently pointed out that current regulations require public transport to be operated for profits for local councils to be eligible for land transport funding from the central government[10]. The Climate Change Commission's final advice Ināia Tonu Nei (June 2021)[11] also suggested that the requirement to have 50% of public transport costs to be recovered through fares need to be changed to make public transport more affordable. The government should change the law to enable councils and communities to own and run transport services as an essential service provided for public good, rather than for profit. This would make transport services more affordable and accessible to all.
30. Furthermore, fundamental reform of our tax systems and the ETS would be very useful. Notably, the introduction of a well-designed and executed wealth tax[12, 13], capital gains tax, and suitably high aviation tax (for commercial air travel), and removal of any tax cuts and avoidance by emissions intensive industries, would generate much needed funds for the purpose.

Chapter 7: Theme 2 – Improving our passenger vehicles

Question 7: Improving our fleet and moving towards electric vehicles and the use of sustainable alternative fuels will be important for our transition. Are there other possible actions that could help Aotearoa transition its light and heavy fleets more quickly, and which actions should be prioritised?

31. New Zealand has one of the highest private car ownerships per capita in the world[14, 15]. Reducing this, and thus shrinking our private passenger vehicle numbers, has to be the number one priority

[10] https://action.greens.org.nz/allow_community_ownership_of_our_buses?recruiter_id=8037886&fbclid=IwAR1uKaYd10IIqQOcRvVFzQJ1sXU2u-U-8GqRCJ0pdTpy-NwtZkFcx_OW68c

[11] https://ccc-production-media.s3.ap-southeast-2.amazonaws.com/public/Inaia-tonu-nei-a-low-emissions-future-for-Aotearoa/Inaia-tonu-nei-a-low-emissions-future-for-Aotearoa.pdf

[12] https://inequality.org/great-divide/the-basic-case-for-a-wealth-tax/

[13] https://www.oecd.org/ctp/tax-policy/role-and-design-of-net-wealth-taxes-in-the-OECD-summary.pdf

[14] http://www.ehinz.ac.nz/assets/Factsheets/Released-2017/NumberOfVehiclesInNZ2000-2016-release201710.pdf

[15] https://www.transport.govt.nz/statistics-and-insights/fleet-statistics/vehicle-ownership-2/

in our effort to lower transport emissions, reduce environmental impacts from transport infrastructure, improve air quality and social wellbeing.

32. Michaux (2021)[16] pointed out that "*Global reserves are not large enough to supply enough metals to build the renewable non-fossil fuels industrial system or satisfy long term demand in the current system… The grade of processed ore for many of the industrial metals has been decreasing over time… Like all other industrial activities, without energy, mining does not happen… the current Linear Economy system is seriously unbalanced and is not remotely sustainable."* Worldwide, there is not enough platinum and some of the other minerals to replace every existing private internal combustion engine (ICE) vehicle with an electric one (Krumdieck and Land, 2020)[17], and the resource drain and social impacts associated with this would be huge[18].

33. By urging the government to ensure policies to keep up with Aotearoa's demand for EVs (page 66), rather than substantially reduce our demand, the green paper fails to acknowledge these important issues and the need to reduce private car ownership. The Climate Change Commission's draft advice also fails to address our oversized car ownership, although the recommendation to phase out the import of ICE and the government's Clean Car Standard policy would be influential in reducing transport emissions. The Commission's final advice does have an increased emphasis on reducing the kilometres travelled by private vehicles which is good.

34. To combat the issue of the socio-cultural identity so heavily tied to big cars, the government needs to invest in a massive, multi-stakeholder media campaign that promotes "public and shared transport is the coolest thing". Any advertising of private cars, especially fuel inefficient SUVs and utility vehicles, should be discouraged and the exemption from fringe-benefit tax for double-cab utes[19] be removed. Incentives and support to encourage EV uptake should be tied to shared car ownership such as one EV to be shared by several families or a neighbourhood E-van.

35. There is no case for hydrogen fuel cell vehicles, whether for light vehicles or heavy freight. The production, transport and conversion of green hydrogen are extremely energy wasteful and costly. Manatū Waka's Green Freight Strategy working paper (May 2020)[20] pointed out that "*The process is currently very inefficient, using around three times the electricity per tonne-KM as direct charging BEVs*" (Battery Electric Vehicles). The present document (page 91) recognised that "*converting electricity into hydrogen and back to electricity can involve energy loss in the order of 45 percent making it an inherently inefficient process.*" It is disappointing to see that the Climate Change Commission has been swayed by the industry and some councils to give more weight to hydrogen (land, domestic aviation and shipping) in their final report Māia Tonu Nei than in the draft report where there was clear reservation about the technology.

36. The process is also fraught with hazards which New Zealand legislation and protocols are unprepared for. The development of hydrogen-based transport would unwisely compete with electrification of transport, for renewable energy, finance, infrastructure and landuse (e.g. priority car parks), all of which are limited and in high demand to cope with the climate crisis. Rather than helping to democratise energy production and consumption, hydrogen technology would concentrate power and wealth in the hands of a few because of the very high energy demand, cost and specialised, hazardous technology and infrastructure.

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[16] https://tupa.gtk.fi/raportti/arkisto/16_2021.pdf?fbclid=IwAR0HF-ajCPg4xyPFkVuvLIVPk00O7_xUlMboFbpr-hao_c1zFIBZKly_mGc

[17] https://www.transitionengineering.org/convergence

[18] https://www.earthworks.org/cms/assets/uploads/2019/04/MCEC_UTS_Report_lowres-1.pdf

[19] https://www.greaterauckland.org.nz/2021/06/02/the-rise-of-the-urban-light-truck-what-to-do-about-it/

[20] https://www.transport.govt.nz//assets/Uploads/Paper/Green-Freight-Strategic-Working-Paper_FINAL-May-2020.pdf

37. In the case of Taranaki, the high costs of green hydrogen technology and hydrogen vehicles would likely result in the use of natural gas to produce hydrogen instead of water electrolysis with renewable energy. This would reflect the fact that nearly all hydrogen in the world is currently made using fossil fuels[21] and therefore not 'green'.

38. Numerous energy specialists and engineers in Aotearoa and overseas have methodologically criticised the government and industry push for hydrogen[22, 23, 24]. Prof Susan Krumdieck has argued strongly that electrification of transport including light vehicles, light rail and inter-regional rail supported by smart energy delivery, to be far more energy and cost effective than hydrogen-based transport[25]. Given all the above, we think that the push for hydrogen is a form of 'trojan horse' promulgated by the fossil fuel industry and their remaining political supporters.

39. The sustainable transport biofuels mandate sounds good on the surface, although the document does not provide much detail. Government incentives and support for further development and production of 'conventional' and 'advance' biofuels that do not require blending with diesel would be helpful, especially if farm and forestry residues or waste fats and oils form the bases. Consideration on potential landuse conflict is important to avoid negative social and environmental impacts. Support and skills training for the conversion of existing ICE vehicles to pure biofuels would also be beneficial. Such developments, when combined, could offer new economic opportunities and jobs, especially in farming and rural communities, and in Taranaki where there is a real need for companies, engineers and workers dependent on the twilight oil and gas industries to transition onto other areas.

Question 8: Do you support these possible actions to decarbonise the public transport fleet? Do you think we should consider any other actions?

40. Expansion of the government's Low Emission Vehicle Contestable Fund or other support for further research and development of electric buses (e.g. AUT's E-bus[26], Christchurch Airport's E-shuttle[27]), trucks (e.g. Alco's E-truck[28], Palmerston North's E-rubbish truck[29]), and the associated charging infrastructure, would help to free us from costly imports while creating jobs and economic opportunities.

41. Buses, though currently contributing just 1 or 2 percent of road transport emissions, will have a bigger carbon footprint with increasing demand for public transport. Hence early development of low or zero emission alternatives, including conversion of the existing fleet, when applicable, would avoid that. Even with limited range, such electric vehicles could help to reduce emissions from long-haul freight, especially when integrated with a much-improved electric rail network.

42. The negativity surrounding rail transport in the document is disappointing. If cost is the main obstacle, then we should change the current ownership and business model of KiwiRail. Their website states that, as a state-owned enterprise (SOW), all of KiwiRail's shares are held by Shareholding Ministers of the Crown, i.e. the Minister of Finance and the Minister for State Owned

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21 https://climatejusticetaranaki.files.wordpress.com/2019/06/tim-forcey-slides-for-conference.pdf

22 https://reneweconomy.com.au/beware-fossil-gas-suppliers-bearing-hydrogen-gifts-73041/

23 https://thefifthestate.com.au/columns/spinifex/hydrogen-in-the-gas-grid-is-a-great-idea-if-you-own-the-gas-grid/

24 https://www.energywatch.org.nz/issues/EW82_4-2020.pdf

25 https://theconversation.com/why-new-zealand-should-invest-in-smart-rail-before-green-hydrogen-to-decarbonise-transport-153075

26 https://news.aut.ac.nz/around-aut-news/new-zealands-first-electric-bus-hits-the-road

27 https://www.stuff.co.nz/technology/113672129/christchurch-airport-buys-new-driverless-electric-shuttle

28 https://www.stuff.co.nz/motoring/EVs/117770655/nzs-first-intercity-ev-truck-is-on-the-road

29 https://www.newshub.co.nz/home/new-zealand/2018/08/first-new-zealand-made-electric-rubbish-trucks-about-to-hit-palmerston-north.html

Enterprises. The principal objective of every SOE is "*to operate as a successful business and to be as profitable and efficient as comparable businesses that are not owned by the Crown*". This ownership and business model contradicts with the need to rapidly and effectively reduce our transport emissions and transition Aotearoa to a zero carbon society. It is not clear how effective the recent changes in the Land Transport [Rail] Legislation Act 2020 and the Rail Network Investment Programme mentioned in the New Zealand Rail Plan[30] might be in generating enough funding for the restoration, upgrade, electrification and expansion of the rail network.

Question 9: Do you support the possible actions to reduce domestic aviation emissions? Do you think there are other actions we should consider?

43. We do not support continued commercial domestic and international aviation for passenger or freight and the reliance on so-called sustainable aviation fuel, as explained earlier. Research and development of sustainable aviation (fuel or electric) should focus on the need of urgent medical and humanitarian services.

44. We have serious concern over the space rocket launching facilities at Māhia or anywhere in Aotearoa, especially when associated with US military and intelligence activities[31, 32, 33, 34]. Such activities are extremely energy and emissions intensive, damage the environment, risk violating Te Tiriti ō Waitangi and provide minimum job opportunities for New Zealanders[35]. The social injustice associated in such military exercises overseas could be far reaching and Aotearoa should not be part of it. Meanwhile, two rūnunga have gone into partnership with the crown to allow aerospace research and launching at Kaitōrete Spit near Christchurch, conditional on funding for spit ecosystems protection[36]. It is unclear whether the impact of emissions from future aerospace activities at this site has been considered.

Chapter 8: Theme 3 – Supporting a more efficient freight system

Question 10: The freight supply chain is important to our domestic and international trade. Do you have any views on the feasibility of the possible actions in Aotearoa and which should be prioritised?

45. We are supportive of the government's plan to improve the rail network and coastal shipping. However, we question whether the plan will be sufficient to achieve what is needed. The various comments in the document suggest hesitation and lack of commitment or leadership. The fact that rail transport emits just 21 percent of CO_2 equivalent per tonne-km compared with road freight, and coastal shipping 12-33% of that from road freight (page 87 of document)[37] is a strong enough argument to pursue a major shift from road freight to rail and coastal shipping.

46. In response to the mention of our Pacific responsibilities, we believe Aotearoa's role is best suited in the area of technology transfer and capacity building for climate resilience including food and water supply. Revival of traditional practices such as maritime navigation and sailing based on

[30] https://www.transport.govt.nz/area-of-interest/infrastructure-and-investment/the-new-zealand-rail-plan/
[31] https://www.rnz.co.nz/national/programmes/lately/audio/2018786842/alarm-at-rocket-lab-s-next-payload
[32] https://www.rnz.co.nz/news/national/440914/no-military-payloads-rocket-lab-accused-of-breaking-promise-to-mahia-locals
[33] https://www.nzherald.co.nz/business/one-of-our-toughest-days-rocket-lab-suffers-third-mission-failure/BY4CYVIDSNDDJPP6ZBW7B6VVAI/
[34] https://www.teaomaori.news/greens-want-rocket-labs-military-launches-mahia-stopped
[35] https://www.rnz.co.nz/news/national/443824/rocket-lab-workers-and-customers-granted-border-exemptions
[36] https://www.stuff.co.nz/business/300320221/new-rocket-launch-site-proposed-for-canterbury-aerospace-industry
[37] Ministry for the Environment. (2019). *Measuring Emissions: A Guide for Organisations. 2019 Detailed Guide*.

indigenous knowledge and skills would also be consistent with our role in the region and help to maintain some level of regional transportation with minimal emissions.

47. In terms of consumer demands and freight patterns, sustained efforts in public engagement and education to foster demand for sustainable supply chains are needed. This should include renewed focus on supporting local production and markets: 'slow, green goods' and 'slow, local foods'.
48. Promoting eco-driving (page 84) could be much more useful when speed limits are reduced, especially on highways, as mentioned previously. Lowering the speed limit would also reduce serious injuries and fatality associated with road accidents.
49. The potential integration of freight with passenger transport, especially on rail and ships, could be considered in some cases to optimise transport capacity/trips.

Question 11: Decarbonising our freight modes and fuels will be essential for our net zero future. Are there any actions you consider we have not included in the key actions for freight modes and fuels?

50. Of the possible key actions proposed in the document, completing investments over the next decade outlined in the New Zealand Rail Plan would be a top priority.
51. It is also extremely important to review the vulnerability of existing and potential rail and road networks in view of increasing extreme climate events and sea level rise. Adjustments and investments would need to be made to strengthen the resilience of these networks, in some cases, retreat and relocate to less vulnerable locations.
52. Ultimately if we are serious about reducing emissions, the growth in energy demand, both for passenger transport and movement of goods, needs to be curtailed rather than assumed. The Toitū Taranaki 2030 community strategy[38] spearheaded by Climate Justice Taranaki has laid down a strong case for shifting our largely export-import reliance economy to a more domestic and community focussed one, for the sake of honouring our international obligation in reducing emissions and fostering a more socially-just world.

Chapter 9: Supporting a Just Transition

Question 12: A Just Transition for all of Aotearoa will be important as we transition to net zero. Are there other impacts that we have not identified?

53. The document acknowledges the difficulties in meeting demands for skilled workers needed for EVs when there are 'minimal skill redundancies' in the transport sector (page 100). Such a strain would be further exacerbated by the push for hydrogen-based transport when there is already a shortage in skilled workers to meet the demand from EVs and associated infrastructure. Resources and efforts in upskilling and retraining are better focussed on the expanding need of electric transport and smart, decentralised community-scaled renewable energy production and distribution, than on hydrogen development.
54. We are supportive of the analyses of transport disadvantages and transport poverty (page 100) in the document. However, on-ground observations show that there are anomalies in some areas (e.g. coastal Taranaki) where travelling by bus (including school buses) actually costs more than driving, and obviously with much less flexibility. Such disincentives need to be removed to foster public transport uptake. Transport disadvantages also need to be addressed especially for people with special needs, by providing more specialised services.

[38] https://climatejusticetaranaki.files.wordpress.com/2021/05/toitu-taranaki-2030-just-transition-community-strategy-apr21-web.pdf

55. For Māori communities papakāinga, especially those in the rural environments, support should be given to enable greater transport autonomy. This could, for example, include part funding for shared electric cars or vans, and investment into smart renewable energy production and sharing onsite. Indeed, as the document suggests (page 104), broader interventions such as in the social welfare/education/health sectors will be essential for an effective, just transition that supports those who are most in need. Such broad interventions will require cross-sectoral and inter-agencies/departments/ councils planning and collaboration, with meaningful partnerships with Māori and local communities.

Chapter 10: Four potential pathways – What could it take to meet a zero carbon by 2050 target for transport?

Question 13: Given the four potential pathways identified in Hīkina te Kohupara, each of which require many levers and policies to be achieved, which pathway do you think Aotearoa should follow to reduce transport emissions?

56. Aotearoa should follow Pathway 4, in view of the climate emergency and its relative cost effectiveness (Tables 3 and 4).
57. Phasing out the importation of ICE light vehicle by 2035 (Theme 2 of pathway, page 105) is too slow, given that there will still be plenty of ICE vehicles in the local market following the phase out. The Climate Change Commission's final advice Ināia Tonu Nei recommended 2030, if possible, 2035 the latest. We believe banning ICE imports by 2025 would better reflect the urgency for emissions reduction and give more certainty and investment incentives for the rapid shift to zero emissions transport.
58. On Table 3 (page 111), it is encouraging that compared with the CCC's draft advice pathway, there is a far greater reduction in light vehicle distance travel (Theme 1 Pathway 4), a much greater increase in public transport bus fleet and its electric share (Theme 2 Pathway 4), and the greater assumed modal shift from heavy trucks to rail and coastal shipping (Themes 1 & 3 Pathway 4). Improvements to the comparative analyses could be made by incorporating the reduction of private car ownership per capita as an indicator. There would be flow on effects on the number and share of the light vehicle fleet transitioned to electric.
59. Under policy for clean trucks (page 116), and indeed other policies also, comprehensive whole-of-life impact assessments are needed to avoid unexpected impacts on other areas. A 'carbon intensity standard' alone is inadequate, because we need to consider the energy and resource efficiency in fuel production (e.g. inefficiency in hydrogen production), local environmental impacts (e.g. windfarms, roads or railway on ecologically sensitive areas, overseas mining of minerals for batteries), landuse conflicts (e.g. competition with food producing land) and end-of-life waste disposal (e.g. EV batteries, fossil fuel, nuclear etc. wastes).
60. Moreover, rather than specifying any policy as 'fuel agnostic', it would be more helpful to provide strong leadership and clear guidance. Just like the ban on nuclear power and new offshore oil and gas exploration, the government should assess thoroughly the different fuels and technologies and provide clear guidance. Noticeably, the document itself provides numerous technical and cost figures on ICE vehicles, EVs, E-trucks, biofuels, and rail, but hardly any on hydrogen, yet it is repeatedly suggested to be part of the low emission transport mix, as if there is a separate pre-determined agenda for it. Rather than being swayed by profit-driven industries or following a perceived trend overseas, the government should carefully and objectively assess the case of hydrogen, and show leadership by prescribing policy direction and/or intervention as needed.

61. Based on science, the urgency to conserve our resources needed for climate mitigation, adaptation and resilience, and the need to foster a safer, fairer, more equitable and inclusive Aotearoa, we urge the government to refrain from supporting hydrogen development in the area of transport, energy or synthetic fertiliser production.

62. Crucially, the push for 'growth enabling' investments to manage 'economic growth' (page 116) is not fit for purpose anymore, although it is prudent to plan for and manage the effects of population growth, including the influx of climate refugees.

63. Numerous scientists and economists have been calling for alternative models that recognize planetary boundaries[39] and our growing social inequality. These include Degrowth[40, 41, 42], Doughnut Economics[43], and of course the fundamental Māori concepts of whanaungatanga (relationships) and kaitiakitanga being an inter-generational responsibility.

Chapter 11: What opportunities should the Government progress over the first three emissions budget periods?

Question 14: Do you have any views on the policies that we propose should be considered for the first emissions budget?

64. The three points on "*system changes*" and transitions from "*legacy practices*" (page 123) hit the nail on the head and could be expanded as follows: a) Changing from a trade-off, competitive and critically profit-driven model, to one that strives to provide "*access, safety and resilience*" while reducing GHG emission reduction would go a long way to benefiting people and the planet. b) Travel demands can be much reduced, optimised and easier to manage if we shift to a much more domestic, local and community focussed economy and service delivery. c) Taking the priority away from large roads would reduce much of the environmental and social impacts and create opportunities for innovation and more vibrant and cohesive communities, when backed by major reforms in our banking[44], tax and social welfare systems[45] that foster fairness, equality and sharing.

65. In Table 5 (page 124), the COVID-19 Fast Track process for infrastructure projects has not been well thought through, especially in relation to environmental and climate impacts and community inputs. It was used by large businesses and industries to minimize scrutiny, in some cases, resulting in decadal environmental impacts at the expense of more sustainable investments involving smaller businesses and communities. Taranaki councils continue to use Covid recovery as excuses to allow spending on infrastructure, notably roads and indoors sports venues, without properly considering their long-term environmental and social impacts. Likewise, the Provincial Growth Fund has enabled the establishment of Taranaki based New Zealand Energy Centre Ara Ake, with the bulk of its budget going into hydrogen, the problems of which have been well explained earlier.

66. In terms of key policy levers (page 125), while investment is needed, better coordination (among Waka Kotahi, councils, communications and utility providers) and prioritisation could greatly help

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39 https://www.stockholmresilience.org/research/planetary-boundaries/the-nine-planetary-boundaries.html

40 https://www.rollingstone.com/politics/politics-features/covid-19-and-debate-on-degrowing-the-economy-1043220/

41 https://www.rnz.co.nz/national/programmes/afternoons/audio/2018766960/jason-hickel-how-degrowth-will-save-the-world

42 https://www.scoop.co.nz/stories/HL2004/S00137/people-before-profit-the-degrowth-movement-values-people-not-money.htm

43 https://www.kateraworth.com/doughnut/

44 https://positivemoney.org/

45 https://www.republicworld.com/world-news/rest-of-the-world-news/new-zealand-pm-raises-minimum-wage-hikes-taxation-on-wealthy-to-support-most-vulnerable.html

to reduce wasted spending and the associated disruptions on climate and people. For example, why are roads frequently being dug up and resealed for no apparent reasons?

67. On Table 5 (page 129), it'd indeed be good for the government to set targets for councils to deliver public transport and active travel networks, and to impose funding consequences for failed delivery. However, as mentioned earlier, current legislation that mandates public transport to be profit-making for councils to obtain government funding must be removed. Enabling legislation needs to be put in place to support not-for-profit transport initiatives for the benefit of communities and the environment.

68. Not only should public transport fare concessions be extended to other low-income groups (Page 130), public transport should be free or at least be more affordable than transport on private ICE cars. Consider offering some sorts of loyalty rewards such as a free return trip for every 10 trips, or the chance to win a voucher from a bike or scooter shop.

69. As mentioned earlier, we have reservations on pricing measures, including "*transport fuels only carbon tax*" (page 131) due to its disproportionate impacts on low-income earners and families.

70. Again, light ICE vehicle imports need to be phased out much earlier than 2030-2035. An end date in 2025 would be more appropriate, as it also reflects the government's requirement to purchase only zero emissions buses by then. Plans and programs are also needed to effectively and efficiently deal with the to-be-retired ICE vehicles, such as to extract reusable components or refurbish old buses into tiny homes.

71. On Theme 2, government incentives for EV uptake should be conditional on (or give priority to) shared vehicles to help move away from private car ownership to vehicle sharing. Expand investment in low emission vehicle infrastructure to innovations and development of programs that refurbish EV batteries for other uses.

72. Give special attention to farm vehicles and buses in rural areas when developing and implementing a "*sustainable transport biofuels mandate*" (page 132) which has the potential to create co-benefits as industrial agriculture is set to transition onto low emissions and more diverse forms of farming.

73. On aviation (page 132), the most urgent priority should be shifting inter-regional transport from flights to land transport, trains in particular. A massive educational campaign is needed to support this. Focus the remaining aviation to medical emergencies and humanitarian needs and develop sustainable aviation fuel for it over the next budget period.

74. On freight (page 133), the National Supply Chain Strategy needs to identify ways to actually avoid/reduce freight, not just freight emissions. Comprehensive, objective cost-benefit analyses (environmental, social and economic) of some of the industries especially those relying heavily on domestic and international freight, such as raw logs and low value timber products, are desperately needed. Based on the analyses, collaborative decisions need to be made to phase out industries that are undesirable and refocus on those that are more beneficial while workers are retired or retrained. A whole-of-government approach involving communities, businesses and industries will be needed for this.

75. On the future of rail, much greater effort is needed to make rail the first freight choice, not an alternative freight choice, especially for long-haul freight with short links to destinations by electric and/or biofuel trucks and vans.

76. In conclusion, as detailed above, CJT is in agreement with some aspects of the proposals in Hīkina te Kohupara discussion document, but is concerned that others will prove to be counter-productive to social inclusivity and cohesion, as well as emissions reductions.

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.

Contents

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 CO2-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.

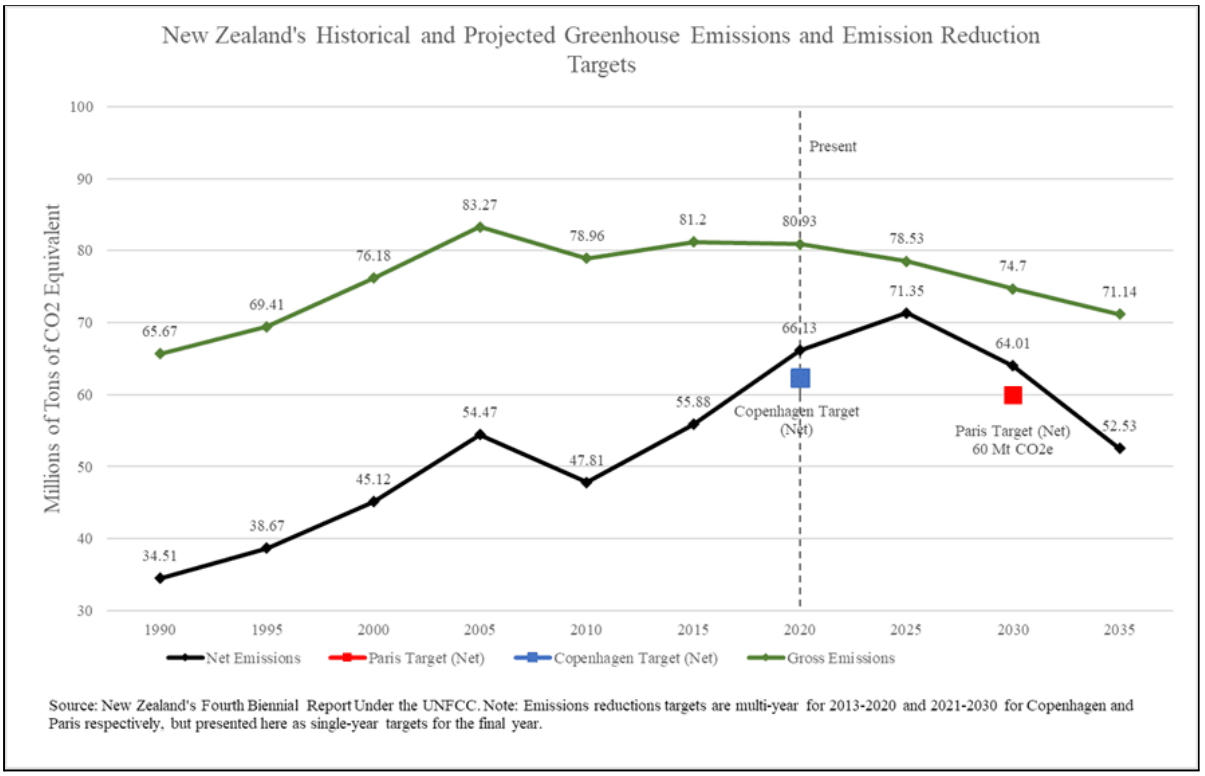
The NZ Climate Change Commission (CCC), in its draft advice to the government (February 2021), pointed out that **the government's current Nationally Determined Contribution is insufficient** to achieve our share of the reduction to limit global warming to 1.5 degrees C. Yet the Commission's suggested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

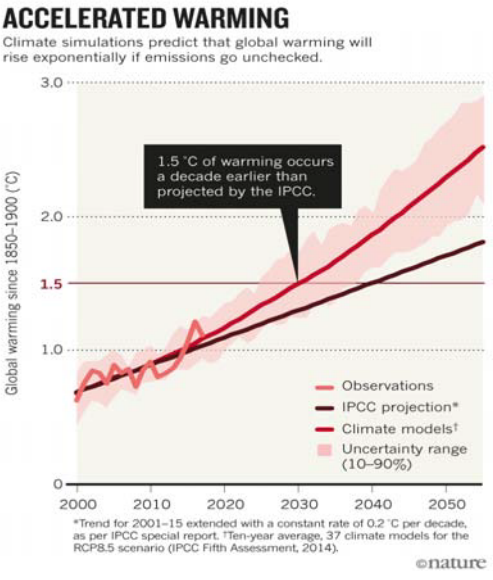
exceeds 1.5^{0} Celsius, we consider that adoption of the Commission's draft advice by the Government would not be consistent with the Crown's obligations under Te Tiriti o Waitangi".

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**.



Source: New Zealand's Fourth Biennial Report Under the UNFCC. Note: Emissions reductions targets are multi-year for 2013-2020 and 2021-2030 for Copenhagen and Paris respectively, but presented here as single-year targets for the final year.

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.



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".

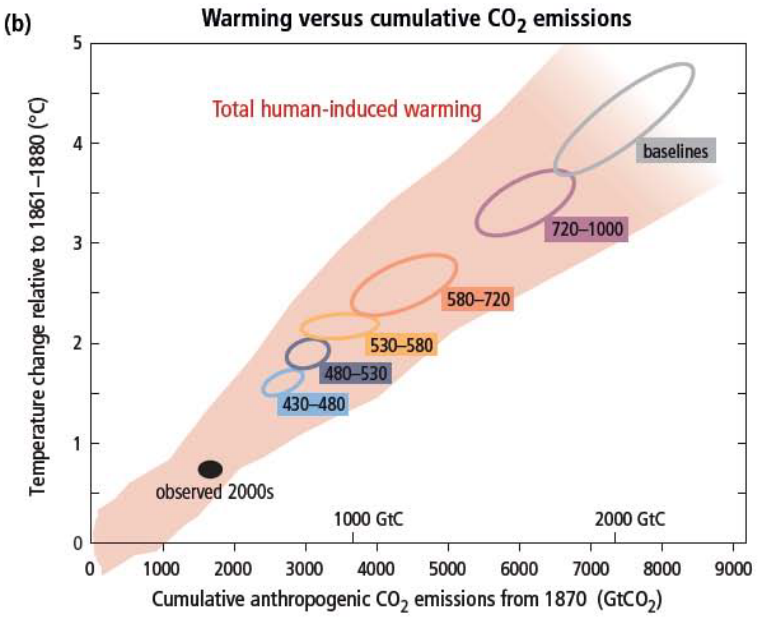


Figure SPM.5 | **(a)** Emissions of carbon dioxide (CO_2) alone in the Representative Concentration Pathways (RCPs) (lines) and the associated scenario categories used in WGIII (coloured areas show 5 to 95% range). The WGIII scenario categories summarize the wide range of emission scenarios published

"*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 CO2-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*

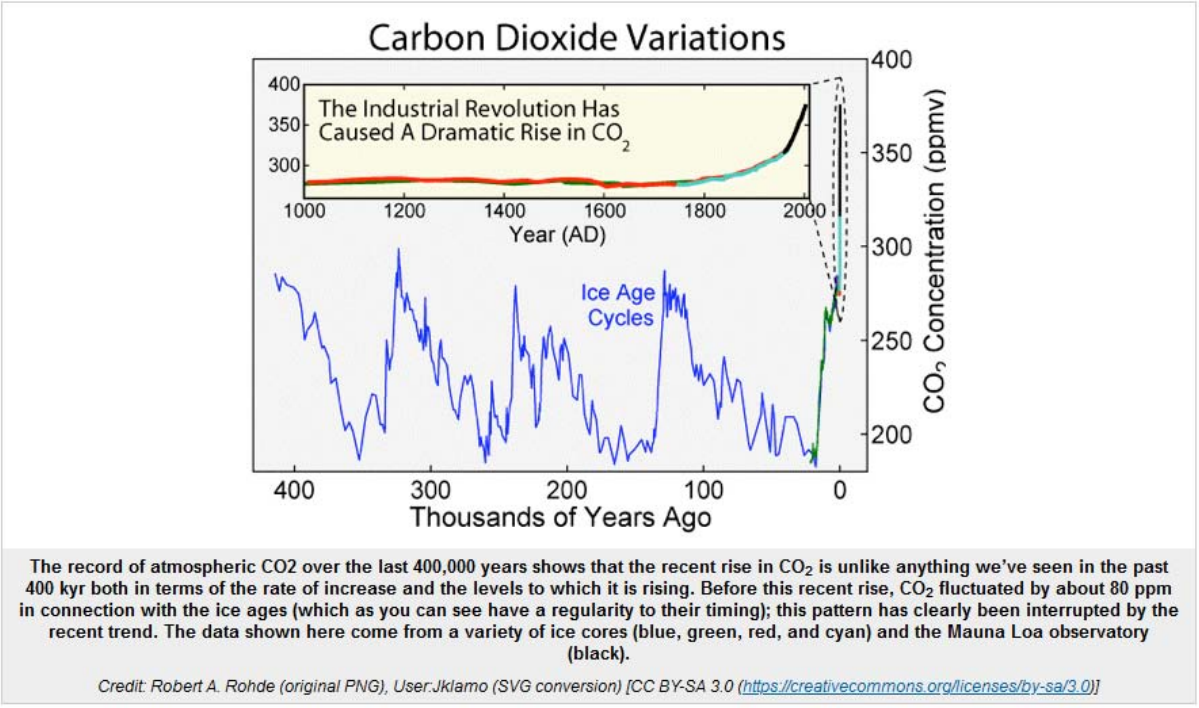
same time forests like the Amazon are being slaughtered at an infinitely higher rate. Planting trees is good of course but it is nowhere near enough of what is needed and it cannot replace real mitigation and rewilding nature... We don't need a 'low carbon economy'. We don't need to lower our emissions.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

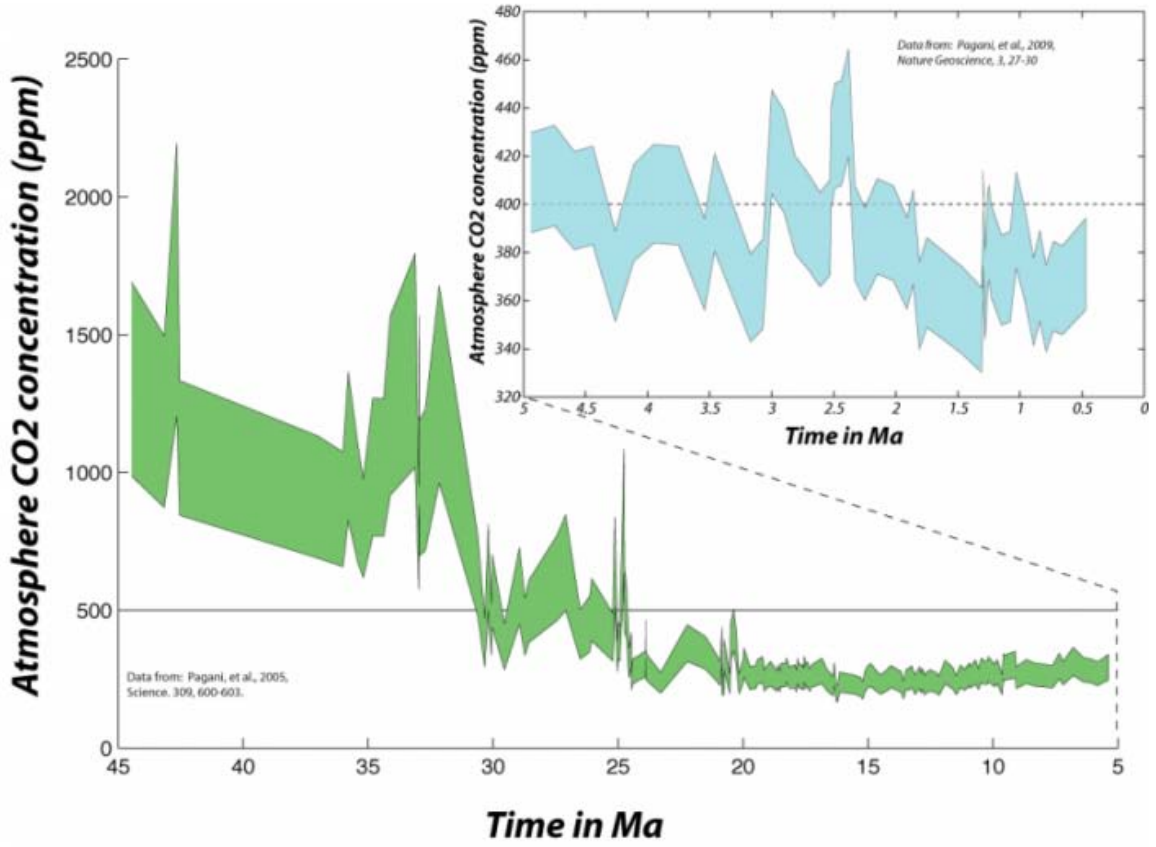
We need to take a wider look though to see what is causing this polluting economy. On the graph below we see that CO2 levels started rising in the late 1700s with the industrial revolution, as humans started burning fossil fuels and deforesting the planet at unprecedented rates. This was in tandem with 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.



The record of atmospheric CO2 over the last 400,000 years shows that the recent rise in CO_2 is unlike anything we've seen in the past 400 kyr both in terms of the rate of increase and the levels to which it is rising. Before this recent rise, CO_2 fluctuated by about 80 ppm in connection with the ice ages (which as you can see have a regularity to their timing); this pattern has clearly been interrupted by the recent trend. The data shown here come from a variety of ice cores (blue, green, red, and cyan) and the Mauna Loa observatory (black).

Credit: Robert A. Rohde (original PNG), User:Jklamo (SVG conversion) [CC BY-SA 3.0 (https://creativecommons.org/licenses/by-sa/3.0)]



If we look wider still at the natural cycles of temperature and CO2 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.**

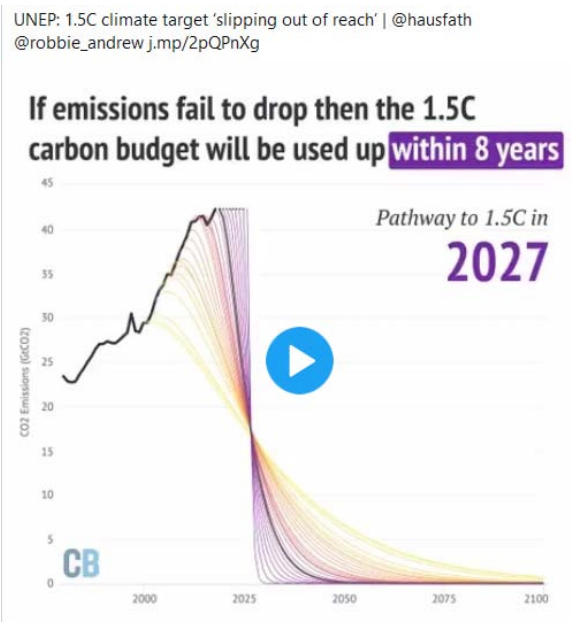
The recently announced Carbon Neutral Government Programme (Dec 2020) for the public sector to reach net zero emissions by 2025 is encouraging but the door is left open to utilise carbon offsetting rather than actual carbon reductions, despite not having enough electric boilers available to get schools 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.

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.

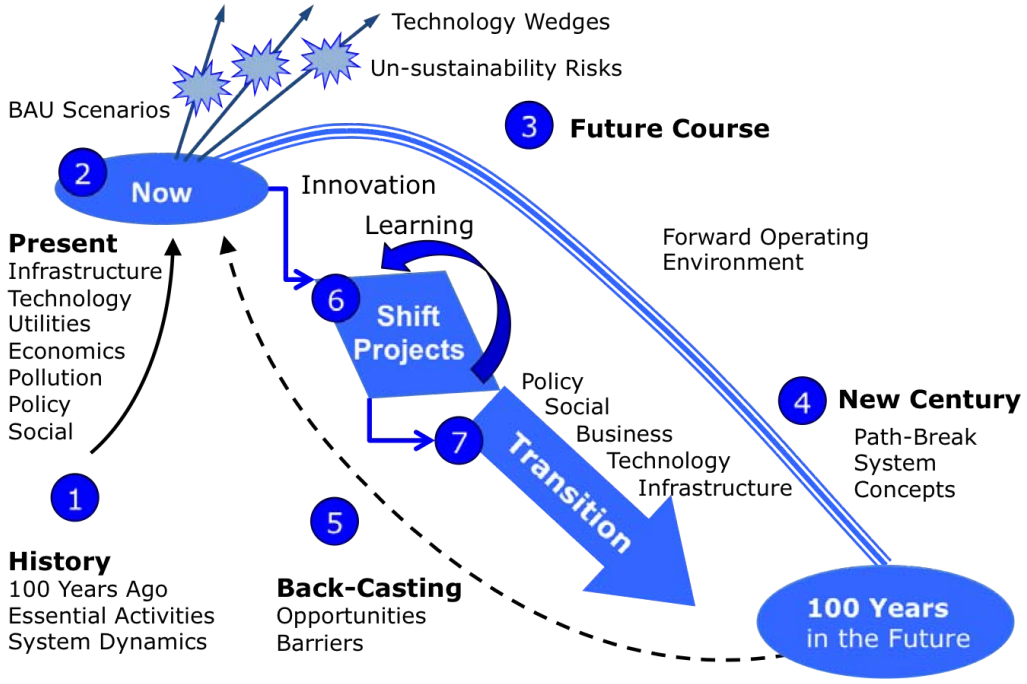
If we take the path of a truly just transition, we won't only reduce emissions and the impacts of climate change, but solve a whole lot of these other issues as well. Enabling more people to participate in decisions that affect their lives, reducing excess consumption and providing fair wealth distribution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

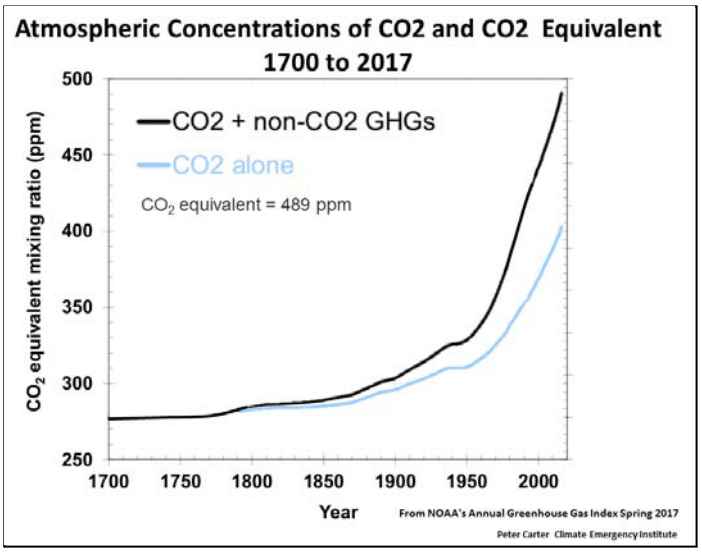
If we are to substantially reduce our greenhouse gas emissions by 2030 and redesign our lifestyles and economy to suit, we need to start with:

- **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.



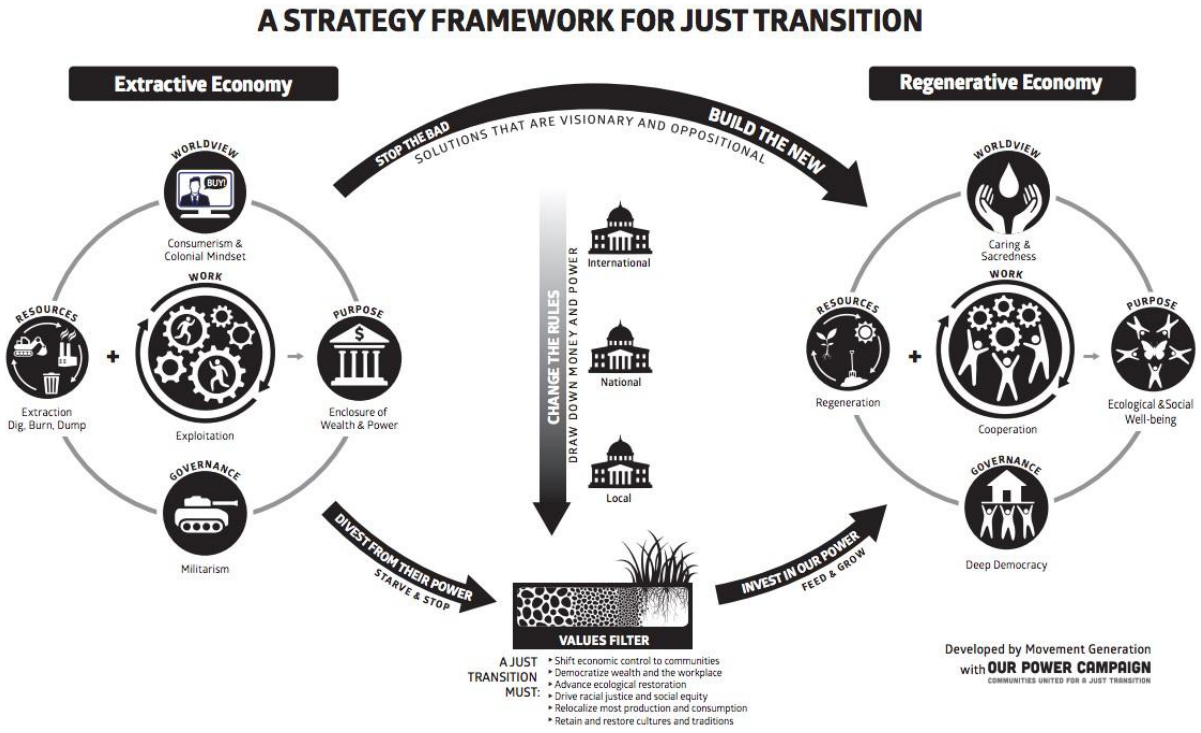
It helps to look back at how things were at a time in our history when global emissions were close to carbon neutral. As a rough guide, between the 280ppm long term and 350ppm short term goals, **the world reached emissions of 320ppm CO2-e around 1950.** In Aotearoa in 1950 we had 1.9 million people 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.



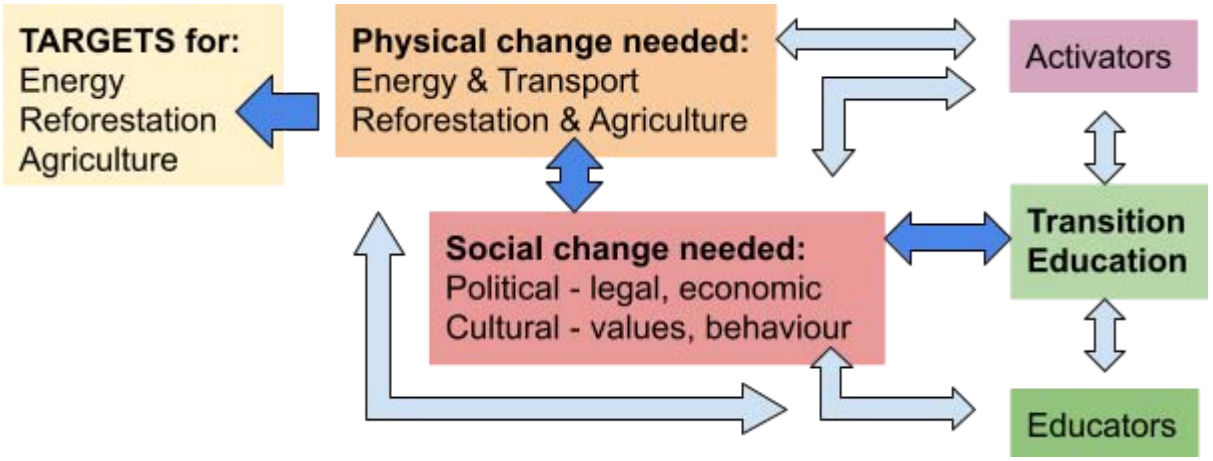
Also, the effects of the previous century of more than halving our forests and probably tripling our GHG emissions in Aotearoa were only just beginning to show impacts. It would be nice to just grab data from then and compare it to now and we tried. Unfortunately not all the data is available and comparing technologies and considering effects from previous and future years' activities distracts and delays us taking action now using the best options available.

There is a growing call to focus less on detailed emissions targets and more on the action needed to reduce emissions and ensure environmental, social, cultural and economic sustainability. This is what we have done in this just transition strategy document.

This transition we need can also be described as shifting from an extractive economy to a regenerative economy. **Shifting away from a coloniser mindset to a kaitiaki mindset**. To build the new though, we must also stop the bad, as stipulated in Our Climate Declaration. This involves having the courage, nous and support to shift power and resources away from the few to the many. **Shifting from an individualistic mindset to a community mindset**. This is defined well in the diagram below used in the US 'Green New Deal':



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.

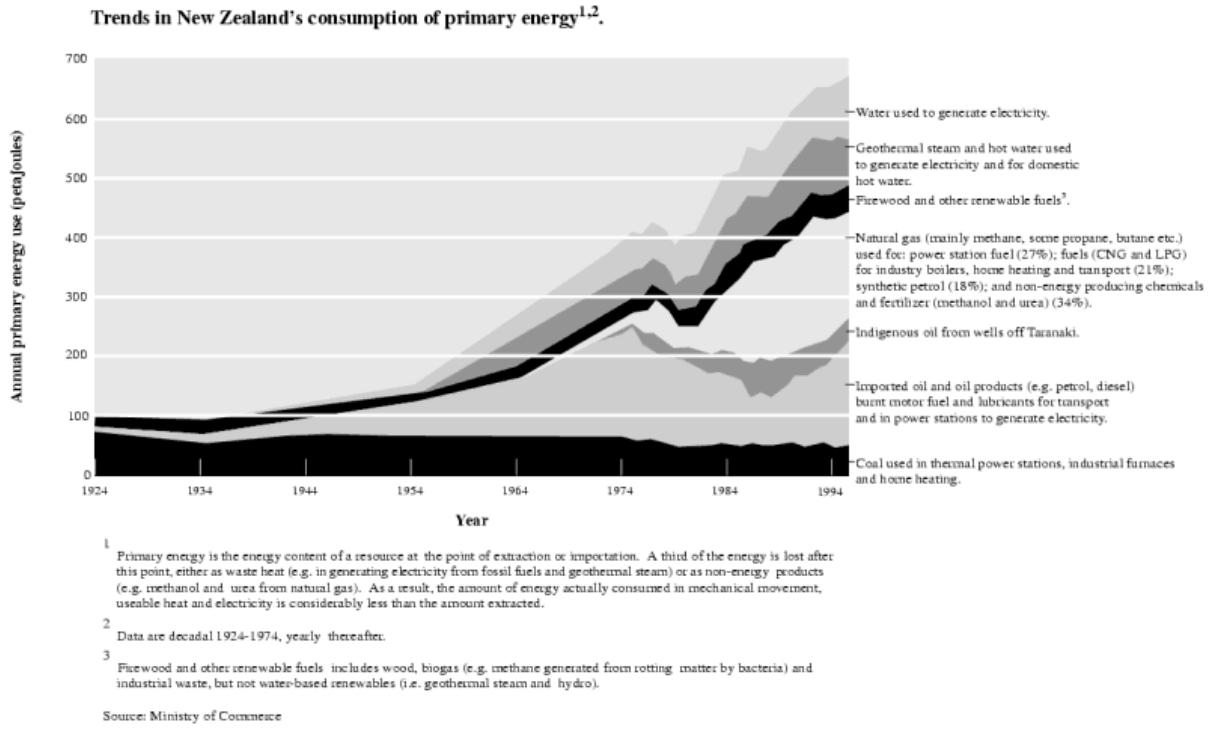
2.1 NZ Targets for 2030

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.

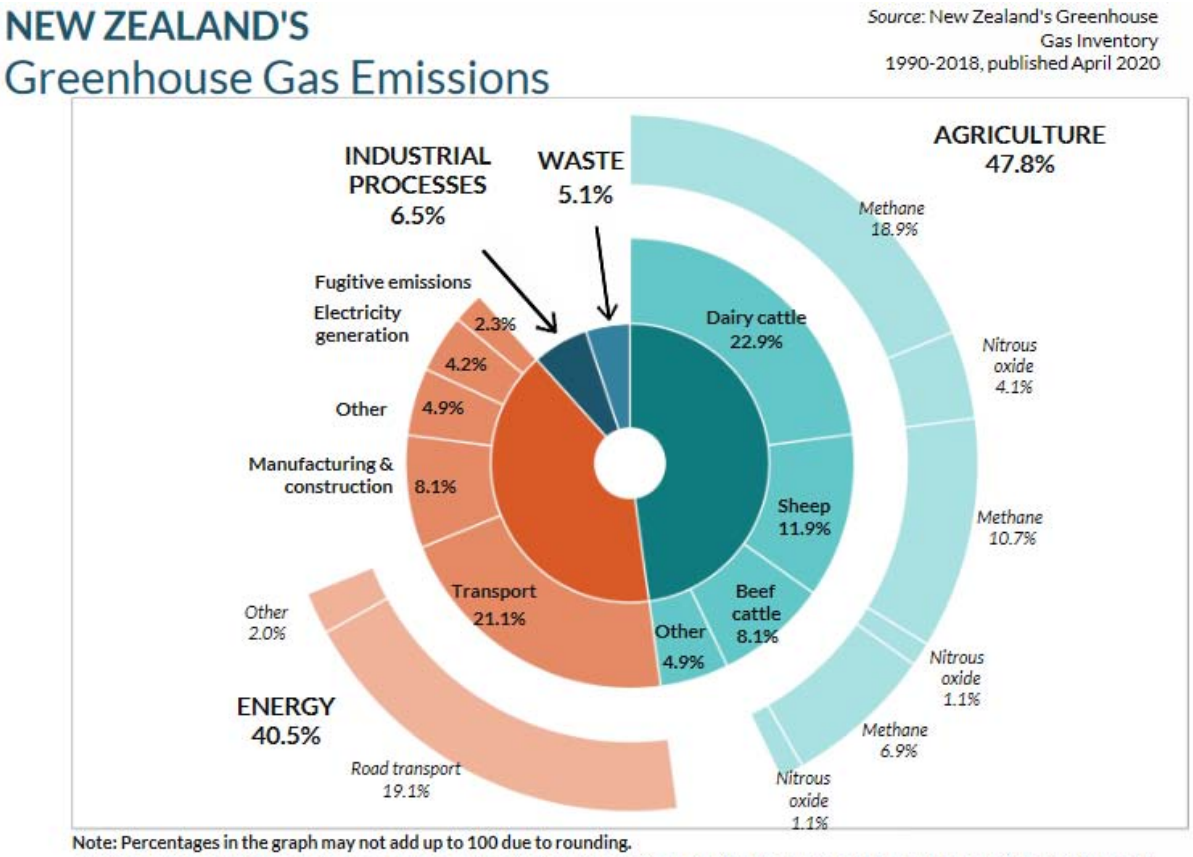


In 2019, according to MBIE's Energy in NZ 2020 report we used a total of **902.55 petajoules**, mostly from oil (295.9) and gas (185.09), just over a third from renewables

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 CO2-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).



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.

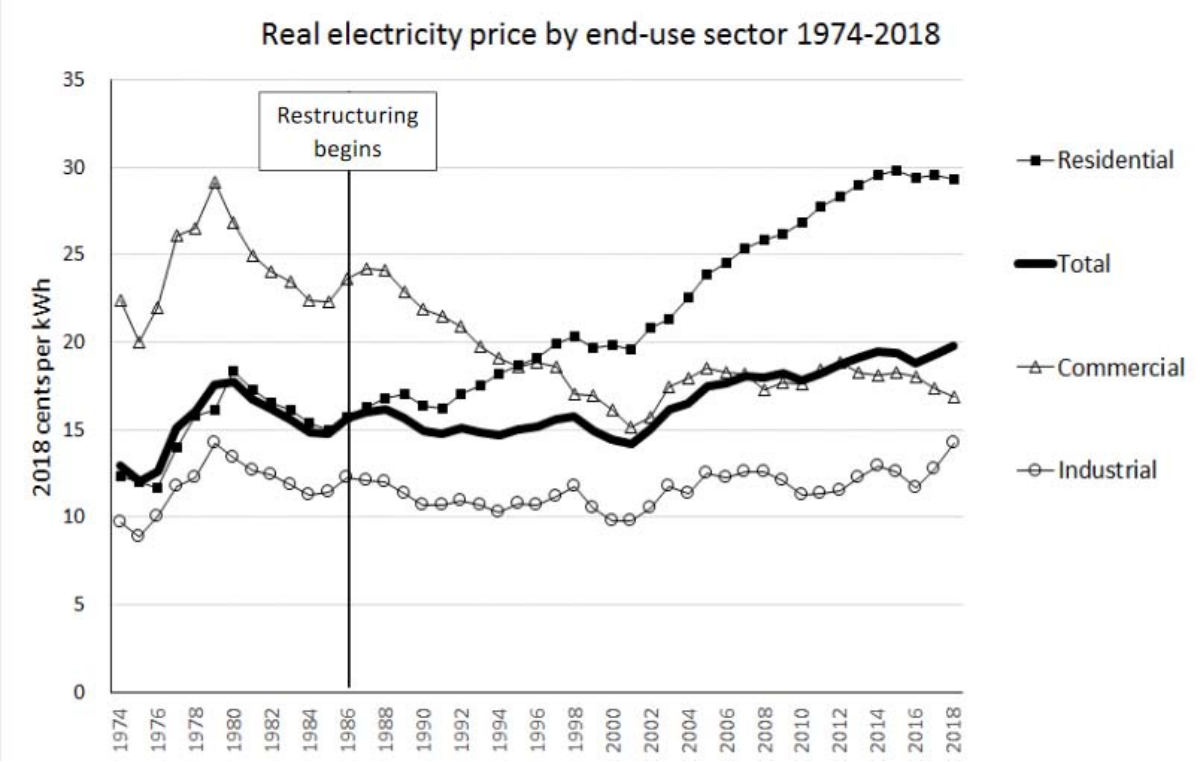
ENERGY TARGET THREE - Phase out all fossil-fuel use in agriculture and other industries by 2030 with a ban on new infrastructure by 2022.

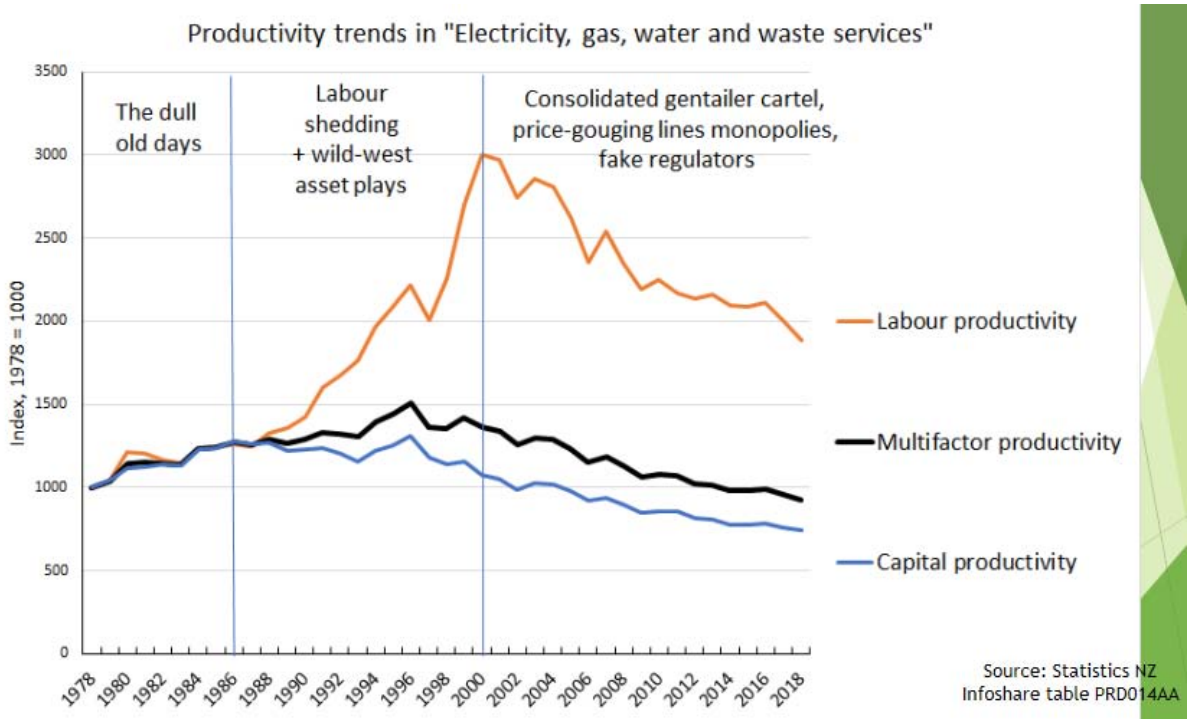
This will be done through **reduction, removal, re-localisation and substitution.** In other words, reduce our energy consumption first and foremost, remove fossil fuels and associated machines and infrastructure that can't be repurposed, decentralise our public services and economies so we have the 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.

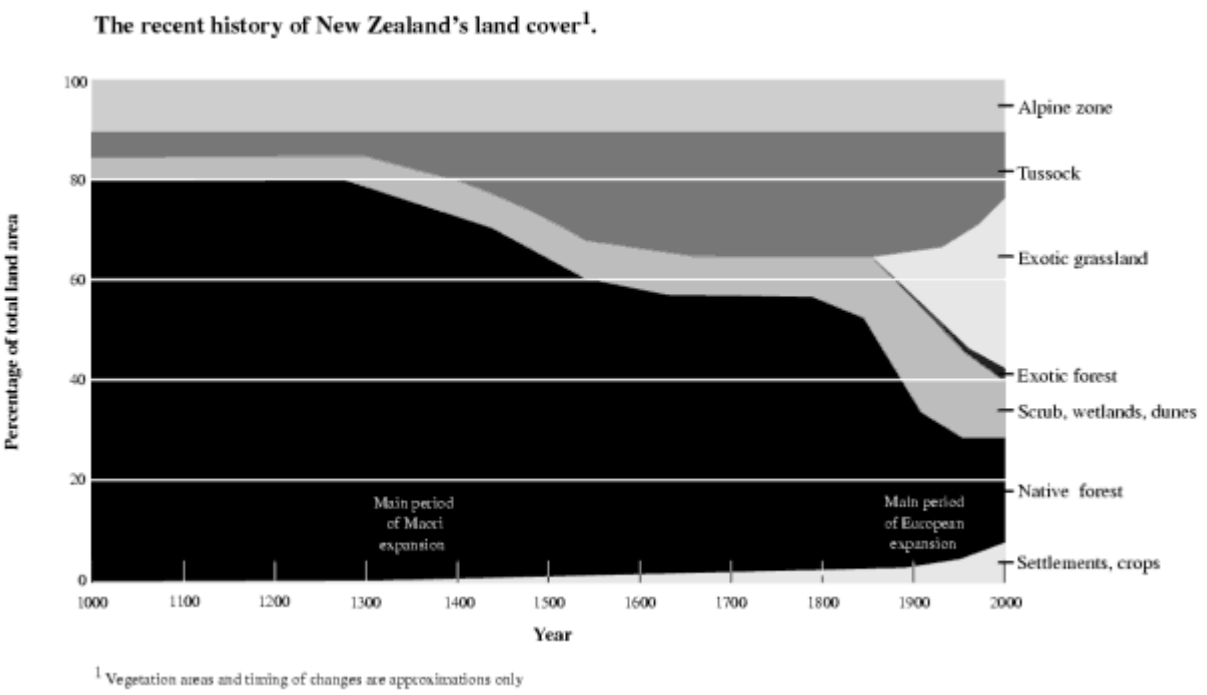

Real electricity price by end-use sector 1974-2018
Restructuring begins
2018 cents per kWh
Residential
Total
Commercial
Industrial


Productivity trends in "Electricity, gas, water and waste services"
The dull old days
Labour shedding + wild-west asset plays
Consolidated gentailer cartel, price-gouging lines monopolies, fake regulators
Index, 1978 = 1000
Labour productivity
Multifactor productivity
Capital productivity
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



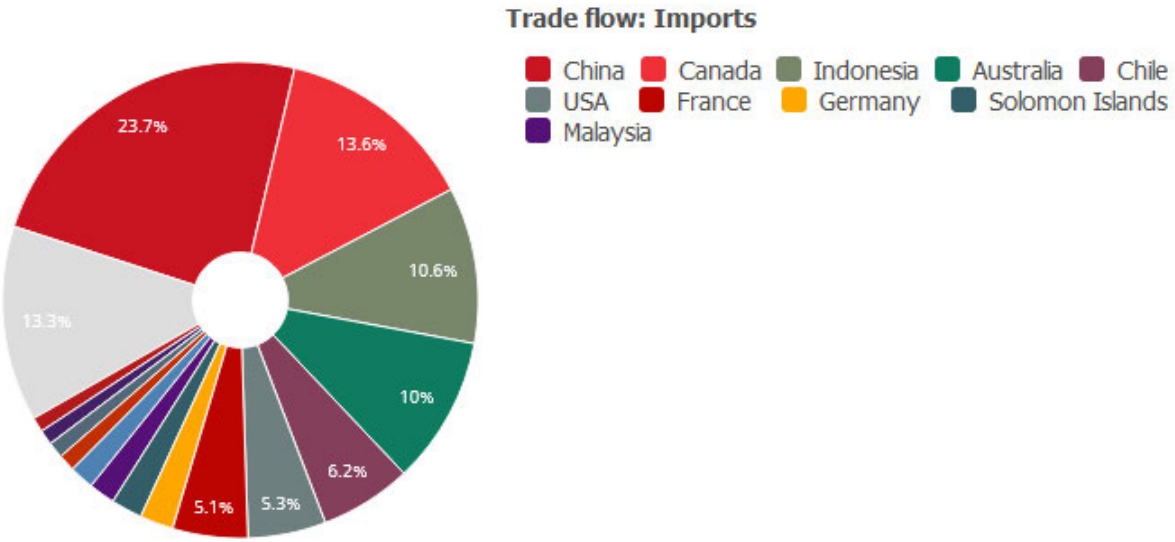
[1] Vegetation areas and timing of changes are approximations only

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%

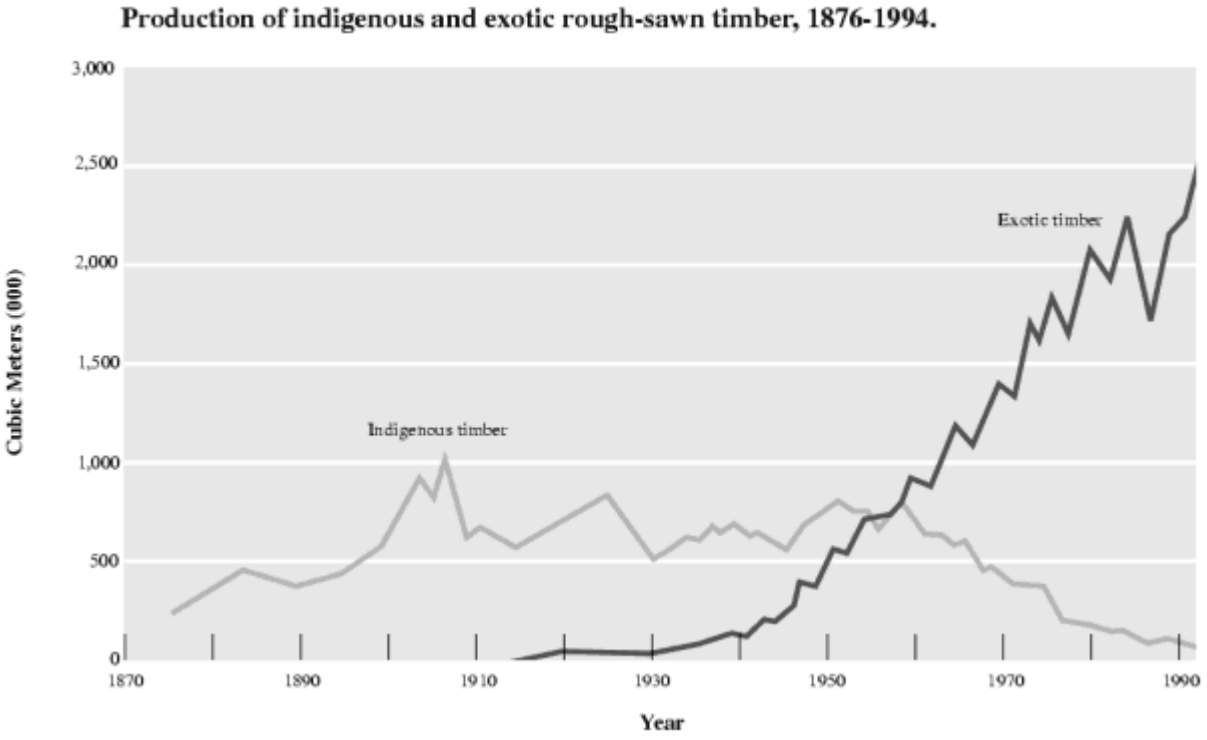
grassland, 1.8% cropping, 2.6% wetlands, 0.9% settlement and 3.3% classified as 'other', on a land area of 26.8 million hectares. Since 2000, settlements have increased as well as forest harvesting with further native and exotic plantings and land conversions for grassland.

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).

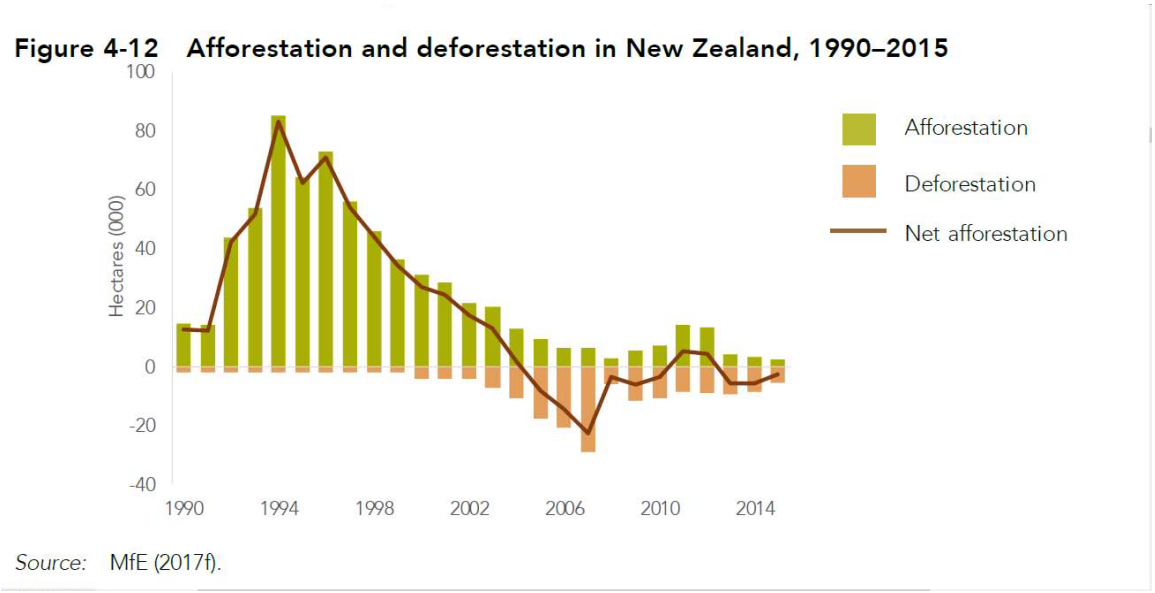


We also export forest products, often to the same countries, exacerbating our emissions here at home and for those overseas while also **wasting fossil fuel on shipping** products back and forth between countries as shown below. When the export market dominates, local users often have to put up with 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':



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 33,101,420m3, imports were 4,199,130m3 and exports were 23,784,290m3 in 2018. (In the year ending September 2019, this rose to almost 37 million m3 of roundwood being removed, with 62% exported, leaving 14.06 million m3 used domestically.)

So using the 2018 figures, removing exports from production and adding imports means domestically **our consumption was at least 13.5 million m3**. On average a hectare (ha) of forest will grow 23m3 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 reforesting. 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 CH4** (which is much more harmful than CO2 but shorter-lived, changing into CO2 at about 9%/yr) and **nitrous oxide N20** (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, CH4 emissions are still far more harmful than CO2 and of course come with the even worse N2O, as the following graph from the CCC report shows.

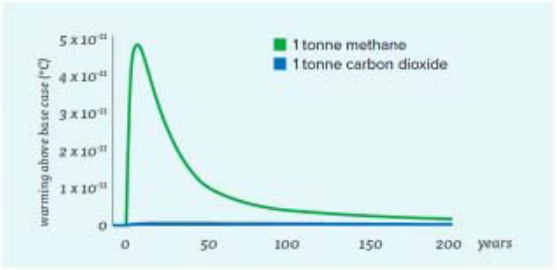


Figure 4.1: The warming effect of a tonne of methane and a tonne of carbon dioxide.

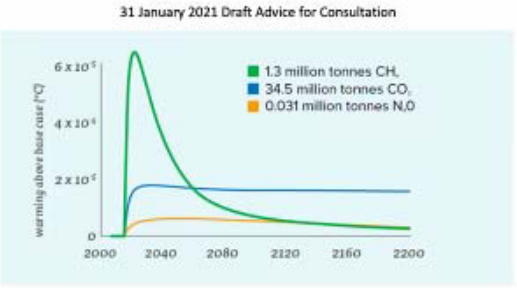


Figure 4.2: The effect of the country's yearly emissions of carbon dioxide, methane and nitrous oxide on warming. Note: This figure is based on 2016 emissions in Aotearoa.

This accounting practice makes our CH4 emissions seem equivalent to our CO2 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 CO2-e (combined CH4, CO2, N2O 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.

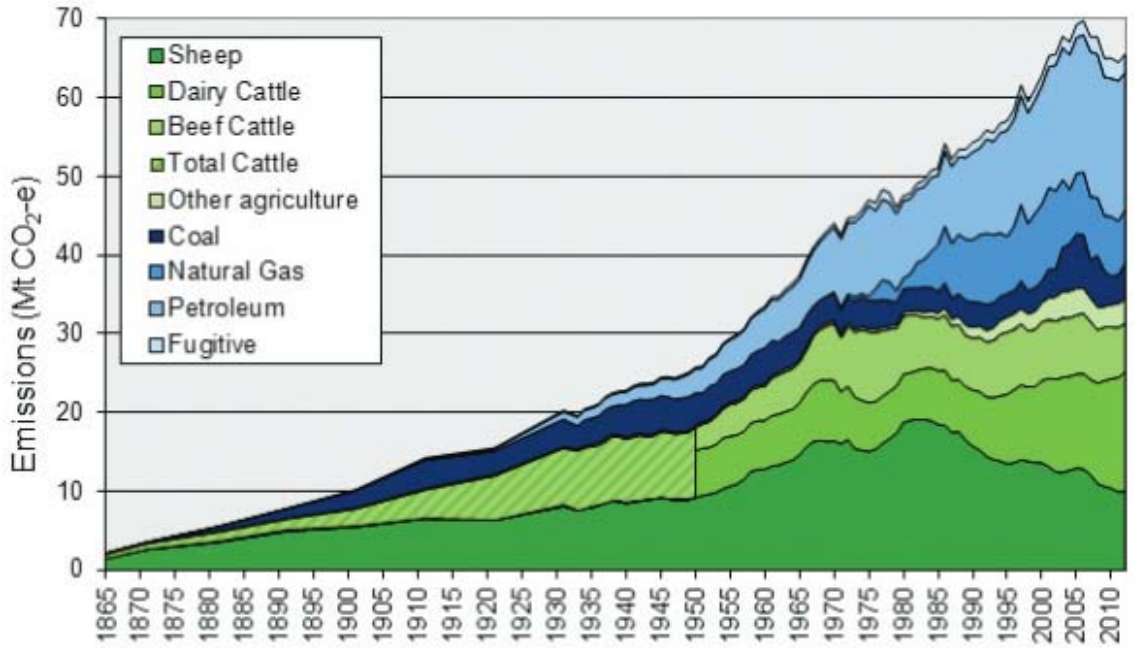
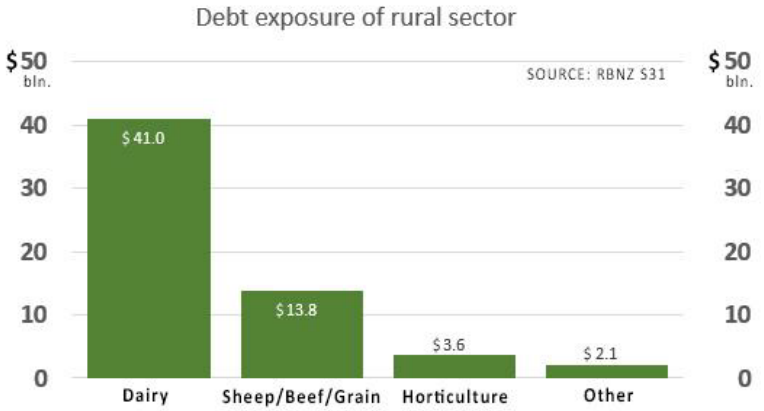


FIGURE 7 New Zealand's agricultural and energy-related anthropogenic greenhouse gas emissions, 1865–2012 (source: own calculations[7]).

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.

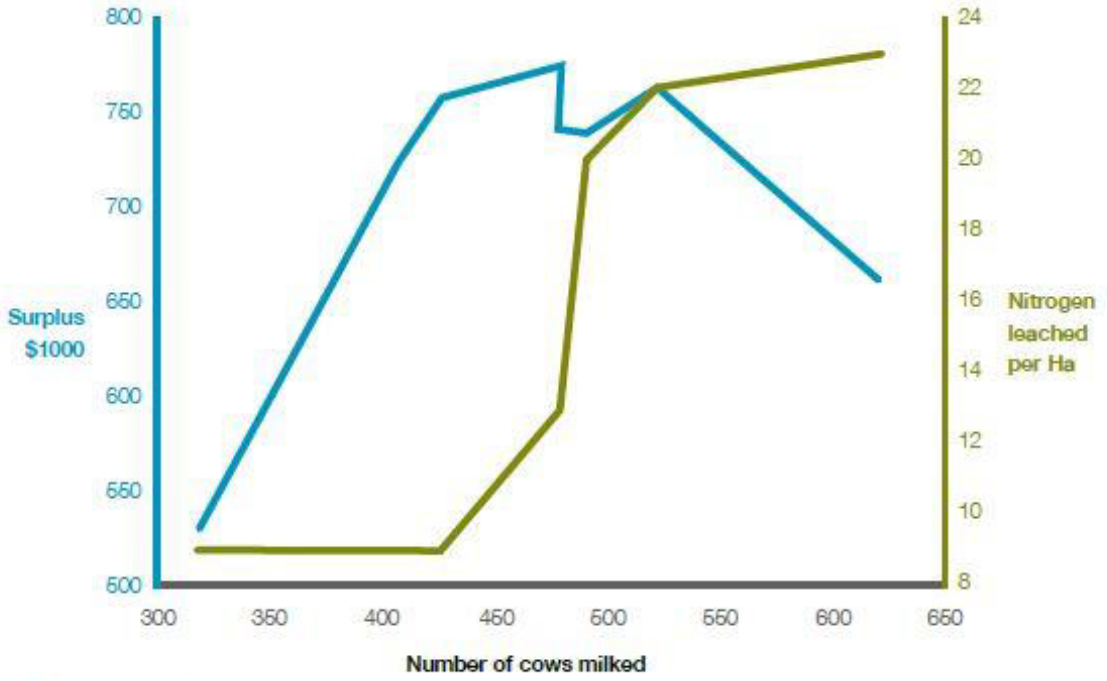


Figure 21. Modelled changes in profit and nitrogen leaching (from overseer) with reduction in intensity from current level on a real farm of 620 cows. (Numbers from Tom Phillips, Massey University)

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:

<table>
<tr><td>2021</td><td>2022</td><td>2023</td><td>2024</td><td>2025</td><td>2026</td><td>2027</td><td>2028</td><td>2029</td><td>2030</td></tr>
<tr><td>No new coal, oil & gas permits</td><td colspan="2">No new oil & gas drilling. Close all coal mines (& remediate by 2027)</td><td colspan="7">Phase out oil & gas production*</td></tr>
<tr><td colspan="2">Ban new gas utilities</td><td colspan="3">Phase out coal boilers</td><td colspan="5">Phase out gas utilities except biogas</td></tr>
<tr><td colspan="2">80-90km/hr speed limit</td><td colspan="3">Disincentivise private car ownership</td><td colspan="5">Reduce international trade to essentials** only</td></tr>
<tr><td colspan="3">Ban fossil fuel car imports</td><td colspan="4">Disincentivise non-essential^ air travel</td><td colspan="3">Phase out large trucks</td></tr>
<tr><td colspan="2">Ban fossil fuel vehicle ads</td><td colspan="4">Decrease car parks, redesign cities for active and public transport</td><td colspan="4">Urban & rural cycle lanes on all commuter routes</td></tr>
<tr><td colspan="5">Support community-owned renewable energy</td><td colspan="5">Zero waste Aotearoa</td></tr>
<tr><td colspan="4">Support energy-efficiency retrofits</td><td colspan="6">Energy production & national grid into public ownership</td></tr>
<tr><td colspan="5">Support Escooter/Ebike/EV share schemes</td><td colspan="5">Regional trains operational</td></tr>
<tr><td colspan="3">Public transport promotion campaign</td><td colspan="7">Urban & regional public transport free or affordable, replace FF buses with EVs</td></tr>
<tr><td colspan="5">Restore, expand daily public transport services</td><td colspan="5">Web communication fossil fuel free</td></tr>
<tr><td colspan="5">Support kinetic/electric product manufacturing</td><td colspan="5">Support sail ships to the Pacific</td></tr>
</table>

* 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

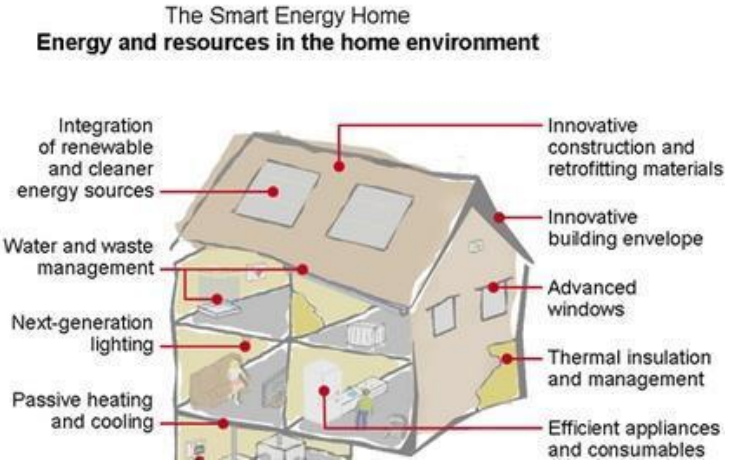
unsustainable. Carbon capture and storage (CCS) which blue hydrogen relies on has mainly been a greenwashing tactic by the coal and now gas industry to continue extracting fossil fuels, and it causes social harm. Numerous critiques have been written by energy experts, engineers and Climate Justice Taranaki. 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_2 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.

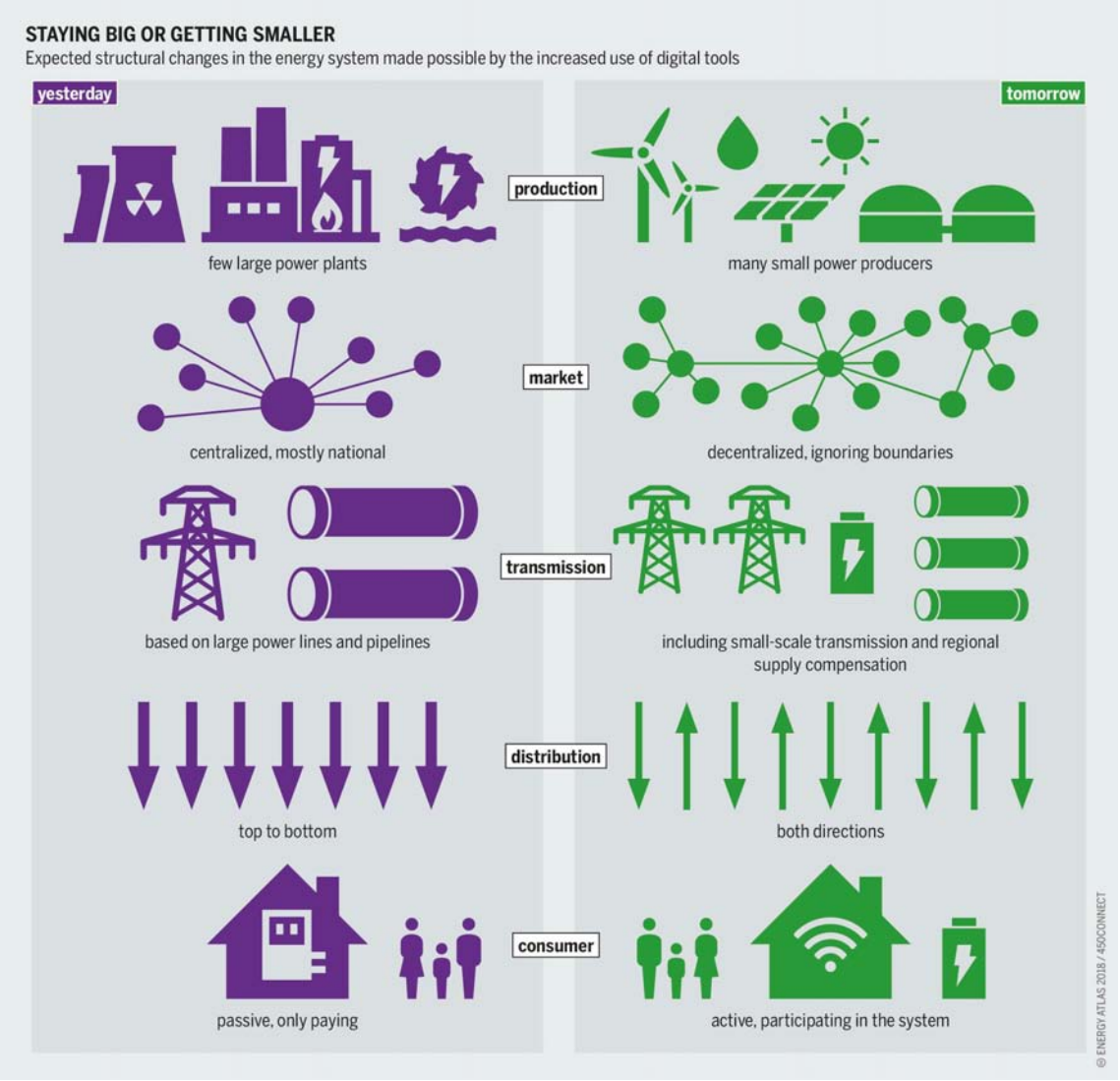
Major education and advocacy programs are needed to promote and support less and smarter use of energy mix including electricity, firewood and bioenergy. Various community initiatives, studies and models exist in NZ and globally, e.g. Transition Network, Blueskin Energy Network and research into renewable 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.



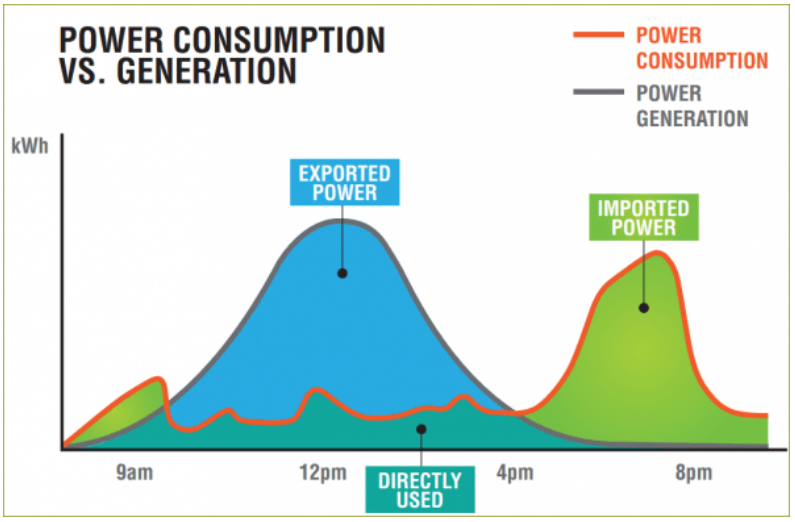
Many examples of well-tested, clean, renewable energy production already exist and are becoming increasingly affordable. Whatever the technology, careful assessments of full life cycle impacts including mining impacts offshore and end of life, are necessary to ensure that it is a responsible choice. 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

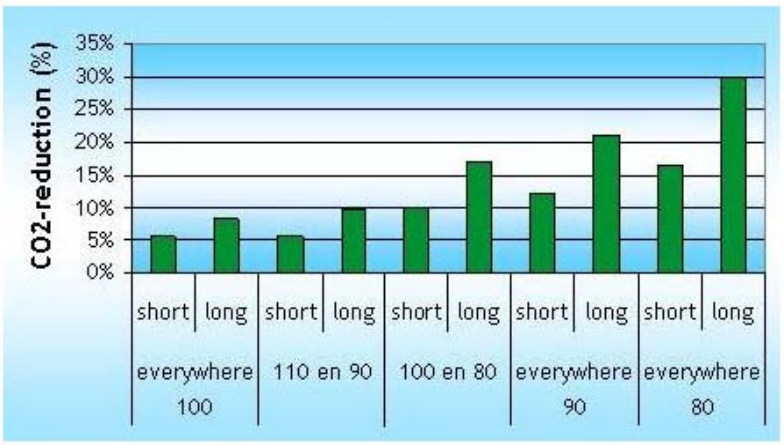
In order to reduce transport related greenhouse gas emissions the top priorities should be to:

- 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.

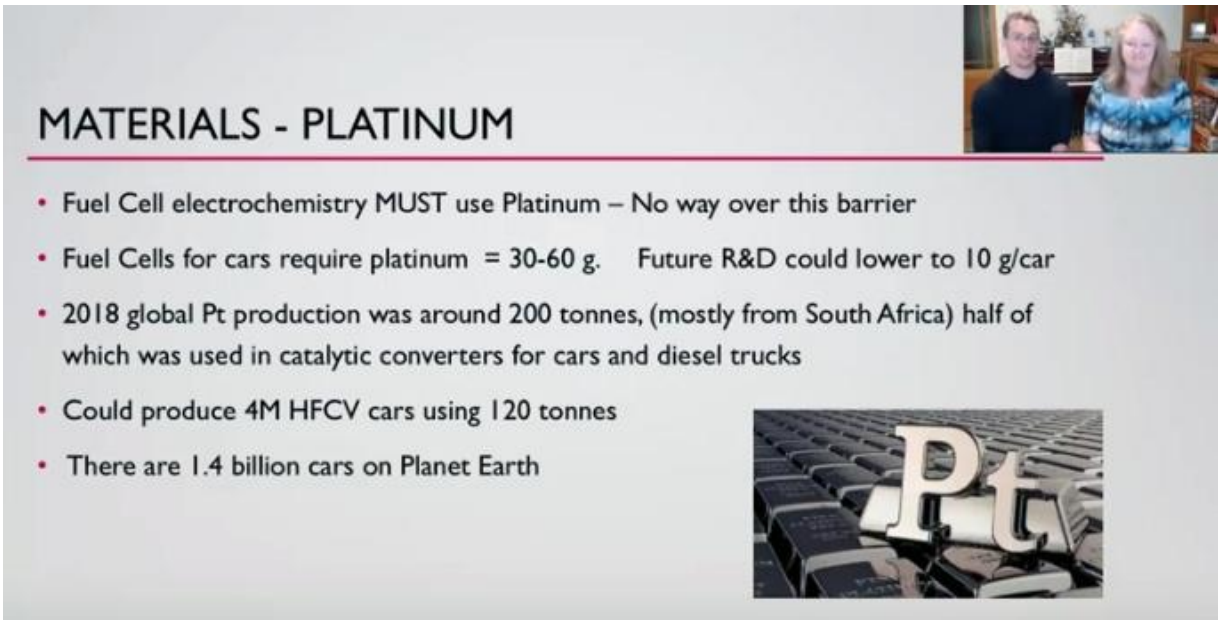
The 2020 Covid-19 lockdown gave communities the opportunity to reclaim neighbourhood streets for safe recreation. This was a useful model of how to continue operating essential services with limited transportation while people learn to work from home, reduce shopping trips, grow their own food and exercise 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.



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

<table>
<tr><td>2021</td><td>2022</td><td>2023</td><td>2024</td><td>2025</td><td>2026</td><td>2027</td><td>2028</td><td>2029</td><td>2030</td></tr>
<tr><td>Ban blood phosph ate</td><td colspan="3">Ban forest to grassland conversion</td><td colspan="6">Phase out farming on tussock and dune land</td></tr>
<tr><td colspan="4">No new* exotic forestry</td><td colspan="6">Phase out export/import industry except essentials**</td></tr>
<tr><td colspan="5">Phase out coal-power processing</td><td colspan="3">Phase out gas-power processing</td><td colspan="2">All awa swimmable</td></tr>
<tr><td colspan="6">Phase out synthetic fertiliser</td><td colspan="4">Stock excluded from all waterways^</td></tr>
<tr><td colspan="2">Ban PKE import</td><td colspan="8">Support domestic timber processing, manufacturing</td></tr>
<tr><td colspan="4">Support local markets</td><td colspan="6">Restore rural services, recreation facilities</td></tr>
<tr><td colspan="10">Increase permanent native forest, wetland, tussock land and duneland</td></tr>
<tr><td colspan="6">Support regenerative agriculture initiatives</td><td colspan="4">Permanent carbon sink areas pest free</td></tr>
</table>

* unless conversion from exotic grassland and for local sustainable use
** Such as medical, aid supplies or items unavailable here deemed essential by society
^ 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 try to feed or inject cattle with new stuff (that doesn't exist yet)

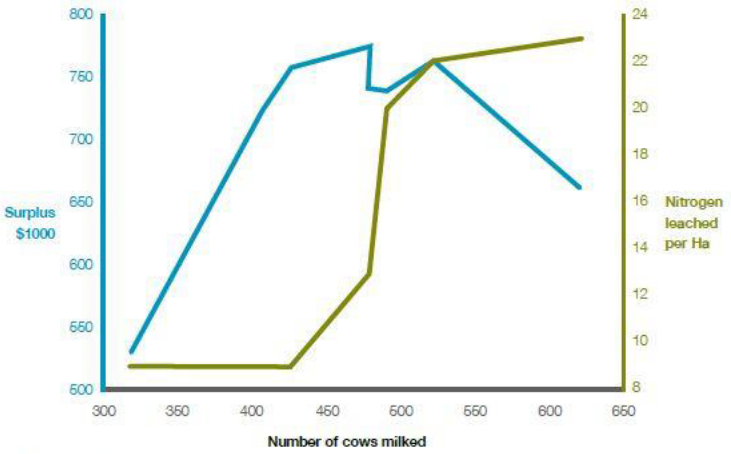


Figure 21. Modelled changes in profit and nitrogen leaching (from overseer) with reduction in intensity from current level on a real farm of 620 cows. (Numbers from Tom Phillips, Massey University)

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 reseeding 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		

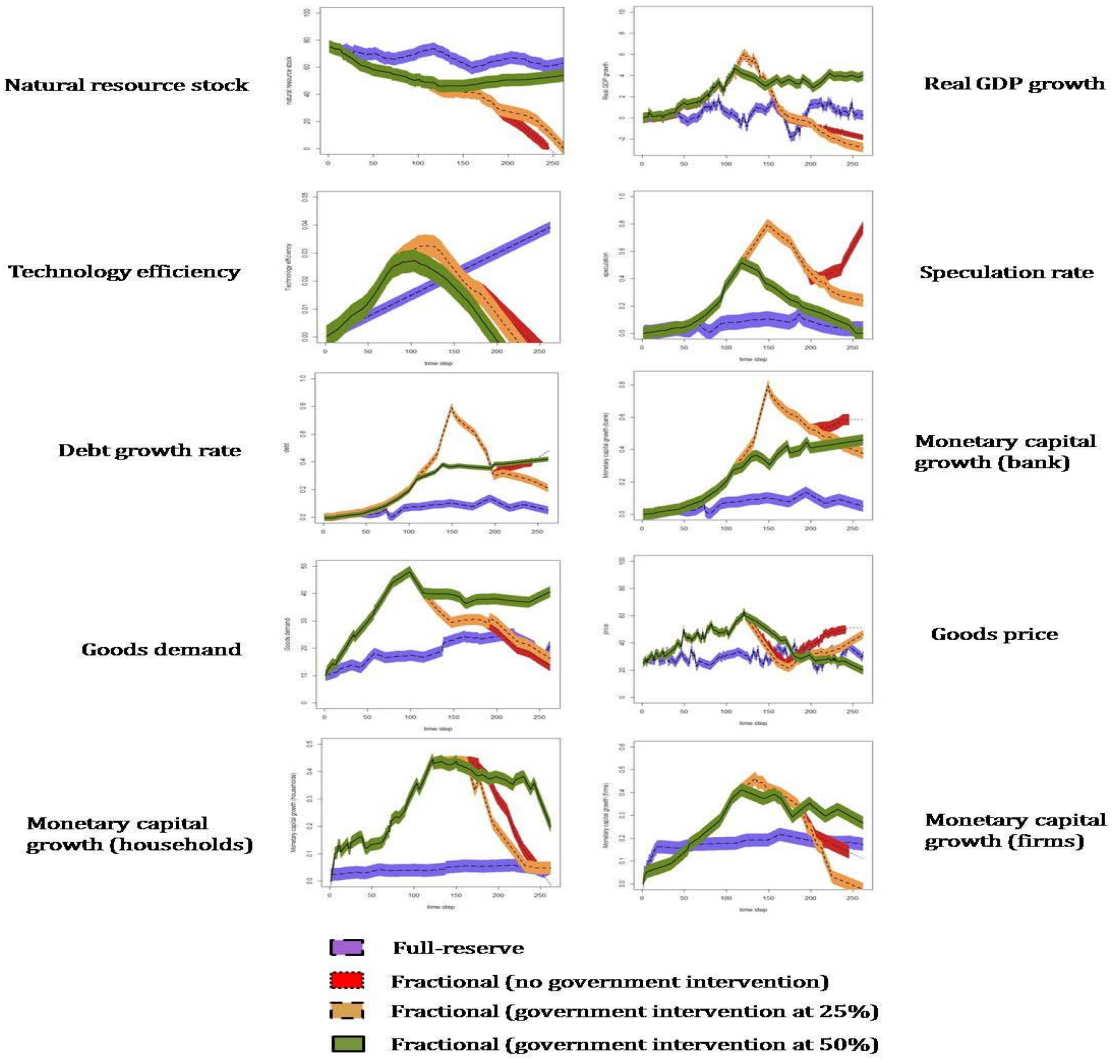
The government, councils, iwi and community organisations should work together with industries, unions, technical and education institutions to develop effective jobs-rich transition pathways that provide for workers' welfare, education, upskilling and retraining for new jobs needed to support local 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 tauiwi, 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.

Tangata 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

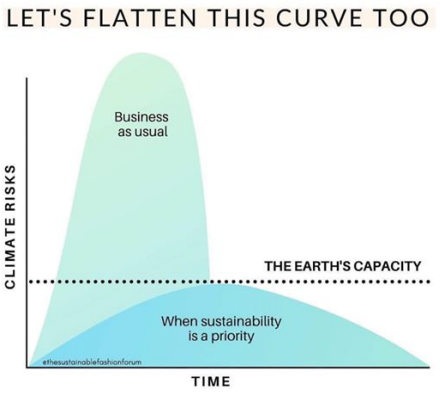
"May you live in interesting times" - Frederic R. Coudert, 1939.

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'

Submission on Ministry of Transport Report –

Transport Emissions: Pathways to Net Zero by 2050

Submissions close 25 June 2021

In reading this report, there are many good initiatives, but there is a lot of 'dreaming' and no real comparison of costs between options.

Auckland has its own problems, primarily congestion, compared to the rest of NZ. My comments would apply more to outside of Auckland.

I hold a BE civil, and have worked in construction and freight for 40 years and within management for 30 of those.

I am concerned about so many mentions of up-front costs and constrained ability to invest by Govt.

Walking / Cycling

The report states, ''*One of the most profound changes in the past several decades has been the reduction in the number of children that walk or cycle to school*'' (pg 51)

To reverse this riddle would be the panacea for many of our congestion problems, and sorry I don't offer a silver bullet, but the long term emissions goal requires these kids to get out of mummy's SUV. I have kids and expect them to be able to travel safely too, preferably on bikes.

Cycling and walking needs to be safe, as well stated in the report. What I can't understand is why we go to great expense building walk/ cycleways alongside new motorways. They are not the shortest route, nor are they scenic, nor healthy, unless you like to look at cars.

As an example, my understanding of the Bethlehem Bypass (Takitumu North Link) is that considerable cost is being added by insisting a cycle /walkway is added to this alignment. Surely the existing road with it's current extra lanes / width should be modified to allow safe cycling on a shorter route, once the major through traffic is using the bypass. This is the shortest route and more amenable area for walking / cycling. Without through traffic, this area should be safer for ''kids on bikes''.

Freight Movement

Figure 7. Movement and Place Framework and the text around this is good for streets, however Movement Corridors appear to be passed over.

The report states, ''*Roads and streets also need to accommodate the efficient movement of products and freight*'', and '' *This helps planners to balance the safe and efficient movement of people and goods along key movement corridors with enabling vibrant and inclusive places for people* ''.

There is mention of separating through traffic from local, but there is not enough emphasis on the freight function in the Street environment. An example is supermarket access, which require trucks to deliver food for people to buy. Due to economics and congestion, minimum number of trucks mean they are bigger, but ''street enhancements'' tend to make access more difficult for them.

Another issue is ''through'' traffic competing with local traffic and local congestion, such as export products enroute to ports being held up local congestion, costing more emissions and lost productivity. An example developed in the last 2 years is Tauriko (BOP), where trucks are commonly crawling along from the foot of the Kaimais to the Toll Road, taking an extra hour, doubling the trip time in many cases. There is always a ''back-up'' at Cambridge Road, where local traffic is waiting to both enter and exit SH29. The tail from the Cameron Rd roundabout also locks up the SH 29/36 roundabout.

Light Electric Vehicles

On page 33, the report states, '' *EVs are increasingly accessible, the range is better, and costs are expected to fall* ''.

On page 70, '' *We need to recognise that the supply of cleaner cars relies heavily on the global market*.''

On page 71, '' *an electric vehicle (or similarly clean car) needs to be an easy and safe choice that is cost-competitive with the costs of owning and running ICE vehicles''*,

I refer you to a press release by Toyota, in The Herald on 31 March 2021, summarised in their words;

There are three key points that Kiwi car buyers and the Government need to think about when considering our pathway to low-emitting transport.

The first is supply. The second will be affordability, and the third could be a potential trade-off between human safety and cheap electric vehicles if they even exist.

On page 125, ''*…if other countries enact ambitious policies quickly (such as the United Kingdom's plan to ban the sale of new petrol and diesel cars from 2030),… In the short term, Aotearoa is likely to compete with other countries as buyers of electric vehicles*. ''

With UK and others planning to ban ICE light vehicles, how is NZ going to source enough EVs and ''expect costs to fall''. This defies the logic of supply and demand.

On page 123, '' *Over the next thirty years, the transport technology that is most likely to drive emissions reductions is the electrification of vehicles. In our pathways, we assumed that the purchase price of electric vehicles will continue to decrease, battery ranges will keep growing, and more vehicle models will quickly become available in Aotearoa.*

If the purchase price parity point for electric vehicles (relative to ICE vehicles) happens before the mid-2020s, this would help to accelerate emissions reductions in Aotearoa. On the other hand, if the price of electric vehicles does not come down as quickly as anticipated, or if the variety of electric vehicle models does not expand quickly enough to meet consumer demands, this may slow down the uptake of electric vehicles.

The price of electric vehicles is significantly affected by battery costs. Vehicle costs may not decrease quickly if battery advances primarily lead to higher capacity batteries that enable greater range (rather than simply lower costs). Battery costs could also be affected by supply constraints in the

materials used to manufacture batteries, and global manufacturing capacity, as global demand for electric vehicles increases.''

Also quoting the report, which doesn't expand enough detail;

Early adoption of new vehicle technologies can be high risk (pg 99)

There is also the challenge of charging entire fleets en-masse on local power supplies/transformers that will need to be considered (pg 77)

Ensuring the safe and environmentally friendly reuse, recycling and ***disposal*** *of vehicle waste, (****such as electric vehicle batteries*** (pg 74)

Under **Just Transition**

However, there will still be plenty of affordable used ICE vehicles available in Aotearoa over the next decade at least (and likely well beyond this). Even if imports of ICE vehicles are phased out in the 2030s, there will still be many ICE vehicles available domestically over the following decade (pg 107)

It is highly likely that we will need to use biofuels to reduce emissions from the vehicles already occurring in the fleet (pg 74)

If major advances are made in drop-in renewable biofuel, or green (low/zero carbon) hydrogen, then this could help us to decarbonise the transport system more quickly. (pg 124)

The Government is considering options for an incentive scheme to help New Zealanders switch to cleaner cars such as electric vehicles. (pg 71)

Where is the analysis ? Surely it would be more reliable to subsidise bio-fuel production into the existing fleet, and continue with affordable ICE, until EVs become affordable, and available in quantity and SUITABILITY. We don't produce our own EVs, so are at the mercy of the rest of world.

WE could produce bio-fuel, at the expense of cows, if it is made attractive for farmers to change. Surely it would be better govt investment in self sufficiency of fuel, than supporting mining of lithium and profits to EV manufacturers. This would appeal to the greenies and could be a win-win for our country. We might be better off turning logs into fuel rather than export to China ?

Again from the report;

Conventional biofuels, along with the advanced biofuels being produced commercially overseas, have the potential to provide an immediate solution to reduce GHG emissions (pg 94)

Back to Freight

My real interest is in fueling freight transport and construction equipment, which the report states;

trucks will be the main contributor to road transport GHG emissions by 2055.

The markedly different emissions path for the heavy fleet reflects the difficulties with decarbonising heavy vehicles compared to light vehicles (pg 20)

To support the transition of heavy freight, aviation and maritime sectors, there is a need for the energy sector to secure the right type of alternative fuels at the right price. (pg 23)

Biofuels could be a more cost-effective solution for decarbonising the rail network (pg 98)

The Climate Change Commission also recognises heavy trucks and diesel equipment such as earthmoving are difficult to decarbonise.

From the report; *If major advances are made in drop-in renewable biofuel, or green (low/zero carbon) hydrogen, then this could help us to decarbonise the transport system more quickly*. (pg 124)

In hindsight, the report contains some very good ideas, but seems to be predetermined on EVs. I believe EVs are part of the future, but cost and availability will make that medium to long term.

The short term answer distilled from within the report is biofuel, and that's where the govt should be throwing our tax money, rather than subsidising EV's.

Don't give the EV manufacturers what little cash we have to borrow, lets invest in biofuel. Maybe NZ could export green biofuel instead of dirty dairy.

Incentivise the growing of feedstock and production of Green Fuel

16 June 2021

Ministry of Transport
[submitted online via **transportemissions@transport.govt.nz**]

SUBJECT: Hikina te Kohupara – Transport Emissions: Pathways to Net Zero by 2050

Dear Sir/Madam,

Sanford Ltd is a New Zealand company with over 100 years of heritage in the sourcing, processing, and selling of seafood. We are listed on the NZX and are included within the NZX50 group of companies. Sanford is a vertically integrated seafood company with interests in wild harvest fishing, farmed aquaculture, seafood processing and packaging, sales in both the retail and wholesale marketplaces domestically and internationally.

In 2020, Sanford Ltd's activities were supported by, or represented[1]:

- A direct workforce of 1,387 persons
- 15 fishing vessels comprising both inshore and deepwater fleets
- 225 aquaculture farms and 22 aquaculture vessels
- 6 seafood processing sites and 2 innovation sites
- The second largest holding of NZ commercial fisheries quota, at 19.7%
- The production of 720 million meals (assuming 100g portions for seafood)
- NZD 468.8 million in revenue
- Direct emissions equal to 67,421 tonnes of CO_2-e (Scope 1 and 2)
- Indirect emissions equal to 208,942 tonnes of CO_2-e (Scope 3)

Progress on Climate Action:
Climate action has been one of the central aspects of Sanford Ltd's sustainability approach, and overall business direction for several years. Notably, Sanford Ltd:

- Is a key member of business climate action groups including the Sustainable Business Council, Climate Leaders Coalition, and the Aotearoa Circle;
- Measures and publicly discloses our Scope 1, 2, and 3 emissions and actively targets their reduction;
- Has already implemented key actions to reduce emissions within our value chain, such as boiler biofuel conversion projects;
- Have ongoing efficiency and improvement identification projects underway in collaboration with the Energy Efficiency and Conservation Authority; and
- Is an active participant in the development of climate risk scenarios for business planning for the New Zealand seafood sector, as well as adaptation planning work.

We understand that we are on a journey with respect to climate change mitigation and adaptation, and although we are proud of what has been achieved to date, we are also realistic regarding the challenge and transition ahead. We are a business where the majority of our emissions (> 86%) arise from high capital investment, long-life assets, with significant complexity associated with alternative energy sources and decarbonisation (e.g. fishing vessels). In these cases alternative technologies have not yet been developed and proven. Our path for decarbonising those assets must reside with a 'least regrets' type approach where there is a focus on maximising efficiencies with existing assts over natural maintenance and re-fit cycles, along with informed and planned decisions made in the future around asset replacement, ideally with the support of newly developed technologies.

[1] Navigate, Sanford Annual Report 2020, https://www.sanford.co.nz/investors/reports-1/company-reports/2020/2020-annual-report/

Our strategy is to ensure that we have an emissions reduction pathway in place, meaningful targets, with mitigation and adaptation risks and opportunities being identified to guide us on the transition. Our transition will be supported by transparent disclosures to inform our stakeholders.

I have reviewed the Discussion Document for Hikina te Kohupara and wish to make the following notes and items for consideration by the Ministry of Transport:

Hikina te Kohupara Decision Doc. Reference	**Comment**
Page 16, Shipping and Maritime Transport	It is defined that "*Aotearoa's domestic fleet includes cargo vessels, passenger ferries, **fishing trawlers**, tugs, cement carriers and fuel tankers. GHG emissions from shipping have remained steady since 1990, in comparison with other domestic sectors e.g. aviation which has seen nearly 100 percent growth in GHG emissions."* We identify that the wide range of vessels classified under the definition of of the domestic fleet means that care should be taken in respect of other conclusions within the document around the suitability or otherwise of alternative energy sources. For example, electric application may be suitable for the mode of operation of a tug, but are not yet even close to being applicable for the mode of operation of cargo vessels or fishing trawlers, which, due to the mode of operation, must remain away from port for several weeks at a time. Further, the opportunities for retro-fitting of alternative fuel and energy sources are NOT uniform across these diverse use applications in the marine space. The IMO has gone some way toward this with their proposed emissions within the proposed MARPOL ANNEX VI guidelines. However, within those guidelines there are categories identify variable targets and requirements for different use applications of vessels; notably fishing vessels are, at present, do NOT have emissions reductions targets identified within ANNEX VI due to their unique and diverse modes of operation and energy use profiles. This is despite many domestic fishing vessels reaching and exceeding the Gross Tonnage definition for ANNEX VI. We suggest the MoT should not assume the emissions specific targets within the ANNEX VI guidelines are applicable to their entire definition of the 'domestic fleet', and urge caution that any policy, regulation, or legislation should be considerate of this.
Chapter 7, Theme 2 Page 68	"*The Ministry has commenced work to develop a strategy to support the ongoing implementation of infrastructure, which should also include charging infrastructure for other modes such as for ships at ports*" We welcome and support this initiative, as while alternative energy sources remain in development for the hard to abate shipping sector, efficiency improvements and solutions such as cold-ironing (shore power) for ships at berth represents a suitable, though costly, way to reduce overall fossil fuel use. We would be interested to be a part of any consultation, dialogue, or strategy development in relation to shore power.

Chapter 8, Theme 3. Page 92/93 And Consultation Question 11.	We caution against the broad statement that "*There is also opportunity to electrify the maritime sector through encouraging the use of fully electric/hybrid vessels…*" At present we are not aware of any proven, and reliable fully electric vessels for our applications (inshore fishing, deepsea fishing, aquaculture support). Indeed, the mode of operation (up to several weeks or months away from land) of many of our vessels strongly suggests that fully electrified solutions are unlikely to be the ultimate solution. We believe that, whilst low/no emissions technologies appropriate for fishing applications are still being developed and proven, most significant emissions reductions opportunities will be through driving efficiency improvements of the existing assets. Those improvements could be achieved through planta and equipment upgrades (propellors, gearboxes, engines) in line with natural re-fit and replacement schedules, along with operational efficiency measures. Alternative fuel applications for existing fleet vary depending upon the mode of operation, for example LNG is not appropriate for retro-fit on an existing fishing trawler, as the fuel containment vessels could not be accommodated due to space constraints and fuel size demands.
Chapter 8, Theme 3, page 96. And Consultation Question 11.	Under the title of "Cleaner ships and ports and associated activities", we note the reference to "*Apply MARPOL ANNEX VI energy efficiency requirements to the Aotearoa domestic fleet*". We request the MoT consider that all vessels within the domestic fleet do not have energy efficiency requirements identified under ANNEX VI, e.g. fishing trawlers over 5000 gross tonnage. Whilst we are committed to drive energy efficiency and reduce carbon emissions from the our fishing fleet, and are on a journey toward this, we have concern that through loose definitions of the 'domestic fleet' those vessels could be caught with requirements which do not take cognizance of their unique modes of operation leading to requirements which were developed for other vessel types being unobtainable for the fishing fleet. We are supportive of other efficiency measures identified including incentivising and investing in renewable shore-side power supplies.

Kind regards

[redacted]

Dr. Peter Longdill
General Manager, Sustainability
Sanford Ltd.
[redacted]

Submission on the Ministry of Transport's Green Paper 'Transport Emissions: Pathways to Net Zero by 2050'

s 9(2)(a) 10.6.21

Consultation Questions 1 and 12: I support the principles in the Green Paper. The paper refers to freight and I would like particular mention to be made of the transport of waste as it tends to be assumed that freight involves the transport of nice clean, non-harmful, new products. Emissions are not only harming the climate they are also directly harming people and flora and fauna.

The number of heavy trucks being driven through Wellington from the motorway through Vivian Street, Victoria Street, Webb Street, Willis Street, Brooklyn Road, Owhiro Road and Happy Valley Road to and from the Southern Landfill and C and D and T&T Landfills is excessive and is harming the people who live in, work in and use these streets and roads. People including pregnant women, children, the elderly and people with disabilities, are dealing with noise, diesel fumes and particles from uncovered loads polluting the air in their homes and workplaces, along with flying litter and debris and traffic hazards, both as road users and pedestrians. In response to this I opened an epetition on the Wellington City Council website entitled *'Stop trucks coming off the motorway and using Wellington streets to transport waste to tips'*. It closed on 1 June 2021 with 52 signatures and will be presented to the Environment and Planning Committee of the WCC on 26 June 2021. The petition can be viewed here https://wellington.govt.nz/have-your-say/petitions/petitions/closed/2021-02-stop-trucks-coming-off-motorway-and-using-wellington-streets-to-transport-waste-to-tips

Local people can to some extent, understand waste being transported right by them from local projects. Petition signees have indicated that waste generated beyond their local area should be banned from the landfills on Happy Valley Road as we have human and legal rights to noise levels that are not excessive, traffic safety on our roads, footpaths and at our bus-stops and crossings; and, clean air in our homes, workplaces and streets. See the appendix to this submission for data on truck numbers and air quality.

Consultation Questions 2, 3, 4, 5 and 10, 11: The government could use the following levers to reduce transport emissions:

- Policy analysis. When local government analyses and develops policy options, it needs to include the minimization, eradication and avoidance of harms from the transport of waste and other transport as an important criteria for analysis.

- Policy Developments. The Solid Waste Management and Minimisation Bylaw, WCC, 2020 introduces new construction and demolition waste planning requirements for high-value building projects (valued at $2 million or more); and, the establishment of waste operator licensing by February 2023 (applicable to waste collectors who transport more than 20 tonnes of waste per year). It is good that these initiatives will eventually provide more data. My question is does the new bylaw reflect the sacrifices some Wellingtonians are being required to make to their health and safety and how long term detrimental will the effects on them be?

- Policing. All trucks need to have their commercial vehicle inspection certified at Level 7, which is: Carried out by qualified vehicle safety officers (VSOs), constables or road police, and focuses on exhaust. Police should also enforce covering of loads.

https://www.police.govt.nz/advice-services/driving-and-road-safety/commercial-vehicle-safety-team-cvst

- Location of where waste is deposited. Councils should source landfills out of the pathway of residential suburbs to dispose of dirt and demolition waste, as well as divert waste into other projects e.g. infill, new roads, cycle trails. If material is being recycled it is being trucked in and then out again polluting the same roads twice. The Southern Landfill is the only tip in the Wellington Region to take asbestos, which means a lot of extra truck kms.

- Electric trucks, biofuels and hydrogen. Council owned or contracted vehicles could have an electric vehicle clause (similar to what GWRC has with the bus and train contract renewal process).

- Minimise need for waste as a mixer. E.g. currently bulk (non-compacted) waste is taken to the Southern Landfill to be mixed with sewerage sludge in Wellington.

- Compact any waste that is to be transported.

- Specialised truck highways and routes. Create underground rail or road tunnels from the motorways to tips. Ferry vehicles containing waste to tips.

- Do not use tips to revenue raise: E.g. consultation about the proposed extension of the Southern Landfill in Wellington resulted in an unreasonably high weighting attached to revenue raising, compared with other criteria against which the proposal was to be assessed. I was surprised by this as I attended a couple of consultation meetings and no-one that I heard speak mentioned any value attached to revenue raising at all.

Consultation Question 6: Discourage situations where waste is transported to a tip further away because of cheaper pricing.

Consultation Question 8: My epetition does not mention it, but another problem in our neighbourhood is the diesel buses that have been used since the trolley buses were taken away. I support actions to decarbonize the public transport fleet.

Consultation Question 9: Please reduce domestic aviation emissions. I knew people that lived in Kilbirnie near Wellington airport (now deceased) and their net curtains and clothes on the line were blackened.

Consultation Question 13: I am keen on Pathway 2 because of the emphasis on biofuels and improve initiatives for freight. As you report on page 2 of your Green Paper, '23 percent of Aotearoa's transport emissions currently come from heavy vehicles (mostly trucks). While light vehicles currently produce the most emissions, trucks will produce the most emissions by 2055 without further interventions. Emissions could be reduced by improving the efficiency of supply chains, shifting freight to low emission modes, and improving the fuel efficiency and carbon intensity of freight modes and fuel. Trucks will need to be decarbonized through the uptake of alternative fuels such as biofuels, electrification, and/or green hydrogen.'

Data Appendix

Quantity of trucks

Data on trucks going towards the three Wellington tips (from the local area, as well as from the motorway) has been provided by two sources:

1. A petition signee who wishes to remain anonymous:

   "Over the past couple of years I have noticed the number of heavy trucks driving south and north on Brooklyn Road and then Owhiro Road to and from the Southern Landfill (probably T&T Landfill as it is trucks) has increased dramatically. Over summer last year, over a four day period, I counted the number of heavy trucks only (excluding vans, utes and cars). They were constant and during one, 1 hour period at 11am on each of these days I counted 150 trucks (roughly 75 going to the landfill, and 75 going back towards town)."
   Source: Email to Alison Robins, 17.3.21.

   Monday 3 May 2021, 2.15-3.15pm, note the road was officially closed during the time of this count due to a traffic accident. "I was standing near the bus stop at the entrance to the Helen Street ramp. There were 80 trucks uphill and 36 downhill, many carrying dirt uphill. This was not cars, vans, utes, buses or light trucks - only big trucks (one tray and two-tray) = 116 big trucks per hour. Around one-quarter had very heavy loads (e.g. cranes, big loads of wood, cars). They were particularly noisy, and I could hear them coming from about 200 metres away either side (from probably around the Washington Avenue turnoff for the uphill ones and from even before the Brooklyn lights for the downhill ones). Trucks and traffic have been moving solidly all afternoon near the top of the hill. I heard the sirens around that time and saw ambulances going past. I saw some coming downhill with dirt in them - must have been turned around."
   Source: Email to Alison Robins 3.5.21.

   Tuesday 4 May 2021, 12.15 to 1.15pm. "84 uphill and 34 downhill = 120 trucks an hour. There were uncovered dirt trucks, plus Woods Waste has demolition waste trucks that are very noisy and have uncovered loads of construction waste. This is where the particles fly off, especially in the wind. More buses today - hardly any yesterday because they would have been diverted because of the accident."
   Source: Email to Alison Robins 4.5.21.

   Wednesday 5 May 2021, 9.15 to 10.15am. "Big trucks only - 76 uphill and 56 downhill = 132 an hour. Several trucks had construction rubble, especially broken up concrete or bricks or just tangled material with reinforcing in it. Brick and concrete dust are both bad. Two more truck names are Goodmans, Vertex and Daily Waste (the latter had a huge, heavy and noisy truck)."
   Source: Email to Alison Robins 5.5.21.

2. Tom Williams, Chief Infrastructure Officer, Infrastructure and Delivery, WCC

   First count done in June 2016 on Brooklyn Rd between Bidwell Street and Washington Avenue
   - Average Heavies per day – 80 (driven up by large number of Class 14 vehicles - 18 wheelers etc.)

- Average number of rubbish truck type heavies per day - 199

Second count done in March 2019 on Brooklyn Rd between Nairn Street and Bidwell Street

- Average Heavies per day – 49 (not so many Class 14 trucks)
- Average number of rubbish truck type heavies per day - 126

Source: Email to Mt. Cook Mobilised, Cr Iona Pannett and Alison Robins 13.4.21, from Tom Williams

Air Quality

I put together the following table using data from the GWRC's Air quality monitoring reports http://www.gw.govt.nz/air-quality-2/, using the current air quality data for Willis Street AQ, for the Tuesday after Easter 6.4.21.

	Highest level (time)	11am	3pm
Black Carbon (AE33) (ug/m3)	7.939 (12.51pm)	0.439	1.042
Black Carbon UVPM (AE33)(ug/m3)	11.721 (8.24am)	0.519	0.914
Carbon Monoxide (ppm)	0.4444822 (9.15am)	0.0736764	0.1162347
Carbon Monoxide 1 hr fixed average (mg/m3)	0.3248793 (9am)	0.1265366	0.1319257
Carbon Monoxide 8 hr moving average (mg/m3)	0.2128980 (2pm)	0.2000994	0.2016467
Carbon Monoxide 8 hr moving average (ppm)	0.1703184 (2pm)	0.1600795	0.1613174
Nitric Oxide (ppb)	15.4840700 (8.40am)	4.5759500	4.2209210
Nitrogen Dioxide (ppb)	15.9146900 (8am)	5.4510780	3.7180060
Nitrogen Dioxide 1hr Average (ug/m3)	25.1012780 (3am)	12.0786348	9.9863720

N.B.: It is expected that levels would be higher in Webb Street before the intersection with Willis Street and at the Brooklyn traffic lights.

Wynyard Quarter Transport Management Association

s 9(2)(a)

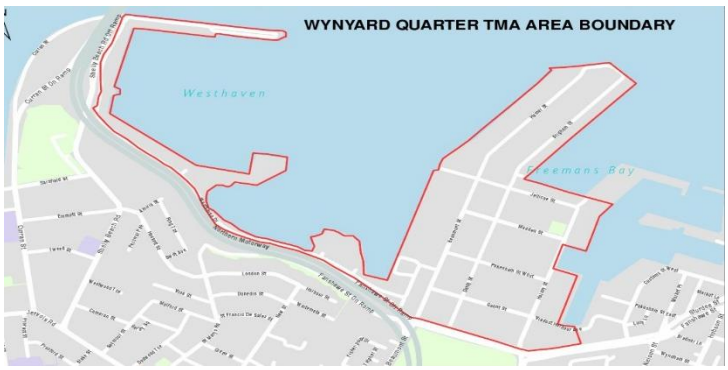
Submission in respect of: Transport Emissions: Pathways to Net Zero by 2050

Date: June 2021

Name of submitter: Wynyard Quarter Transport Management Association ('WQ TMA')

1. Wynyard Quarter Transport Management Association - background

1.1 Wynyard Quarter Transport Management Association (WQ TMA) is an independent group representing developers, landowners, employers, the marine and fishing industries, and the arts and hospitality sector which collectively have, and continue to develop an environment to work, live and play. The former industrial area is now booming with offices, housing, and a vibrant entertainment sector. The area is home to some major employers including Air New Zealand, ASB, Datacom, Fonterra, Kiwibank, Sanford, Southern Cross and has a reputation as the innovation hub for Auckland. The area currently is home to approx. 15,000 employees, and this number is set to rise. The map below shows the TMA area boundary:



1.2 The TMA was established under Part 14.9.3.10 (Wynyard Quarter) of the Auckland District Plan 2004. It was made a condition of the Planning Consent and Environment Court Order 2012. Trip generation ceiling targets were specified in the District Plan (DP) and are linked to the extent and timing of development permitted in Wynyard Quarter. The Resource Consent for Wynyard Quarter set a target of a 30:70 mode split by 2020. With 70% of all journeys being by sustainable modes. However, this figure has been anecdotally revised to a 20:80 or even 10:90.

1.3 The objectives of the TMA as outlined in the Rules are as follows:

a to advocate to the Government, local authorities and/or persons, corporations or associations for the improvement of transport services and transport infrastructure to benefit the Wynyard Quarter community;

b to promote and share information with regard to access and transportation in and around Wynyard Quarter; and

c to do all things as are, or may be incidental to, or conducive to, the attainment of these objectives.

1.4 There are constraints on access to Wynyard Quarter. This has resulted in a heavy reliance on trip generation management, and restrictions have been placed on office activity under the Auckland Unitary Plan[1] to ensure that vehicle traffic entering and exiting the Wynyard Quarter is not increased. The mission of WQ TMA is to be the voice of the Wynyard Quarter: creating a thriving safe environment for business and community and fostering economic vitality by building partnerships, and delivering targeted transport initiatives.

1.5 WQ TMA recognise that the Wynyard Quarter area is being developed to become a unique waterfront location embracing a thriving economic hub, as well as playing host to major events (for example the America's Cup). WQ TMA understands that the regeneration and development of the area is ongoing. WQ TMA are keen to ensure that the area gets the very best transport infrastructure to support the ongoing economic growth of the area. This means well connected, reliable, frequent sustainable transport options of high quality that ensure the safety and well-being of all users of the area.

2. Comments and observations

Our comments and observations are focussed around our key interest areas of commuter and private vehicle travel.

2.1 The scale of change needed to meet the emissions targets that have been set will require bold leadership and new thinking.

2.2 One of the main challenges is bringing on board the complex and diverse range stakeholders that need to buy into this journey. This will require clear, concise communications to draw in the "Team of 5 million". The Covid pandemic taught us that we are a "team" and that we are stronger working together. It would be great to see the same level of political leadership, community engagement and cooperation applied to reducing emissions.

2.3 There is no one solution. There will need to be a range of measures, both incentives and penalties put in place to initiate change and reduce emissions.

2.4 Working with a wide range of stakeholders and communities will be key to enabling change in behaviours and modes and thereby reducing transport emissions.

2.5 What lessons can NZ learn from other cities around the world. How can we do things better?

2.6 Wynyard Quarter would be an ideal area to pilot or trail initiatives prior to wider launch. WQ TMA would be keen to work collaboratively on such initiatives.

2.7 Swapping ICE for EV's will reduce emissions but won't reduce congestion, urban sprawl, the number of accidents caused by cars, neither will it reduce the need for parking or the costs associated with maintaining the road network. It may also increase social inequity. Options that solve multiple transport related issues need to be prioritised.

[1] Auckland Unitary Plan, 1214.8.2(2)(a)(ii) requires that restricted discretionary office activities in the Wynyard Quarter have to demonstrate that the activity, along with any other existing, permitted or consented activities do not exceed the following trip generation targets: 3650 vehicles per hour two way; 2500 vehicles per hour one way inbound or outbound during the weekday morning peak (7am to 9am); and 2500 vehicles per hour one way outbound or inbound during the weekday afternoon peak (4pm to 6pm).

2.8 Economic incentives (and disincentives) will produce faster results than “softer measures”. Such actions can then be tangibly measured and evaluated.

2.9 There is a lot of data and some conflicting facts around transport and emissions. It would be beneficial to have a place where data is collated – a single place of truth.

2.10 Traffic calming and parking management will not, by themselves, reduce SOV travel. In some areas parking management needs increased enforcement along with heavier charges for all day parking and increased penalties for overstayers, in order to reduce emissions.

2.11 There is little evidence of transport demand management programmes in NZ. This is a missed opportunity as such programmes are hugely successful overseas, and deliver great results.

2.12 House prices in Auckland generally decrease further out from the city centre. Urban sprawl has driven people further away from their workplaces and therefore increased journey times which, in turn has meant higher emissions. Transit orientated urban development isn’t something that can be easily retrofitted into existing communities. This does need to be built into new developments.

3. Considerations

Public transport	
	Ensure buses and trains can take bikes and micro mobility at peak times
	Make public transport easier to understand and provide free trials for those looking to swap from unsustainable modes
	Distinguish between peak and off-peak travel in terms of concessions in key areas and on key routes
	Remove barriers, for example allow pay by phone rather than a standalone card
	Provide tax breaks for employers giving staff discounted public transport options
Active modes	
	Increase active modes uptake by providing pool/free bikes and or scooters to targeted communities. Training and safety equipment should also be provided
	Ensure active modes pathways are safe, well lit, connected and fit for purpose
	Encourage employers to provide pay back opportunities for those wanting to purchase E bikes, bikes and micro mobility
	Increase the number of safe and secure bike parking facilities in key areas
Electric / sustainable vehicles	
	To encourage update improvements are needed to public charging infrastructure for both vehicles and bikes / micro mobility

	Public car share scheme should only be using EV's. It would be absurd to have a car share scheme using old diesel cars, for example
	Find solutions to enable electric vehicles to be charged safely at homes and in communities
	Accelerate car share and car pool schemes by providing incentives and active promotions
	Reduce barriers to buying low emission transport. This could include incentives, tax breaks or support for interest free loans for electric car and electric bike/scooter purchases
	Ensure taxis and ubers are of the right type and in the right place for all road users. Some cities have banned uber schemes as they are deemed not to be sustainable transport
ICE vehicles	
	Attractive buy back schemes for ICE, especially high emission vehicles, when they are traded for EVs
	Develop a clear plan for how will ICE vehicles be repurposed when they are deemed redundant
Car parking	
	Car parking is significant factor in enabling private vehicle travel. Most Councils control car parking so can use levers as needed
	Councils approve all Resource Consents and it may be that providing public transport options rather than car parking spaces could be a new way of looking at developments in some locations
Targeted campaigns	
	Communications need to be clear and concise with real incentives to drive long term behaviour change
	Research and target the group who, through their transport use, creates the most emissions
	Look for group rather than individual solutions – such as workplaces, churches, sporting activities, schools etc.
Delivery and impact	
	Using delivery mediums which foster speedy results rather than mechanisms which are traditionally complicated, heavy on regulations and which produce outcomes very slowly.
	Consider the social impact of all new schemes and provide support to those on low incomes to facilitate change and reduce emissions

Businesses	
	Ensure that increased flexible working doesn't drain income from businesses who rely on employee/commuter spending
	Important to see reductions in emissions, not businesses just offsetting their emissions
	Develop clear guidelines so that developers know what is expected of them. This could include guidance on end of trip facilities, secure public bike parking, electric charging points etc.

4. Next steps

- Raise awareness of issues and associated targets
- Unbundling the real cost of car ownership
- Development of a mix of push and pull levers
- Control and remove barriers to PT and active modes usage
- Properly funded and supported, independently lead TDM programmes in key areas.
- Gamification an important tool to use for engagement
- Be open to transport options that aren't yet available
- Be aware that EV's are subject to rapidly changing technology

4.1 Short term measures

- Emissions testing for all vehicles
- Higher registration rates for vehicles emitting higher emissions – as per UK scheme
- Expansion of the congestible fund supporting more low emission vehicles for both business and personal us.
- Planning and urban development rules amended to focus in on sustainable, low emission solutions
- Unbundling the real cost of car usage – how much time do we use our cars, the cost of providing free parking, insurance, servicing, fuel etc. Nottingham, UK have introduced a workplace car parking levy to try and reduce SOV trips
- Increase bike/scooter uptake by providing pool/free bikes and or scooters to targeted communities
- Take into account international trends such as huge increases in online shopping and home delivery. Opportunities to consolidate freight drop offs and reduce emissions
- Re-examine roading projects to ascertain if they will increase vehicle use. If so, should that funding be spent on sustainable transport solutions that reduce emissions.

4.2 Medium term

- Infrastructure to support growth in public transport. The PT network needs to be connected and user friendly. Remove barriers, for example allow pay by phone rather than a standalone card.
- Consider how to make improvements to PT that will benefit the greatest number of people. For example, a dedicated bus lane on the Auckland Harbour bridge would create more

reliable journey times, enable increased bus frequency, carry more people and therefore encourage mode shift.

- Enhanced train network which connects major cities and is a viable alternative to flying.
- Congestion charging could be used as a mechanism to reduce emissions. Any charges need to be such that it will change behaviour. That levy should also be linked to emissions and distance travelled.
- Consider low emission zones as per London.

5. Conclusion

WQ TMA would recommend and endorse the development of a package of travel behaviour change interventions to flank the introduction of any triggers for change. This package should have its techniques grounded in behavioural economics and other models of change that recognise how people make travel decisions and how these can be influenced.

The introduction of any new charges needs to be done in conjunction with significant improvements in public transport (infrastructure and services), improvements to active mode accessibility and routes, as well as the introduction of a comprehensive suite of travel demand management initiatives.

Most businesses require good transport connections and service access for both customers and goods, in order to thrive. It is important to protect the necessary infrastructure for businesses such as construction, marine and fishing, which are unable to function without heavy machinery and equipment.

From: [redacted]
To: Transport Emissions
Subject: Submission re decarbonising the transport sector
Date: Tuesday, 18 May 2021 3:12:11 pm
Attachments: Decarbonising the transport sector in NZ.docx
Hydrogen economy.pptx
biofuel roadmap.pptx

Kia ora

Please find attached a brief white paper submission to the "Heavy Transport Decarbonisation Plan" Also attached are 2 powerpoint presentations that I produced and presented at west coast economic development meetings.
You will note that much of the government initiatives relating to hydrogen and fungible fuel production has been supported by me for at least 6 years.
Thank you for your interest.

Nga Mihi

s 9(2)(a)

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" The west coast of the south island may lead NZ into the fourth industrial revolution (4IR) by deploying technology and innovation and using the principles of kaitiakitanga and matauranga maori"

John Hill 2016.

Decarbonising the transport sector in NZ

Background

The transport sector accounts for around 47% of carbon emissions in NZ. There is a plan in place to decarbonise light transport sector with the uptake of electric vehicles, however there must be a plan for the heavy transport sector that does not lend itself to EV uptake.

The writer resides on the west coast of the south island, which consumes 50million litres per year of diesel excluding rail. This high diesel consumption per capita (35,000) is due to coal mining farming/milk production and excludes Kiwirail locomotives.

The west coast is at the end of the fossil fuel supply chain and it is particularly beneficial to decarbonise transport in this region. The west coast is isolated from larger towns and must therefore focus on self sufficient generation of energy including electricity and fuel. The west coast is well positioned to become self sufficient in electricity generation, fungible diesel, and hydrogen production that would obviate the need for freighting and transmission of energy into the region from outside. In order to achieve this hydrogen production would need to be the pivotal process.

It has long been recognised that the west coast of NZ's south island is well positioned to manufacture hydrogen (NASA circa 2000). This is due to the base process of hydrogen production being electrolysis of pure water, that requires pure water and low cost electricity. Up to 7 metres per year of rainfall falls on the region and NASA assumed that low cost electricity would be available from hydro.

Hydrogen production

The fall in price of electrolysers and lower cost of renewable energy from solar, wind, tidal and hydro ensures that NZ should be at the forefront of global hydrogen production, at least technologically if not commercially.

However 70% of the cost of hydrogen production by electrolysis (green hydrogen) is due to electricity costs and line charges. (Concept Consulting 2018). Taranaki currently manufactures hydrogen by steam reformation of natural gas (blue hydrogen). Hiringa Energy has received government funding to establish a national green hydrogen supply chain. Hydrogen will be produced by electrolysis of water deploying solar power and Thyssenkrupp technology to produce ammonia catalytically from nitrogen (70%of air) and hydrogen. Ammonia is easy and safe to ship and may be converted easily to hydrogen at point of use (eg Japan). The ThyssenKrupp process is preferable to the Haber Bosch process which depends upon fossil fuel and is not viably available for small counties such as NZ

Hydrogen production West Coast

Since 2010 the fully consented and funded Ngakawau Restoration Scheme (NRS) has been proposed on the west coast. This proposal coincided with Meridian Energy's abandonment of the Mohikinui Hydro scheme. The NRS is designed to divert acid mine drainage (AMD) from the Stockton Plateau coalfields away from the Ngakawau river to allow the river to be restored to it's original health. The AMD is diverted to ocean via an outfall having been used to drive a turbine and produce 24-45MW installed capacity power generation.

The writer proposes that this low cost electricity may be used to produce 20,000 tpa of ammonia via the Thyssenkrupp process which replaces the Haber Bosch fossil based process and avoids importation of nitrogen based fertiliser into NZ. Excess hydrogen will be available to establish a hydrogen refuelling station in Buller as part of Hiringa Energy's national supply chain.

The Buller hydrogen fuelling station may provide hydrogen refuelling to Bathurs Resources back to base trucks, Kiwi rail Locomotives, Westland Milk (YILI) milk trucks and other freight companies. All excess hydrogen would be converted to ammonia for export to Japan providing a guaranteed market for the electricity from the NRS.

Approval of the consented Waitaha Hydro would allow the production of green hydrogen to support a hydrogen refilling station in Westland, to service Westland Milk, Kiwirail (transalpine service), and westland based freight companies such as Aratuna freight. It may also provide hydrogen for hydrogen fuel cell based energy production in small towns such as Haast. This hydrogen refilling station would be part of Hiringa Energy's hydrogen supply chain. Excess electricity from the Waitaha hydro would be available for conversion of coal fired boilers to electricity, a conversion that is currently commercially unviable.

Biomass to diesel West Coast

6 years ago the writer proposed the establishment of a timber to diesel facility in Buller. It is unlikely that the entire west coast usage of diesel (50 million lpa) may be converted to hydrogen fuel cell. Even by 2050 it is likely that NZ will still have significant diesel consumption in the heavy transport sector. The process proposed at that time was the Royal Dutch Shell/ Catalyst Research Institute CRI/IH2 technology that was licensed to NZ via the NZ company Nxt Fuels. The technology involved catalytic hydrogentation of lignocellulosic pulp, which would require large scale hydrogen production. At that time Scion Research stated that all of NZ's fossil based fuel may be converted to fungible alternatives from fast rotation timber crops grown on low grade non arable stewardship land from the DoC estate. This conversion was said to be possible within 15 years.

A white paper briefing from Ernst & Young indicated that around 50,000 hectares of land would be needed to produce the 300,000 tpa of oven dried timber necessary to sustain production of 50 million lpa of fungible diesel.

In 2018 Scion Research produced the National biofuel roadmap that involved growing large scale short rotation timber crops in Waikato and convert this to crude pyrolysis oil (CPO). This CPO would weigh 15% of the original wet timber and would be more suitable for freighting to the regions, where it would be upgraded to fungible fuels. This upgrade process would require large scale hydrogen production for catalytic hydrogenation.

The fungible diesel produced by Scion's process and CRI/IH2 process would be carbon neutral and low particulates and contamination such as sulphur making it suitable for the marine sector.

Conclusion

The transport sector in NZ must be targeted for decarbonisation. It makes sense to focus upon the heavy transport sector. Per capita the west coast consumption of diesel is high and finding commercially viable technologies to provide fungible hydrocarbon fuels is justified. It is also important that the regions are included in this strategy. All of the aforementioned projects rely upon hydrogen.

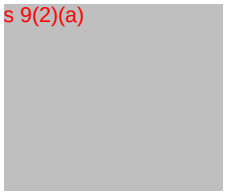
The proposed projects would allow the west coast to develop new industries in forestry, energy production, hydrogen production etc and provide broader benefits to NZ and the south island for example in allowing Kiwirail to "electrify" their south island service using hydrogen fuel cell technology as opposed to a $3billion track electrification project.

In order to allow the west coast to participate in this exciting plan I ask for government assistance or intervention, as follows.

1) **Treasury must reconsider the Ngakawau Restoration Project so that, like Taranaki we can manufacture 20,000tpa of ammonia and sufficient hydrogen to participate in the Hiringa Energy hydrogen supply chain.**
2) **Hon Minister Parker must reconsider approval of the run of the river Waitaha hydro scheme to allow Westland to supply hydrogen to tourist coaches and industry such as Westland Milk.**
3) **Government must reconsider ownership of land on the west coast that is currently in 87% ownership of DoC. It is only low grade, non arable unproductive land that must be transferred to private ownership to allow commercial production of short rotation energy crops.**

None of the above requests involve funding from central government and 1) and 2) are fully consented.

s 9(2)(a)



18/05/2021

Timber to Diesel Project
YIKES!

Hill's hairbrained scheme?

Environmental Catastrophe?

A Crock……..?

3 years in the planning

Supported by the PCE

Supported in principal by Scion Research

“NZ could sustainably supply all of it’s transport fuel demand by 2030 from forests grown on lower productivity land. There is 9.2 million hectares (sic) of hill country that is either marginal land or low to moderate hill country grazing land and converting just 30% of this land to forests would be sufficient to meet the country’s total transport fuel demand while still retaining the higher value flat land for food production. Such large scale forestry for bioenergy will also have significant economic and environmental benefits.”

Scion Research - Suckling et al 2015

Parliamentary Commissioner for the Environment – Jan Wright 2014
Some biofuels are better than others

- “In light of these conclusions, if biofuels are to play a significant role in our energy future, we should move toward developing drop-in biodiesel made from wood. Some biofuels are good, some are bad, and some are probably downright ugly. The challenge that lies before us is to develop and commercialise biofuels in a practicable way that will significantly reduce our greenhouse gas emissions, improve our energy security, and genuinely make our country cleaner and greener”

Scion Research Biofuel Roadmap

Stakeholder Support

Air New Zealand

Bioenergy Association of New Zealand

Bio-Protection Research Centre, Lincoln University The New Zealand Biofuels Roadmap Summary Report is

available at www.scionresearch.com/nzbiofuelsroadmap

Energy Efficiency and Conservation Authority

Forest Owners Association

Fulton Hogan

Interislander

KiwiRail

Lake Taupo Forest Management Ltd

Landcorp Farming Ltd

Ministry for Primary Industries

Ministry for the Environment

Ministry of Business, Innovation and Employment

Ministry of Transport

Motu Economic and Public Policy Research

National Energy Research Institute (NERI)

Norske Skog

NZ Post - Tukurau Aotearoa

Oji Fibre Solutions

Pure Advantage

Sustainable Business Network

Wood Processors and Manufacturers Association of

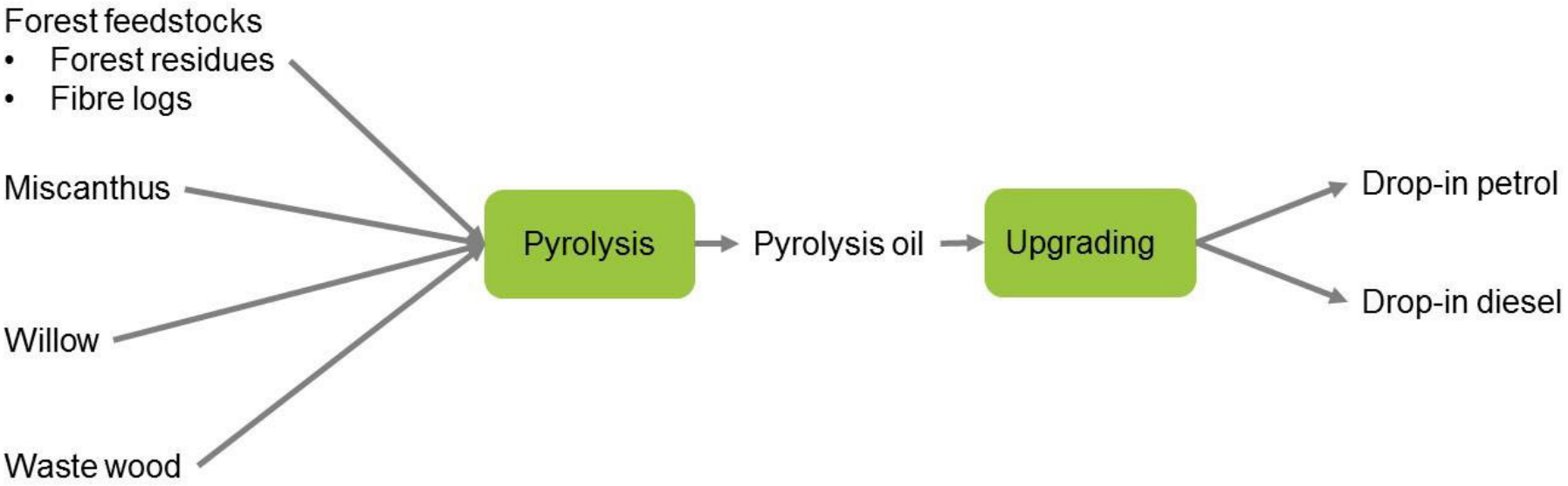
New Zealand

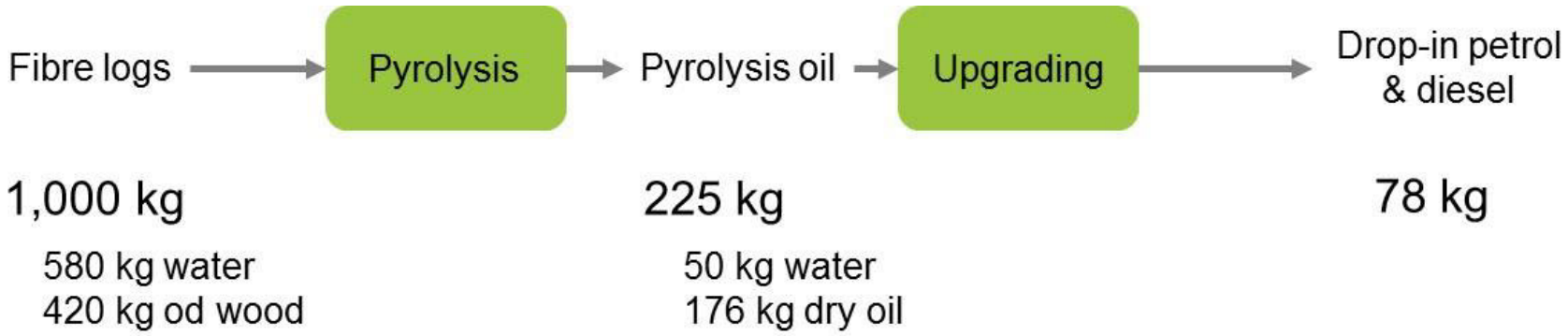
Z Energy

How is Biofuel Manufactured

- Timber and Biomass – waste and energy crops
- Dried, shredded – Fast Pyrolysis
- Crude pyrolysis oil (CPO) – The intermediate
- CPO Upgrade to diesel &petrol
- Hydrogen + CPO = Drop in Diesel & Petrol

Biomass to Fuel





The Weight Loss Equation

Jenny Craig works folks.

Regional Upgrade Plant

- Scion's View
  - Must have low cost hydrogen
  - Must have access to the natural gas pipeline
  - Must have transport infrastructure
  - Must have low cost land – brownfield

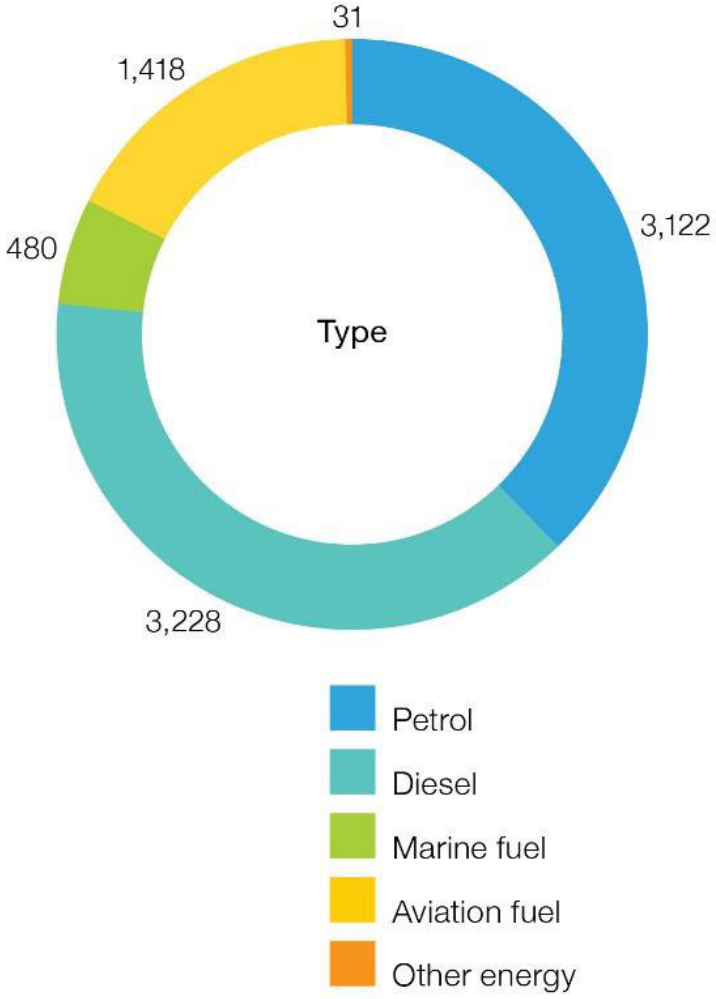
    - West Coast does not comply?
    - Wrong!

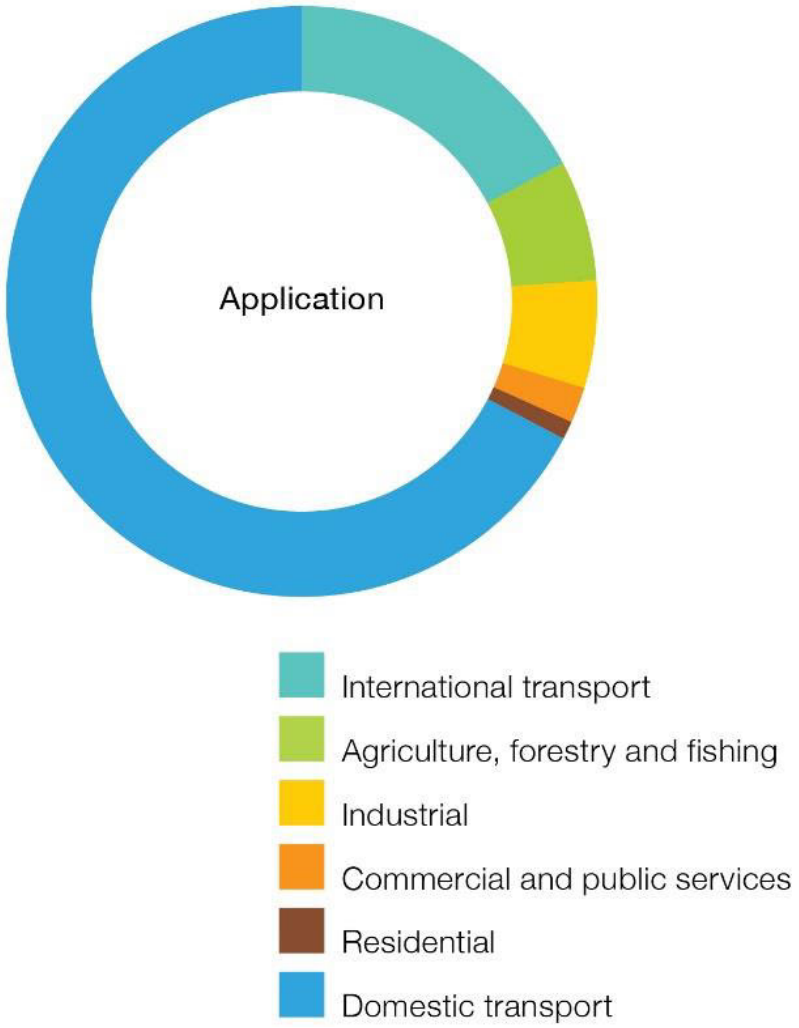
Hydrogen Production Buller Style

- Electrolysis of water - H_2O + Energy= H_2+O_2
- Waste to Energy - 1T waste= $30+$100=$130
- Ngakawau Restoration Project - $90/MWh
- Rainfall 2.5 metres per year
- Most favourable conditions globally
- Hydrogen stored as a compressed gas
- CPO to diesel by catalytic hydrogenation

MLPA Fuel Types in NZ

MLPA = million litres per annum





The numbers

- South Island diesel consumption = 1250MLPA*
- Equivalent to 1,250,000TPA*
- Requires2,500,000TPA of CPO
- Freight into Westport Harbour

*MLPA = million litres per annum

*TPA = tonnes per annum

More than 6 Times Holcim's cement freight

The Value proposition

No need to wait for energy crops on coast

Avoids freighting across Cook Strait

No “end of supply chain” costs

Reduced fuel cost on the coast

Encourages new industry to coast and SI

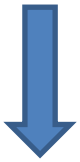
The Hydrogen Economy - West Coast

John Hill LRIC

ED Meeting 29 October 2018

Economic Development Model

Ngakawau Restoration

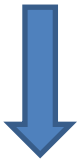


AMD to VAP's
Minerals recovery
Phyto Remediation
Coal to VAP's

Timber to Diesel

Biomass to oils
Indigenous meds
Algae to oil
Green carbon/coal
Bipolymers
Biofilm inhibition

MSW to Energy



Horticulture
District heating
Home heating
Hydrogen fuel cell
Ash to aggregate

Incubator – Clean Tech Hub

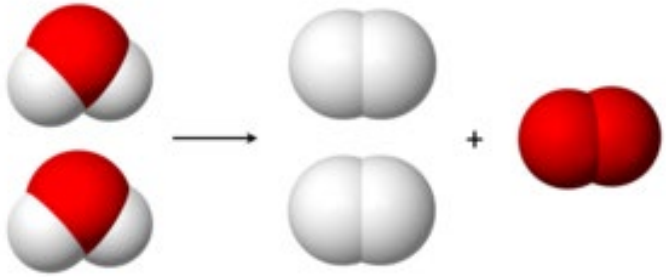
The Hydrogen Economy. Why?

- Low emissions – Productivity Commission etc
- Safer
- Easy to manufacture
- Natural gas, water, coal, MSW
- Reduces imports of crude oil
- Versatile
- Stabilises fuel prices.

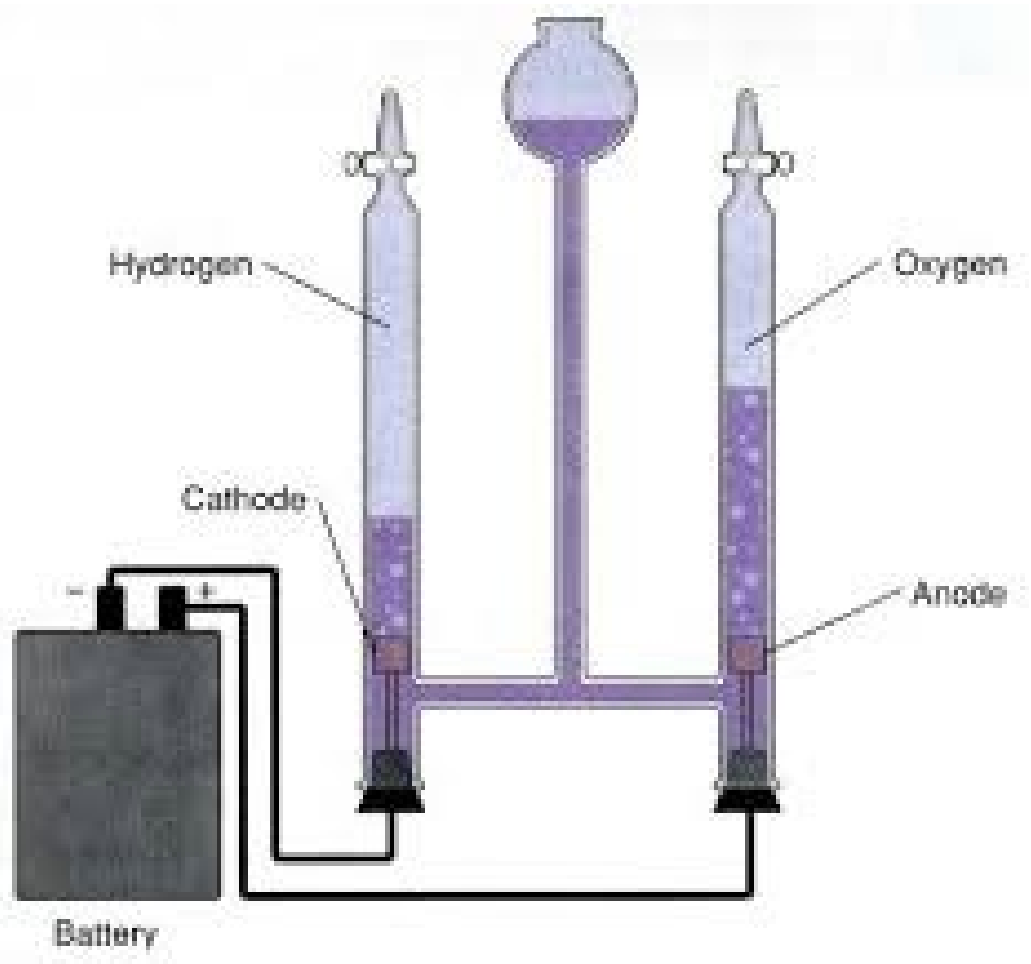
Giving Oxygen to Hydrogen - Stuff

Hiringa Energy Taranaki

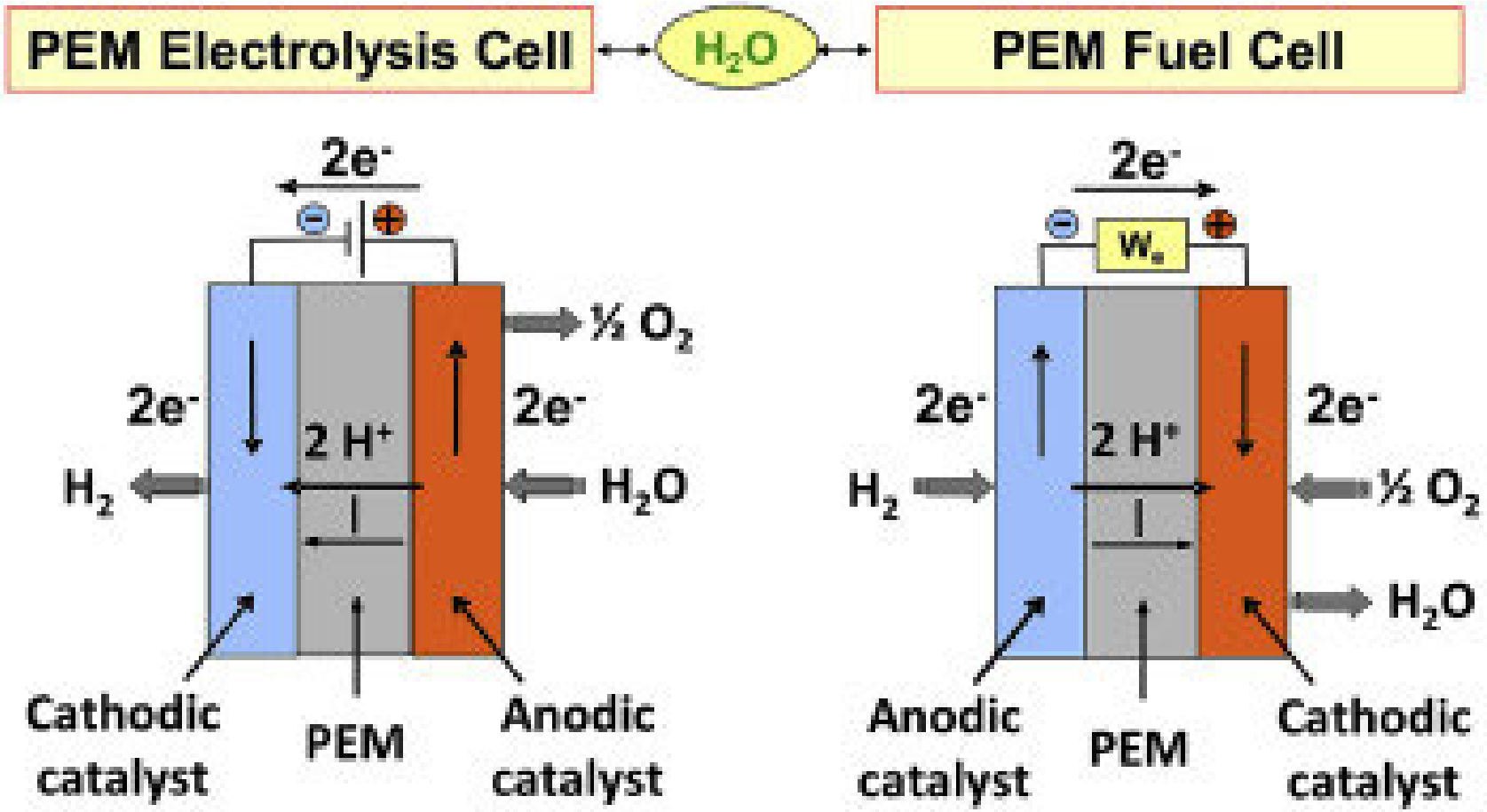
- Hydrogen production
- Reformation of natural gas
- Maui Gas Pipeline
- PGF Funding
- Hydrogen supply chain
- Heavy truck sector



$2H_2O \longrightarrow 2H_2 + O_2$



Proton Exchange Membrane



Overall reaction: $H_2O \rightarrow H_2 + \frac{1}{2} O_2$

Overall reaction: $H_2 + \frac{1}{2} O_2 \rightarrow H_2O$

2018 Research

- Abstract
- Coal gasification is seen as an attractive way for hydrogen production. The main advantage of this approach is the low fuel price compared to reforming of natural gas. On the other hand, considering the EU climate policy, the emission of CO_2 has to be reduced. The CO_2capture from the raw syngas should be thus considered. The main purpose of this work is to propose implementation of a fully “zero-emission” plant by introduction of biomass into the gasifier.

West Coast Hydrogen Economy

- Water, coal, MSW, Hydro, geothermal
- Start with one organisation.
- Hydrogen supply chain – SI
- SI Refill stations within the range
- Scale up
- Add Rail, Marine, Air transport
- Passenger vehicles.
- Hydrogen exports

Hydrogen's Versatiliy

- Direct fuel in ICE's
- HFC – vehicle fleet, commercial & residential power generation
- Catalytic hydrogenation of CPO to petrol & diesel (Biofuel Roadmap - Scion)
- Fischer Tropsch production of petrol and diesel from carbon dioxide. (ETO Gas)
- Coal to Urea.

West Coast Value Proposition

- Availability of hydro, coal, MSW & geothermal
- No more “end of energy supply chain”
- Freight options – road, rail, coastal shipping
- Export to Japan
- Diesel and petrol manufacture
- Coal to Urea manufacture
- Electricity Transmission reduced
- Scale up with solar, wind, wave energy

Water electrolysis plant Denmark

Commissioned September 2018

Will service 1000 cars

Hydrogen Economy – West Coast

130 MW IC Excess Renewable Power Generation

Hydrogen Gas Storage – Resilience HILP event

HFC Trucks

HFC Residential Commercial

HFC Cars

CPO Upgrade Diesel Trucks

Petrol Cars

LS Diesel Interislander

SPK Aviation

Fischer Tropsch of CO_2

Petrol Cars

LS Diesel Interislander

SPK Aviation

Coal to Urea

Export to Japan

File No: 25 12 05
Document No: **20486936**
Enquiries to: s 9(2)(a)

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waikatoregion.govt.nz
0800 800 401

18 June 2021

Ministry of Transport
Transport Emissions
PO Box 3175
Wellington 6140

Email: transportemissions@transport.govt.nz

Tēnā koe,

Waikato Regional Council Submission on the Transport Emissions - Pathways to Net Zero by 2050 (Hīkina te Kohupara - Kia mauri ora ai te iwi) Green Paper

Thank you for the opportunity to submit on the Transport Emissions - Pathways to Net Zero by 2050 (Hīkina te Kohupara - Kia mauri ora ai te iwi) Green Paper. Please find attached the Waikato Regional Council's (the Council's) submission, formally endorsed by the Council's Submissions Subcommittee on 15 June 2021.

Should you have any queries regarding the content of this document please contact Alejandro Cifuentes, Senior Policy Advisor, Policy Implementation, directly on (07) 859 2786 or by email Alejandro.Cifuentes@waikatoregion.govt.nz.

Ngā mihi nui

[redacted]
Mark Tamura
Acting Director Science and Strategy

Submission from Waikato Regional Council on the Transport Emissions - Pathways to Net Zero by 2050 (Hīkina te Kohupara - Kia mauri ora ai te iwi) Green Paper

Introduction

1. We appreciate the opportunity to make a submission on the Transport Emissions - Pathways to Net Zero by 2050 (Hīkina te Kohupara - Kia mauri ora ai te iwi) Green Paper (the Green Paper).

2. The Council welcomes the government's efforts to develop the appropriate regulatory environment to meet the 2050 emission reduction targets introduced by the Climate Change Response (Zero Carbon) Amendment Act 2019 and keep New Zealand's commitment under the Paris Agreement to limit warming to 1.5˚C above pre-industrial levels. We encourage the Ministry of Transport (MOT) to continue working with stakeholders across different sectors to prioritise the shift of the transport system to a low/zero carbon pathway as soon as possible to meet our emissions reductions commitments and targets.

3. The Council's submission includes recommendations to support the MOT's efforts and ensure that the Council is demonstrating climate leadership and is at the forefront of climate action. The submission reinforces the principles and objectives of the Council's Climate Action Roadmap[1] and takes a pragmatic approach to how the Green Paper might impact the region and the Council's own operations. Our submission is centred around the following themes:
    a. Leadership and incentives
    b. Spatial planning (including freight transfer nodes, rural connection, and electrification of rail/future-proofing)
    c. Funding assistance
    d. Innovation (batteries, congestion pricing, new modes, biofuels and hydrogen)
    e. Implications of EV uptake.

4. Around 16 per cent of the Waikato Regions greenhouse gas emissions come from transport. This compares with 39 per cent in Wellington and 47 per cent in Auckland. While options to reduce transport emissions may be more readily available than from other activities, it will be important that these measures do not disproportionately impact rural communities and business. We strongly encourage investment in options to reduce rural greenhouse gas emissions from transport and other on and off-farm activities that avoid unintended consequences such as exacerbating transport disadvantage.

5. We look forward to any future consultation processes and would welcome the opportunity to comment on any issues explored during their development.

Submitter details

Waikato Regional Council
Private Bag 3038
Waikato Mail Centre
Hamilton 3240

Contact person:

s 9(2)(a)

[1] https://www.waikatoregion.govt.nz/assets/WRC/WRC-2019/Climate-Roadmap.pdf

Leadership and incentives

6. The Council supports the principles identified in the green paper but notes that Principle 1 (The transport sector will play a lead role in meeting our 2050 net zero carbon target) needs to clarify what the expectation is. If looking across all sectors, transport contributes only 19.7% of all greenhouse gas (GHG) emissions.

7. **Submission:** Adjust wording to clarify that the sector leadership means for transport emissions reductions to be a first mover, acknowledging that the transport sector is good for early reductions. This clarification is to avoid the perception that other larger GHG contributing sectors have less of an obligation to achieve meaningful reductions.

8. We agree on central government's vital role to send clear signals on how New Zealand will be stepping towards the net zero goal. This emphasis on leadership should be backed by government actions that make use of policy levers/incentives to influence the market, for example through the Clean Car Discount recently introduced by the government. We consider that these tools could be used to incentivise modal shift and micro mobility.

9. It will be important that these and other measures avoid exacerbating transport disadvantage. We encourage the Government to support regional and local schemes to provide access and mobility for vulnerable communities.

10. We note that new technology and operating models will also be required to support rural and on-farm activities to transition to *net-zero emissions* and this will require continued investment.

11. **Submission**: Develop policy tools like the Clean Car Discount to incentivise the uptake of e-bikes and other micro mobility options.

12. **Submission:** Central government should give assurance that local government, including Regional Transport Committees in exercising their planning functions under the Land Transport Management Act 2008, will be given clear direction and support in its role to reduce emissions.

13. **Submission:** Any tools created to reduce the transport sector emissions should be aligned with any strategies being developed for the country's infrastructure. In particular, the strategy setting out a pathway for future charging infrastructure, briefly mentioned in chapter 3 of the Green Paper. We note a key challenge will be determining requirements for infrastructure provision in each region as well as funding infrastructure provision.

14. Further opportunities should include generation of intellectual property and technological development to generate emissions reductions. Such an opportunity would be to develop a national centre of excellence, to leverage the active areas of work across the transport sector (Waka Kotahi, MOT and tertiary institutions) to increase our intellectual property in this space.

15. Innovation could also look at how electrical vehicle (EV) use interfaces with charging infrastructure. The Green Paper does not sufficiently look at options outside the increase in energy density of EVs. Another possibility would be looking at how to integrate vehicle-to-grid technology (using the stored capacity within a mobile fleet to smooth grid peaks), which could be used to modulate peak use demands. This could be an opt-in initiative and can be easily moderated/controlled by software.

16. **Submission:** Any actions identified in the strategy to decarbonise the transport sector should fully consider the impact on rural communities. It will be important to ensure that there are practical options for the movement of people, supplies and products to market and for discretionary travel (recreational) to ensure the social and economic wellbeing of rural communities.

Spatial planning (including freight transfer nodes, rural connection, and electrification of rail/future-proofing

17. We suggest prioritising the action for both central government and local government to work together to improve capabilities for spatial planning and require spatial plans to be developed (under the proposed legislation to replace the Resource Management Act) and implemented to better integrate land use, urban development and transport planning to achieve quality compact, mixed use urban development. However, we acknowledge that there is uncertainty about the content of the new legislation and note that aspects of regional land transport plans could eventually be components of spatial plans.

18. The Council **supports** the key action to require transport GHG emission impact assessment for proposed urban developments – including the transport GHG emissions of residents and business owners that would be located in the development.

19. **Submission:** The Green Paper needs to create a requirement to develop clear guidance on how these assessments are to be undertaken to ensure comparability.

    This guidance should also account for emissions resulting from land use change enabled by transport infrastructure, such as a bridge that creates a connection to a greenfield site, making it suitable for development. This will avoid creating incentives to pursue forms of development, or development in locations, that may have higher net emissions, but appear preferable because key factors are not accounted for.

Funding assistance

20. We note that the success of the identified themes in the Green Paper is dependent on effecting changes in people's transport behaviours and also the investment decision of Road Controlling Authorities and regional councils. The setting of higher Funding Assistance Rates for walking and cycling investments, bus priority measures and public transport services would create strong incentives to prioritise and accelerate changes in the allocation of existing transport corridor space and the provision of public transport services.

Innovation (batteries, congestion pricing, new modes, biofuels and hydrogen)

Batteries

21. **Submission:** Regulatory tools created to incentivise the uptake of EVs should be accompanied by product stewardship programmes that will ensure that EV batteries and electronic components do not end up in landfill, thus generating additional emissions and potential environmental harm.

Congestion pricing

22. **Submission**: The Council supports the availability of a range of transport pricing tools, including where appropriate, congestion pricing in areas where there are practical, convenient and affordable public transport options that will incentivise the modal shift and avoid issues with equity of access (assisting a just transition).

23. Other pricing tools that warrant consideration include targeted time-of-day pricing to reduce peak-hour congestion and tolls as a form of direct user charge providing that practical, convenient and affordable alternatives for non-discretionary travel are available.

Rural activities

24. Council considers that there should be dedicated research into assisting rural communities and business transition into lower-emitting transport options, both as part of their supply chain and personal travel.

25. Settings that allow for lower-emitting alternatives to be more cost effective will incentivise early adoption and create a positive attitude for adoption of greener technology, especially since modal shift might be more difficult to accomplish in rural communities.

26. Assisting rural communities and business to meet reduction targets from transport will help them in meeting the challenge of lowering agricultural methane emissions.

New modes

27. Although the Green Paper is interested in identifying travel options that should be considered to encourage people to use alternative modes of transport, we caution against being too specific about modes because of the speed of technological developments and different rates of adoption. Currently prioritising the uptake of micro mobility options appears appropriate.

Alternative fuels

28. The Council **supports** both increasing the supply of clean cars and incentivising demand, and suggests that there is an opportunity to look into domestically developed low-carbon fuel sources.

29. **Submission:** Considerations around alternative fuels need to take into account the location of resources, population centres and demographics. In the Waikato and Central North Island there is potential for biofuels due to co-location of wood waste and geothermal energy. The Council encourages MOT to further investigate where different fuels would be more efficient to bring the biggest reductions for transport.

30. For reductions on freight supply chains, we agree that overall efficiency needs to be improved. We suggest considering a multimodal and efficient use for freight transfer. This could include a larger portion of the trip made by sea or rail, consolidation in hubs to minimise travel by road, and first and last kilometre travelled by EV to minimise total carbon emissions.

31. Further we note that the Climate Change Commission acknowledged in its draft advice to the government that hydrogen might be a viable alternative to transition heavy vehicles to low carbon. We note that significant electricity generation capacity will be required to achieve this.

32. **Submission:** The transport sector needs to embrace all the different opportunities provided by technological innovation and alternative fuel sources. This could be done using wind to generate hydrogen, leveraging existing planning tools to allow manufacture around supply.

33. **Submission**: Any initiatives to pursue the use of hydrogen as a viable alternative to fossil fuels need to consider the electricity requirements of obtaining it. The government needs to ensure that there is sufficient electricity generation capacity to meet the demands for hydrogen and the electrification of the light vehicle fleet.

34. We support extending the electrification of rail and the Green Paper key action to investigate the use of biofuels for rail.

35. **Submission:** Options for rail should also include hydrogen or other alternative fuels, as well as the use of battery-powered trains – instead on just focusing on electrifying the network. The assessment of each fuel should be based on suitability for specific route, the implications on conversion losses, the possibility to integrate different services, and the impact on infrastructure spend.

36. To facilitate actions around hydrogen, we recommend that MOT advocates for the Ministry for Primary Industries to increase the scope of future requests for proposals to include hydrogen.

Implications of EV uptake

37. **Submission:** The Green Paper does not fully assess the implications of decarbonising the small vehicle fleet by replacing internal combustion engine (ICE) vehicles with EVs. This includes the disposal of ICE components, the potential for people to carry out conversions, and the safety standards of converted vehicles.

38. The agencies responsible for managing the transport sector in New Zealand need to start planning for the disposal of ICE vehicles to manage the waste from the transition. We also recommend considering conversion of ICE to EVs.

39. **Submission:** ICE conversion into EVs would also lead to fewer emissions from waste as part of the life cycle of passenger vehicles. Further, international[2] and domestic research[3] also identified EV conversion as a viable avenue to overcome obstacles to EV uptake such as high acquisition costs. We recommend developing guidelines for disposal and conversion of ICE vehicles.

40. We note that the transport agencies should ensure that all EV imports and ICE to EV conversions have a high degree of compliance with international vehicle safety standards.

41. **Submission:** The Green Paper should be clear that an uptake of EVs should not aim to just replace the existing fleet, but should be accompanied by actions to facilitate the shift. This could include tools to limit multiple car ownership in urban settings, such as the Singaporean system to manage vehicle population through a certificate of entitlement.

42. Further, Council highlights challenges to equity in prioritising the uptake of EVs. Decisions to electrify the light vehicle fleet have to ensure the provision of suitable alternatives to car ownership and avoid exacerbating transport disadvantages. The shift to lower-emissions modes of transportation should have the just transition at their core.

[2] Silva, Jardel Eugenio da, & Urbanetz Junior, Jair. (2019). Converting a Conventional Vehicle into an Electric Vehicle (EV). Brazilian Archives of Biology and Technology, 62(spe), e19190007. Epub November 25, 2019. https://doi.org/10.1590/1678-4324-smart-2019190007

[3] Schafer, M. G. (2011). *Electric Vehicles in New Zealand – Policy, Regulation and Technical Standards for Emerging Vehicle Technology* (Master's thesis, University of Waikato, Hamilton, New Zealand). Retrieved from: https://researchcommons.waikato.ac.nz/bitstream/handle/10289/5145/thesis.pdf?isAllowed=y&sequence=4

From: [redacted]
To: Transport Emissions
Subject: Submission for climate change initiatives - cycleways
Date: Saturday, 15 May 2021 9:43:28 am
Attachments: Submission_cycleways_PChurton.pdf

Hi,
Please see attached my personal submission around the installation of better cycleways to lower transport emissions, including many other benefits.

Please confirm receipt of this submission.

Thank you,
[redacted]

Transport Emissions, Ministry of Transport.

Hīkina te Kohupara discussion document

Submission subject: Improvement in cycleway designs to/from commuter towns.

Tēnā koutou,

I write representing myself in this submission, as a member of the public living in a small Canterbury town within commuter distance of Christchurch. I have been told, that Rolleston has the highest percentage of residents who commute to work by private motor car – in New Zealand. – I am not sure if this is true but it is not surprising statistic based on the sprawling nature of the town and the difficulty to access a bus without multiple changes to arrive at your destination, or a long walk at either / both ends.

A significant number of people travel to Christchurch from commuter towns such as Rolleston, West Melton and Lincoln.

I propose that fast, direct cycleways are constructed between commuter towns like these are the central work locations (in this case Christchurch).

Though the current cycleway design seen throughout Christchurch and other towns is excellent for young children and those who commute a short distance it is not adequate for those who travel from further out.

For a cycleway from Rolleston or West Melton to Christchurch (or other similar towns in other locations) to be useful it needs to be fast and direct, allowing persons to travel at speeds of 25 – 35kmph on conventional commuter bikes or 30 to 45kmph via commuter bikes or e-bikes. For this to be possible, safe and efficient the routes need to be direct, be designed with minimal obstructions, be sealed (not gravel) and have smooth curbs etc at intersections allowing for speed to be maintained. I understand that cycle safety guidelines often move road crossings away from corners but these design techniques do not allow for speeds to be maintained by the more experience commuter cyclists.

I further note that cycleways in rural settings are catering for cyclists that have a relatively high level of experience, almost all will have drivers licences and know how to stop before crossing a road – thus the better design is the more direct without diversions / safety features that will only benefit young children.

Why does the government need to be involved?

Local district councils have limited funds, and they have a small list of projects that can be delivered over a number of decades.

Major commuter routes are often state highways (such as the those given below), or they may require the use of railway land. The local councils often don't have remit to work around these.

Often, as is the case in my example 4 the land is held by the railways for future capacity – a good thing, but this may not be used for 20+ years and the land should at least be used in the interim for an absolutely superb, direct, efficient cycling route.

Examples of areas where improvements can be made. These are likely examples that will be similar to many other similar towns and cities.

These examples are from my local area which have been discussed with Selwyn District Council. These are examples that are likely duplicated across many towns in New Zealand.

Burnham, Rolleston to Jones Rd route extension project.

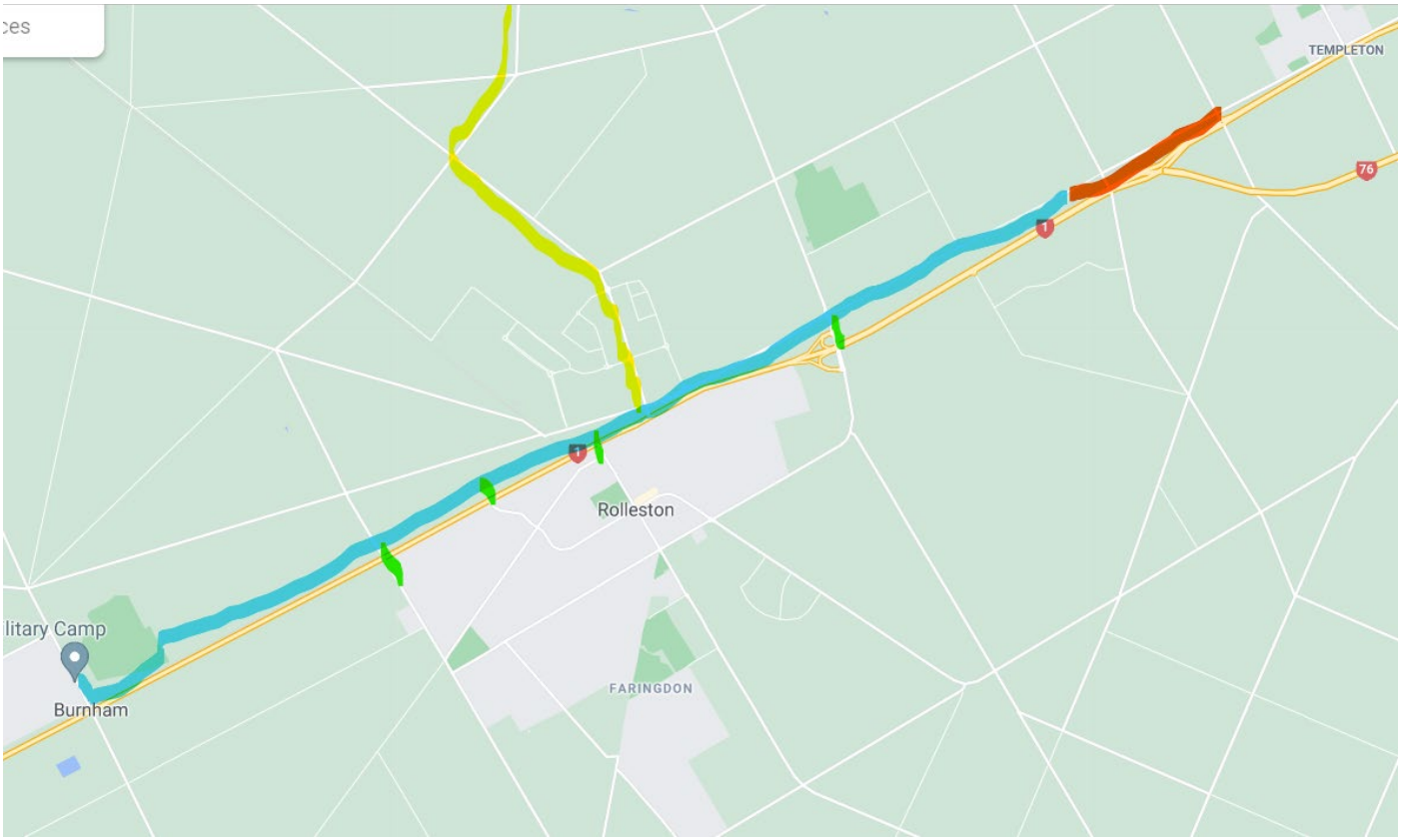
As part of the Christchurch Southern Motorway extension which is nearing completion cycling was considered but in no way was the consideration adequate to allow commuters to travel by bike.

NZTA has installed a short but 'excellent' section of cycleway is shown below in Red. Unfortunately the remainder of the designed route to Rolleston diverts down a side road then zig zags through east Rolleston streats.

The extension proposed is shown in blue, with multiple connections into Rolleston shown in green. And a current termination/ end point at the Burnham town/camp.

This would provide a great connection with the yellow future West Melton to Rolleston route – providing a network as proposed in the discussion document.

The proposed route extension would be approximately 8km, and would be relatively very easy and low cost to construct due to it being in the wide (approx. 12m wide) disused space that runs between the railway lines and Jones Rd (or alongside the railway line on farmland further West. This, would provide significant efficiency gains to a poorly designed route. I would estimate 15,000 residents live within a short distance of this route, many of which currently commute by car.



Rolleston to city along Motorway cycleway project (refer image below).

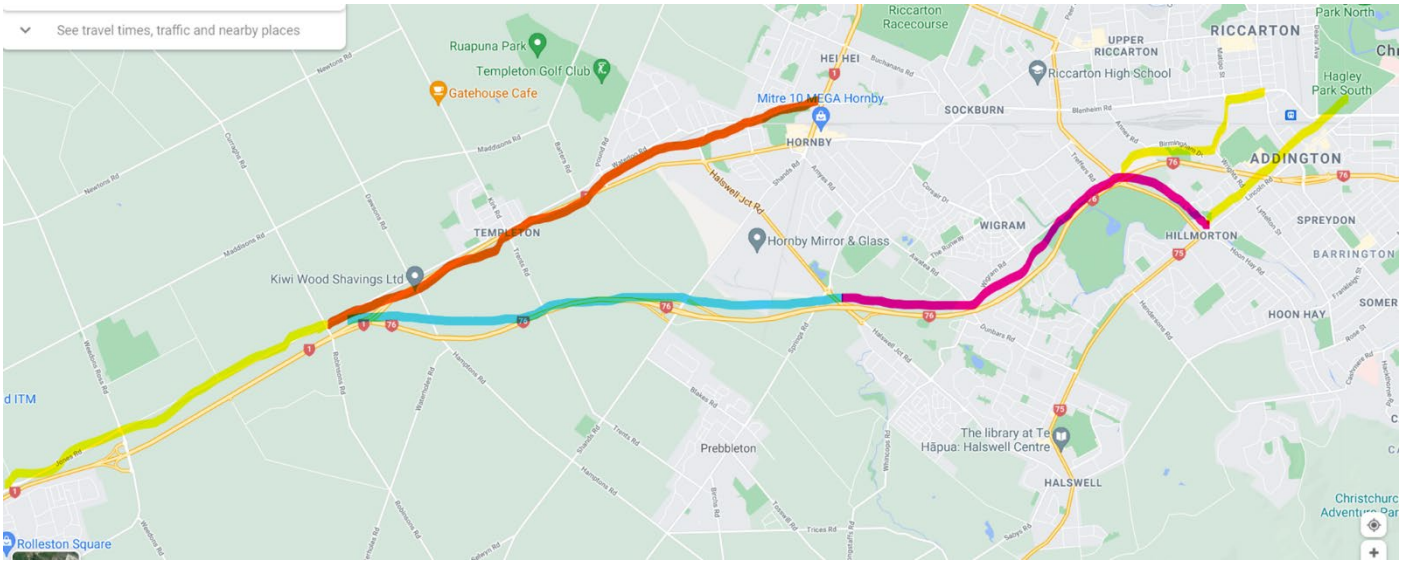
There is currently an excellent cycleway (in purple) from Halswell Junction to Hillmorton (installed as part of the original southern motorway project).

The Southern Motorway extension project inadequately allowed for cycleways. Rather than spend a few dollars on extending the excellent cycleway to Rolleston, they expected cycles to either not be used, or to wind through suburban streets from Templeton to the city, with heavy traffic, on slow on pavement routes, which limit cyclists to an average of around 20kmph, even on e-bikes.

Funding should be provided to extend the existing route alongside the railway corridor (as noted in example 1 above). This extension is shown below in blue. This route would provide various options in yellow to connect to the city and southern / hill suburbs of Christchurch.

With both this project and the one above, this would allow people to cycle / commute from Rolleston, Templeton safely and efficiently to the whole city. Using an e-Bike the route could be fast and direct, allowing speeds of 35 – 45kmph.

As this extension would be on state highway land it needs government / NZTA support.



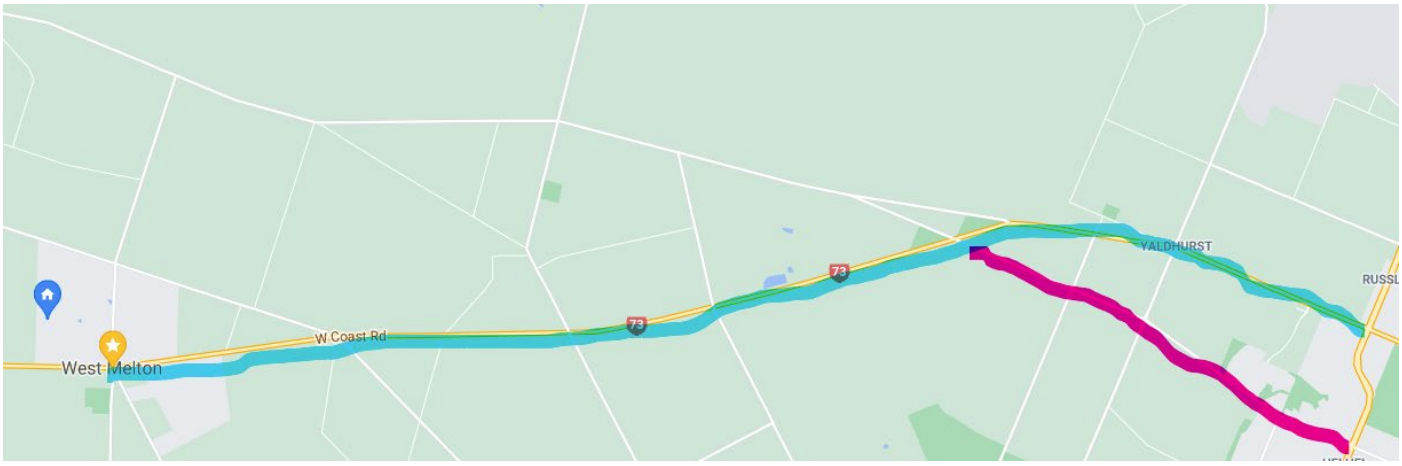
West Melton to city cycleway project (see image below).

West Melton is a town of 2,000+ people, but the wider region population is much higher. I would believe the majority of the working population commute to Christchurch for work.

Due to the narrow roads with fast, high volumes of traffic there are zero alternatives for safety commuting by bike. Due to the many work locations within the city and variable start finish times bus services are poorly patronised (there is currently only one bus per day).

There is an viable option to install a continuous direct cycleway alongside SH73 from West Melton to Christchurch (a distance of 13km, where it could join with existing and future Christchurch City Council cycleways. A proposed route and an alternative route are shown in blue and purple respectively.

Any other route along existing roads would be much less time / distance efficient and therefore much less likely to get used by commuters.



Christchurch south railway line cycle route

There is a perfect, continuous section of clear land alongside the railway line from beyond Hornby right through to Hagley Park / Christchurch city. This is on railway land.

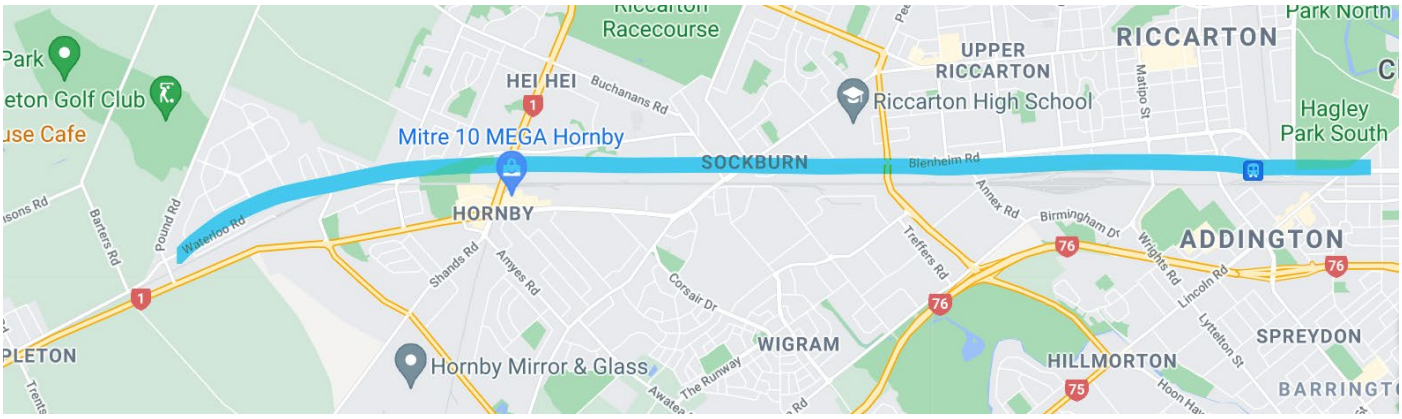
This route would provide an absolutely perfect, safe, efficient, fast route to the city.

Yes – if a 2nd railway line is required, this may be a better use of the land, but commute rail does not look to be coming any time soon – so can the land be used for a cycleway – this would be perfect!

Should a 2 lane railway line be required in future then likely this would be a $500m + investment so you could move the cycleway then for a fraction of the cost.

Though CCC coucillors and cycle advocates would like to build a cycleway here, the railways say no – we need the government to overrule this and make the land available for this use – with the understanding that in future if a railway project needs the land it may be taken back.

I note there is a neighbouring railway line which Kiwirail may consider to be a danger and need to be fenced. In reality the dangers of climate change, obesity and mental health are much more significant and this work should be progress.



Cycleway design

Current cycleway design in Christchurch city, Selwyn and likely other locations has the top priority of safety, and being suitable for young children etc.

For cycleways to be used by commuters and gain the benefits they need to be efficient in their routes.

Examples of poorly designed cycleways for commuters are throughout the country – they wind in and out of the suburbs, bump through parks and around road furniture. To be clear, these routes may be excellent for recreational cyclists and children cycling 1 or 2 km to school.

Some have a great route but the unpaved / gravel surface restricts there use for commuting efficiently – e.g the route along the river from Trenthon to Lower Hutt. This could be vastly improved for cycle commuting by sealing it and ensuring there are no obstructions.

Conclusion

I very much see cycling providing a solution to transport emissions alongside public transport.

Due to the rise of e-bikes it is now very possible to travel much faster (35 – 45kmph) and much further. If a route it smooth and efficient distances of above 20km are now perfectly feasible.

To ensure efficient travel and use by commuters cycleways need to be designed with speed in mind and some sacrifice in terms of safety at intersections needs to be lost – but we are planning for adults and senior children here who know how to stop at a cross road. Not kids under 13 years old in almost all cases on these roads.

I have provided three examples in Selwyn, Canterbury where off road, sealed, efficient cycleways could allow people to leave their cars behind, and avoid 1hr plus per day in a car. Please support these initiatives, and other similar initiatives.

Please provide local councils and NZTA the funds and the incentives to deliver projects like these.

I have provided an example where land reserved for future railway usage can be used now for cycling initiatives. I recommend this is used as it will provide significant benefits now, benefits that will not be achieved by a winding

route through the suburbs as currently proposed. Note that commuters need efficiency, and without it they will not get out of there cars.

Please enforce Kiwi Rail to relinquish this land if it does not have a current plan, with the understanding that it may in the long term be taken back. Please provide local councils and NZTA the incentives to request access to this and similar routes.

Thank you very much for reading this submission.

Regards,

[redacted]

BIG STREET BIKERS

LET'S ACCELERATE THE MODE SHIFT.

SUBMISSION TO THE MINISTRY OF TRANSPORT ON ITS MAY 2021 GREEN PAPER:

"TRANSPORT EMISSIONS: PATHWAYS TO NET ZERO BY 2050"

Submission from Big Street Bikers, 25 June 2021

As a nation, we spend on average more time stuck in gridlock, than we do on annual leave. The social harm costs are diabolical, let alone the carbon emissions. However, there is a solution. It's electric and it's affordable for everyday kiwis.

Electric bikes are vehicles for kindness. Kinder on your mental health. Kinder on your community. Kinder on our planet. And… kinder on your wallet.

Big Street Bikers is a New Zealand based and Iwi investment backed social enterprise developing the physical and social infrastructure to allow a massive uptake of electric bicycle travel in Aotearoa. We do this by making the eBiking commuting more accessible, affordable and desirable; specifically providing ride-to-own eBike subscriptions and secure bike parking and charging facilities linked to an outdoor public broadcast channel for mode shift and other public good messages.

We make a number of points in this submission to the Ministry of Transport on the May 2021 Green Paper entitled "Transport Emissions: Pathways to Net Zero by 2050". Our key points cover:

1. The importance of mode shift as the path to emissions reduction and the vital role that eBikes could play in this regard.

2. The importance of transport equity in the transition to eBikes as a mode of transport and a consideration of trialling a publicly funded low-cost eBike subscription for communities affected by transport inequity.

3. The importance of widespread, publicly accessible secure parking and charging facilities for electric bicycles if we are to realise their value in terms of mode shift and emissions reduction.

4. The need for a greater focus from the government on strengthening the rules and planning tools that will make cycling safer.

5. A proposal for a dedicated Commission to deliver the necessary mode shift towards active transport that will be required for the country to meet its emissions targets.

These points are laid out below and we would be pleased to discuss them with the Ministry further.

1. EMISSIONS REDUCTION VIA MODE SHIFT

The path to reducing transport emissions will have to come via mode shift rather than a continuation of private cars as the dominant mode of travel. Both the Ministry of Transport's Green Paper and the Climate Commission's final advice acknowledge this. Whether they are electric or not, cars take up far too much city space, crowding other far more efficient, healthier and lower emission forms of travel like walking, cycling and micro mobility as well as public transport modes such as buses on priority lanes and light rail.

This principle of "mode shift" as the primary mechanism for transport emissions reduction has been widely accepted by planners internationally and around Aotearoa New Zealand.

The UK government for example has recognised that, with the right infrastructure surrounding it, cycling can be a form of mass transit. In New Zealand, national and regional transport agencies have embedded mode shift targets within their strategic planning documents for this reason. For the cost of one EV, ten cars can be replaced with ten eBikes for daily commutes.

In its final advice to the government, the Climate Change Commission noted that:

> "At the moment, transport planning and funding is largely centred around private vehicle use. Of the approximately $4 billion spent on land transport in 2017, only around $600 million was spent on public transport, and less than $100 million on walking and cycling.

The Commission went on to recommend that:

> "there should be a large increase in the proportion of funding spent on public and active mobility".

Any emissions reduction strategy for the transport sector will prioritise mode shift away from cars over electrification of the existing congestion and inequity produced by private vehicles.

Mode shift must happen at a speed and scale that require a major overhaul of our transport system and underpinning legal framework. That means clear and unequivocal national direction to councils, government departments and civil contractors. Given the slow speed of transition to date, it is likely that changes to legislation are the only way to ensure this national direction.

Key recommendations:

- Legislative change requiring government agencies, councils and civil contractors to change the type of transport infrastructure they provide, prioritising healthy low carbon options over roads.
- Legislative and policy change, including through changes to the Public Transport Operating Model, to greatly increase the amount of financial assistance provided to councils for public transport, as recommended by the Climate Change Commission.
- Legislative and policy change to encourage the provision of lower fares and discounted or free fares for disadvantaged groups, as recommended by the Climate Change Commission.
- Legislative and policy changes directing planning rules to enable installation of cycleways and discouraging private vehicle use in city centres through the use of pricing, driving and parking restrictions.
- Prioritise government public communications spending to make mode shift behavioural change more desirable.
- Provide visible, digital wayfinding to make mode shift and in particular cycling the more convenient option.

2. TRANSPORT EQUITY: EBIKE SUBSIDIES AND SUBSCRIPTIONS

International evidence suggests that government subsidies for eBikes are the highest value intervention that can be made to reduce transport emissions. This could be in the form of direct subsidies, tax rebates, or - as proposed by Big Street Bikers - in the form of subsidised low cost or free weekly / monthly subscriptions to eBikes. Subsidised subscriptions would provide major benefits in terms of transport equity by eliminating the high upfront cost of an eBike and providing a flexible, ongoing low cost option that is cheaper than existing transport budgets related to private vehicles including fuel, insurance and other on road costs.

The Ministry of Transport's Green Paper on transport emissions reduction recognises the role of eBikes in reducing emissions. The Green Paper notes that:

> "E-bikes are growing in popularity and have potential to improve efficiency, sustainability and wellbeing within Aotearoa's urban transport systems. E-bikes enable people to cycle more quickly, with less effort and sweating, and to cover longer distances."

- "The key benefit of E-bikes is that they broaden the pool of people who would cycle if there was safe and connected infrastructure to do so in Aotearoa. Therefore, creating networks of safe, separated cycleways is likely to be the best way to harness the potential of E- bikes in Aotearoa."

Big Street Bikers agrees with this analysis and would make two key additional points:

1. Secure parking, charging and wayfinding infrastructure must be included in the concept of "safe and connected infrastructure" in order to realise the benefits of eBikes for mode shift; and,
2. Transport equity solutions such as the "Two-wheeled public transport" proposal for targeted subsidies that allow for low cost eBike subscriptions in disadvantaged communities will be necessary to spread the benefits of eBike uptake equitably. This proposal is described further below.

The Climate Change Commission's final advice also recognises the importance of transport equity around eBikes suggesting that "support to purchase an EV (electric vehicle) or electric bike could help." The US for example is currently considering a tax rebate on eBike purchases of 30% of the purchase price up to $1,500 USD. However, the upfront cost of eBikes will still be a major barrier, meaning subsidies for eBike purchase could perpetuate transport inequity.

Big Street Bikers has been working with partners to develop a transport equity pilot called "Two-wheeled Public Transport". This programme would provide subsidised eBike subscriptions (either low cost or free) to people on a six month trial basis with a view to providing an ongoing ride-to-own subscription for people that wish to continue using the eBike. This means that for $10-5 or less per week, people would have their own eBike, unlocking transport opportunities that previously would have been out of reach. This is a core transport equity question and schemes like this will be central to a just transition, which is a priority both for the Climate Change Commission and for the government.

In addition, Big Street Bikers is currently creating Village Share schemes in housing developments including with Kainga Ora - Otautahi Community Housing Trust. A further

partnership between Kainga Ora, Waka Kotahi and Big Street Bikers could unlock further gains in transport equity and mode shift.

The Fringe Benefit Tax has prevented some NZ employers from providing subsidised eBikes to their employees. Removing the Fringe Benefit Tax from eBikes provided by employers to their employees is also a simple action that would have a significant impact on mode shift.

Key recommendations:

- Consider funding the proposed "Two-wheeled Public Transport" pilot programme. This programme, in development with partners in Wainuiomata and the Hutt Valley, would trial the provision of subsidised, either low-cost or free, eBike subscriptions to people experiencing transport inequity.
- Consider other government funded programmes to provide eBike subsidies and / or eBike share schemes for people around the country.
- Encourage businesses and organisations to implement salary based programs that enable employees to purchase eBikes and unlock affordable, carbon free transport options.
- Remove the Fringe Benefit Tax from eBikes purchased by employers.
- Consider tax subsidies and rebates for eBikes to encourage cycling uptake.

3. INFRASTRUCTURE INCLUDING SECURE BIKE PARKING, CHARGING & WAYFINDING

Along with removing the financial barriers that prevent people from switching to electric bikes for many of their journeys, building the physical infrastructure to make cycling safe, convenient and practical is essential. Central government and local councils are working on cycle ways and shared paths around the country and these efforts, while too slow, are beginning to bear fruit. These efforts need to be scaled up urgently and we encourage the Ministry of Transport to acknowledge this urgency.

To drive the usage of the new cycleways, it's imperative that awareness of this safe cycling infrastructure is increased through high profile and attractive digital wayfinding, coupled with this is the need for secure bike parking for electric bicycles.

Given the value of an electric bicycle, secure bike parking at key destinations is of critical importance if we want to shift people out of cars for short journeys to the shops, the library or the doctors, to play sports and exercise or to see a movie or have a meal. Many people are currently afraid to use their eBikes, or switch their car commute to eBike and make it their preferred daily transport for fear of theft. In the future, with a projected uptake in electric bicycles, secure bike parking should also provide power so people can charge their bikes while they are locked up. Big Street Bikers provides Locky Docks for this purpose in Auckland, Wellington and Christchurch, with a network of 30 bike parking stations currently in its pilot stage.

Locky Docks provide secure parking, charging and wayfinding for eBikes, bikes and scooters. They can integrate with existing Hop cards, Snapper cards and Metro cards. Locky Docks make cycling safer, secure and much more convenient. This innovation has been funded privately alongside Mercury Energy and EECA and is a free public service available for anyone to use at any time. Many of the Locky Docks are also equipped with a digital screen display providing wayfinding alongside a public broadcast channel for government agencies and councils to promote healthy lifestyles, community engagement, safe streets and zero carbon transport.

MAPS FOR SAFER STREETS

84%

USERS FOUND THE MAPS HELPFUL

WAKA KOTAHI NZ TRANSPORT AGENCY

Christchurch City Council

Key recommendations:

- Prioritise secure bike parking and digital wayfinding infrastructure to increase of awareness of safe cycle ways of make cycling more convenient and secure.
- Make bike parking compulsory for any new commercial builds in urban centres.
- Use modern secure bike parking with digital data tracking to enable oversight over daily usage statistics and trends.

4. STRENGTHENING RULES AND PLANNING TOOLS FOR SAFE CYCLING

The Climate Commission's final advice as well as the Ministry of Transport Green Paper on emissions reduction from transport both recognise the importance of cycling as a key active mode that, if scaled up, will help reduce transport emissions.

Any government direction on transport emission reduction should also recognise the importance of strengthening the rules that protect people who are cycling. One example of such rule changes is to signal that in a collision between a cyclist and a motorist, the motorist is by default responsible. This is the law in the Netherlands and contributes to the dramatic increased safety for people cycling in that country. There are a number of other safety rules that could contribute to safer cycling and, as a result, accelerate mode shift and, consequently, emissions reduction.

In addition to safety rules, planning tools such as rezoning certain suburban streets as 'cycle priority streets' is a useful mode shift intervention. This rezoning has been very successful in Vancouver and can be done without the infrastructure spend and time required to build separated bike lanes. In Auckland for example, suburbs within 10km of the central city (e.g. Grey Lynn, Mt Albert, Sandringham, Mt Eden), could be easy quick wins for this, sending a strong visible signal to communities to help activate the behaviour change required for mode shift and transport emissions reduction. Government direction that makes it easier for local councils to replace car parks with safe cycling and walking infrastructure would also have a big impact.

Key Recommendations:

- Encourage councils to rezone key urban areas as 'cycle priority streets' to activate behaviour change.
- Remove regulatory barriers to enable communities to easily switch car parking to cycle parking.
- Implement a public mobility path wayfinding system to encourage uptake of mode shift and make existing mobility paths more visible to everyone.

5. ACTIVE TRANSPORT COMMISSION

In order to rapidly scale up delivery on key transport interventions we propose the establishment of a dedicated Active Transport Commission with its own ring-fenced budget. The purpose of this Commission is to deliver a mode-shift that sees 7% of urban trips being made by cycling or walking, by 2025. The required commitment to mode shift from Waka Kotahi and local councils is being held back by legacy roading budgets, entrenched culture and longstanding relationships that prioritise private vehicles and roads over the significantly higher return on investment from active transport. We cannot expect different transport outcomes by using the same transport system. We need a new system.

We've run out of time to turn the tanker by 1 degree, we need to create a new vehicle to lead the way for the required behaviour change. In the past we have seen success from other commissions — Smokefree NZ and the supporting legislation, are an example of how a dedicated vehicle for behaviour change has been successful in our country. Big Street Bikers is currently in discussions with other groups about a potential proposal for an Active Transport Commission.

Potential features and functions of this Commission could include:

- Advising on legislation that enables safer and more attractive conditions for active transport (e.g. laws that make it safer for cyclists of all ages — similar to those in the Netherlands).
- Allocating a dedicated budget to building infrastructure and delivering related projects to support walking, cycling and active transport modes. This budget could be drawn from and / or complement existing budgets within Waka Kotahi, EECA, Ministry of Health and Green Investment Fund.
- Deliver infrastructure, innovations, behaviour change campaigns and activations for active transport modes.
- Untethering and focusing the wealth of talent, currently siloed with limited powers, within councils and government agencies. This talent ranges from the health sector, urbanism and active transport.
- Facilitating and supporting active transport mode-shift programmes in government agencies, councils, businesses, organisations and community groups.
- Providing advice and reports to the Minister of Transport and the Climate Commission.

CONCLUSION

We recommend that the Ministry of Transport take into account the following points in relation to reducing transport emissions:

1. The importance of mode shift as a higher order strategic priority than transitioning the private car fleet to electric vehicles;
2. The major positive impact that public subsidies for electric bicycles could make to the speed with which people switch their journeys from cars to active modes, thereby reducing emissions and the importance of targeting such subsidies in ways that increase transport equity;
3. The importance of widespread, publicly accessible secure parking, charging and wayfinding facilities for electric bicycles as a key enabler of this transition from car journeys to active transport journeys;
4. The need for a greater focus from the government on the critical importance of strengthening the rules and planning tools that will make cycling safer; and
5. A dedicated commission for delivering the necessary mode shift to active transport required for us to meet our emissions targets.

Evidence indicates that supporting the swift and equitable uptake of eBikes is one of the best value for money interventions available to us to rapidly scale zero emissions transport. As well as emissions reduction it will deliver multiple benefits to physical health and mental wellbeing, economic prosperity and productivity, and community development. Supporting the equitable uptake of eBikes should be in the highest order of priorities for the Ministry of Transport and the government as a whole as the transport sector works to meet its targets in the forthcoming national emissions reduction plan

Thank you for consideration of this submission and we would welcome the opportunity to discuss these ideas with you further at your convenience.

EVIDENCE AND FURTHER READING

Locky Dock Case Study Video – showing the success of providing secure bike parking
https://youtu.be/LYHXiiHtEeQ

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Hīkina te Kohupara – Kia mauri ora ai te iwi

Transport Emissions: Pathways to Net Zero by 2050

Personal Submission

I am a cycling and walking advocate and am submitting on this mahi by pulling together many of the shared themes and concerns from Spokes Canterbury and Living Streets regarding transport emissions and how we can get to Net Zero by 2050

Our cities and towns should make sustainable, active transport a priority. These modes include cycling, walking, scootering, mobility device and public transport use. We need to stop planning for the private vehicle. There is enough, some would argue more than enough, already. If the right active transport infrastructure is provided and incentives given to change behaviours away from the private vehicle then active transport will increase and we will have a healthier, safer population with fewer transport-related emissions. But only with the right infrastructure people will be empowered and motivated to change their transport behaviours.

Safety

The more people traveling by active transport the safer it is for all.

Cycling and walking advocates would like to see a safe environment for those aged 8-80 to cycle, walk and used mobility devices. This may mean building maintained footpaths on both sides of the road, free from overhanging vegetation and footpath clutter. Separated cycleways, reduction in speed (from 50 km/hr to 40 km/hr in the urban setting) and safe ways to cross busy roads that give priority to cyclists and pedestrians are all incentives to active transport.

Bus and truck drivers need to be supported to attend mandatory training sessions on visibility and sharing the road (currently this is happening as a voluntary system). Side under-run protection needs to mandatory on all trucks. Freight needs to be moved off the roads into rail or shipping. Drivers who park or drive in cycle lanes, pass cyclists too closely, pass without adequate passing distance, or use cell phones need to be penalised.

Programmes like Bikes in Schools and walking school buses and active transport in schools in general need to be funded and provided with human resource.

Political risk

Government funding is critical to change our streetscape to be more Active Transport-friendly. This should be part of planned urban design, that provides convenience benefits for active transport ahead of private vehicle use. This can be in the form of short-cuts through alleyways or green spaces, and adding "live end" signage to "no exit" signage (a Living Streets campaign) where there are cycling and walking throughways.

Priority should be given to active transport users at signal-based crossings in high walking and cycling areas- in CBDs, around schools etc. In the Netherlands, in wet weather, cyclists (and presumably pedestrians) have a longer, more frequent crossing phases – a simple way to reduce time out in the rain and to maintain cycling numbers during inclement weather when the roads would otherwise become more private car-congested.

Government should investigate a subsidy program for commuter cyclists with businesses supported to provide bikes tax free to employees up to a certain limit.

Businesses, learning institutions, public transport stations and councils etc should be supported to provide end of ride/walk/run facilities – not only secure bike parking but also (preferably co-located) lockers and showers. It should be compulsory for all urban buses to have well-maintained bike racks and all trains to allow bikes at no extra charge for all hours of service.

Funding

Currently walking and cycling is underfunded at only 2.2-3.0% of the total transport budget. While acknowledging that this is a significant improvement on the past, it is still insufficient to make a different in the time frames required to shift private vehicle trips towards sustainable modes and thus mitigate transport emissions and their contributions to global warming. The Climate Commission report recommends a substantial increase to this funding and cycling and walking advocates agree. We'd like to see around 25% of national transport budget dedicated to active transport nationally with funding flowing through to support local governments. Even so, very effective changes to our streetscape do not have to be costly - an inexpensive solution to the proposed $685M walking and cycling bridge across Auckland's Waitematā Harbour (which will take five years to complete), would be to merely change one of the lanes to be cycling and walking only.

An increased budget would fund such things as upgrades to the most dangerous intersections for pedestrians and cyclists, particularly near schools, and the installation of walking and cycle counters so that there is data available to the public, and the cost/benefit able to be measured.

Just Transition

I don't expect everyone to want or be able to take up active transport but everyone benefits when more people walk and cycle. For the interested but unconfident would-be cycling community, programmes to get people cycling should be funded. Programme that provide free bikes, helmets and locks for communities at need also require financial support. In Christchurch there is Bike Bridge, which helps migrant and former refugee women learn to ride and get free bikes. There is also the Aranui Bike Fix Up, which has helped get 200+ free bikes in to the local community while teaching disadvantaged youth the

rudiments of bike mechanics. The BuyCycles project has supported over 250 people from the mental health and Corrections services buy bikes. These last 2 initiatives have a high uptake from Māori, Pacific groups. Other community bike fix ups in Christchurch- ICECycles, LJ and Friends and RAD, do excellent work across population groups but much time is spent on fund raising and volunteer recruitment and retention- there needs to paid resource to keep these essential services, and others like them across New Zealand, to support cycling. Living Streets advocacy is currently not funded and is done solely from a volunteer base. Ideally walking and cycling advocacy will not be needed at all as these become mainstream, intuitive and easy transport options.

Legislative changes

Cycling and walking must be made more attractive than travelling by car. Slower speeds, well maintained and lit footpaths and separated cycle lanes as part of the legal road need political will to be enacted and enforced. Cycling and walking advocates would like to see all urban speeds reduced to 40km, with 50km the exception rather than the rule. Allowing cyclists to turn left on a red light, and go through a T intersection at the top end (cycling by-passes) are easy to implement incentives to a more efficient and satisfying ride. Well maintained functional cycle parking close to entry at all major destinations including malls, supermarkets, schools and sports grounds need to be in place.

Currently all transport users on our roads have priority when going straight- except pedestrians Pedestrians need to be given right on way over turning traffic when going straight, and also have right of way where there is a car at a stop sign. This is the case in many other parts of the world.

Communication and Learning

There are many examples around the world which show that towns and cities with good public and active transport policies and infrastructure have improved economic, health and wellbeing outcomes of the population, while reducing emissions caused by the private, often single use, vehicle. Here in the New Zealand setting we need research to be supported into best practice for planning the alternative new urban designs and cycle infrastructure away from our car-dominated status quo.

Vehicular transport not only contributes to CO2 and other contaminants, frequent commuter travel can also create poor health and wellbeing. We need to work together to shift able bodied people from cars to public transport, cycling and walking.

Submission for the Ministry of Transport Green Paper, Transport Emissions : Pathways to Net Zero by 2050.

Introduction
We highly commend the direction the Ministry of Transport is taking in this Green Paper, and many of their recommendations. We hope that the Ministry and Waka Kotahi would go well beyond the recommendations by the Climate Commissions in cutting transport emissions, because that is absolutely necessary to limit the temperature increase within 1.5C.

About Us
The Zero Carbon Nelson Tasman group (ZCNT) was established in 2018 to bring about urgent local climate action in response to the IPCC's Special Report on Global Warming of 1.5 °C. We have a shared passion for research and public communication. Our goals are to: 1) mitigate regional emissions in line with limiting global warming to 1.5°C; 2) enable the Nelson–Tasman region to adapt to the impacts of climate change; and 3) enable an urgent and just transition to a resilient, low-carbon society. Members of Zero Carbon Nelson Tasman are Jenny Easton, Dr. Yuki Fukuda, Bruce Gilkison, Carolyn Hughes, Alistair Munro, Dr. Olivia Hyatt, Julie Nevin, Dr. Jack Santa Barbara, Dr. Joanna Santa Barbara, Dr. Aaron Stallard.

Consultation question 1
Do you support the principles in Hīkina te Kohupara? Are there any other considerations that should be reflected in the principles?

We support the principles, but an additional one should be included. Principle 8: Waka Kotahi and Ministry of Transport staff members must **lead by example** by moving away from relying on ICE vehicles and switching to active and public transport. You are leading the change and, therefore, need to be the role models for the entire New Zealand society of reducing unnecessary emissions by actively remote working, switching to cycling and walking from driving cars. Once you switch to cycling from driving cars, you will truly come to understand what needs to happen to make cycling infrastructure safer, for example, and will be in a better position to make appropriate planning and actions.

Consultation question 2
Is the government's role in reducing transport emissions clear?
Yes. However, we oppose the use of hydrogen fuel because it represents an extremely inefficient use of energy (we note that we are entering a time of energy scarcity) and has massive infrastructure costs. We acknowledge there may be rare situations where hydrogen fuel should be considered, but we recommend this be the choice of last resort and not be widely employed.

Are there other levers the government could use to reduce transport emissions?

We would like the government to set up an organisation and website like below to make cycling the central part of transition to the low-carbon transport:
Welcome to Cycling Embassy of Denmark - Cycling Embassy of Denmark (cyclingsolutions.info)

Endorse the government to change the law regarding driver's license to heavily penalise motorists who collide with cyclists. The Dutch government brought in legislation stating that primarily the motorist is liable for the damage incurred in accidents involving cyclists. An education campaign (e.g. a Dutch Reach; https://www.nzherald.co.nz/lifestyle/what-is-a-

dutch-reach-and-why-every-driver-should-use-it/4Z4IICUWVST6MSINKO4QBXGZCU/) for all drivers would increase the safety of cyclists. These will reduce health costs by preventing accidents and reducing rehabilitation costs. Many drivers fail to stop at pedestrian crossings. We would like cameras to be installed at some of the pedestrian crossings and drivers who decide not to stop for pedestrians should be sent heavy fines.

Request the government to change the driving speed limit from 50km/h to 30km/h in all urban zones because it will significantly reduce fatal accidents involving cyclists and pedestrians. This will lead to an increased uptake of active transport. We hope that one day that wearing a helmet for adults would become elective as biking becomes much safer in urban streets; New Zealand is one of few countries that wearing a helmet is mandatory. Helmets are, however, made of non-biodegradable, recyclable products and contribute to creating a large amount of waste. Currently, cyclists would have to spend money on high-vis jackets, lights and rear-view mirrors because cars pose a significant safety threat. These accessories should be made available to cyclists for free, by taxing the car drivers.

This document does mention behavioural change needs to happen at a nationwide scale. We believe that a public campaign like the anti-smoking one needs to target car emissions, and would like to see the following images used widely so people become aware of the negative effects of emissions.

STOP YOUR ENGINES!

Stopping air pollution by turning off your car

01

KEEP THE AIR SAFE FOR YOUR KIDS!

Idling cars spew out pollution linked to asthma, cancer, heart disease and chronic bronchitis

02

PREVENT GLOBAL WARMING!

Every 10 minutes your engine is off, you'll prevent one pound of carbon dioxide from being released

03

SAVE MONEY & FUEL!

You can save up to $650 each year by turning you car off instead of idling. And it doesn't take more fuel to restart your car

04

PREVENT ENGINE WEAR & TEAR!

Idling doubles the wear and tear on your engine by forcing it run long periods of time at lower speeds

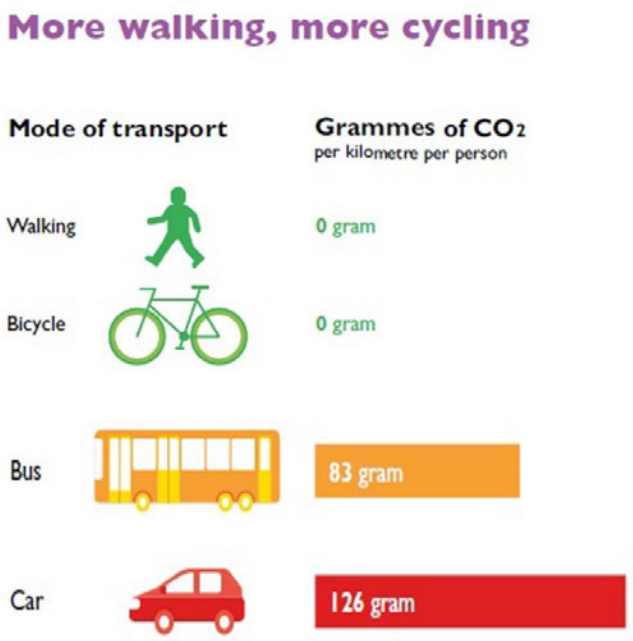
05

TURN OFF YOUR CAR IF WAITING MORE THAN 10 SECONDS

Idling for even 10 seconds wastes more fuel and creates more pollution than simply restarting your car

FOLLOW THESE STEPS TO SAVE MONEY AND THE EARTH!

Sources: US EPA & The Environmental Defense Fund



The above poster is based on Copenhagen's data. For NZ cars, the average emission is 209 gram per kilometre due to the prevalence of larger and older vehicles and SUVs here. However, this kind of image would be very useful in modifying behaviour.

Consultation question 3
What more should Government do to encourage and support transport innovation that supports emissions reductions?

Electric cargo bikes (mentioned on Page 50) have replaced family SUVs in countries, such as Denmark and the Netherlands. However, they are quite expensive and mostly unavailable in New Zealand. We would like the government to invest in this technology and build a local factory here in New Zealand, so electric cargo bikes that are suitable to NZ conditions could be produced. Denmark and the Netherlands are relatively flat countries but many urban areas in New Zealand have hills and often imported cargo bikes fail as they are designed for riding on flat areas only. Some of the E cargo bikes come with a rain/sun shelter and can carry up to four small children, or two children and a pram or grocery basket. Along with safer bike paths and sufficient parking spaces for E cargo bikes, these can transform the way many caretakers move themselves and children and reduce a large amount of emissions. The higher charges from importing SUVs or congestion charges should be used to incentivise E cargo bikes, so most families could afford these bikes. Ultimately, if E cargo bikes could be the preferred option for many urban families over SUVs, that would be the ideal goal. Old batteries from E bikes and E cargo bikes should also be recycled within New Zealand, rather than being sent overseas.

In terms of innovative street design, we would like more women, particularly those caring for children, to be consulted so their opinions are heard. Women have different feelings towards road safety than men, and cycling and walking paths need to be built so women can feel safe using them.

We would also like bike shops to accommodate the needs of our diverse cultural groups as well. Many bikes currently sold in bike shops tend to be for recreational purposes, suitable for European men and women who are reasonably fit. For many Asians, these types of bikes are not something they are accustomed to or feel comfortable riding, but prefer the type below. The standard Japanese bikes are typically designed with grocery shopping or commuting to work/education as main purposes, so they come with a front basket. The lock can be operated with one hand (as opposed to many NZ bike locks that require two hands, which is not safe if you need to hold onto a toddler with one hand near parking spaces). We hope that the government does research on what types of bikes are 'standard' in other countries and makes these available to meet the needs of our diverse residents.

Photo: Bikes that can carry two small children. Bike shops in Japan typically have a wide range of these bikes (including E bikes) displayed and ready for sale (which creates the 'norm'). In NZ, child seats are almost always 'optional' (with extra cost, and it sends the message that it is not the norm).

To make cycling safer, LED lights are a common feature of Copenhagen cycle ways (see Cat-Eye Devices in the picture below).

Curb Barriers

Physical separation from motor vehicles

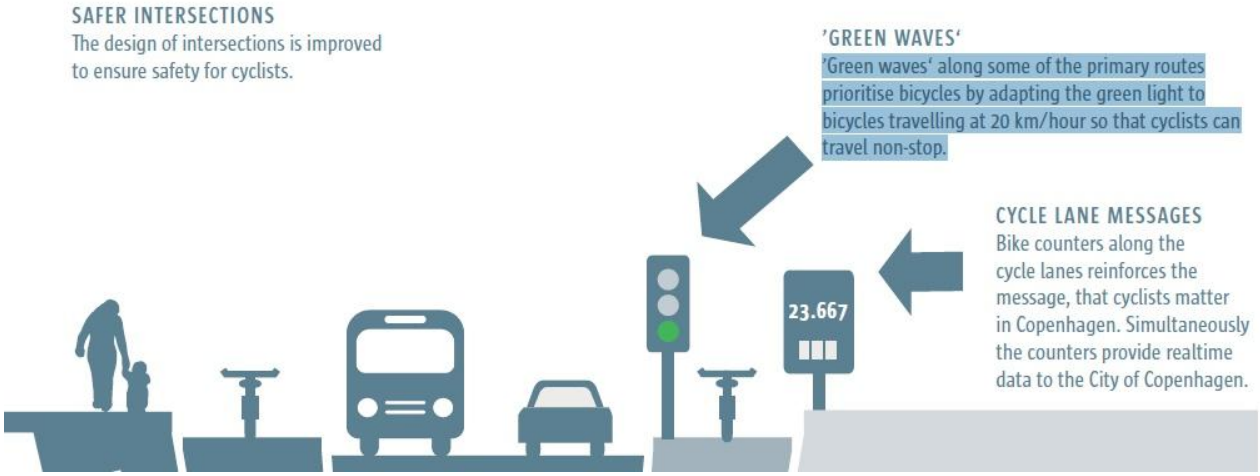
Cat-Eye Devices

Cat-eye type devices providing the separation

Wide White Lines

Double width, white line separating cars from cyclists.

Also, to monitor the number of cyclists (and, therefore, the success of innovation), bike counters should be installed along many cycle lanes (see below). Synchronised cycle traffic lights allow cyclists in Copenhagen to travel at 20km/hr without having to stop too often. The goal is to make cycling the faster, easier, cheaper and most convenient way to get around cities, rather than driving.



Technological innovations for car-pooling should be improved. When people purchase a ticket to an event, they should be asked how they are planning on traveling and whether they are willing to take extra passengers from streets nearby and how many. Software could identify potential people who can car-pool together, to reduce the emissions from single-occupant drivers.

Technological innovation on building roads using less carbon emission should be investigated as road construction emits large volumes of emissions.

Consultation question 4
Do you think we have listed the most important actions the government could take to better integrate transport, land use and urban development to reduce transport emissions? Which of these possible actions do you think should be prioritised?

Building higher density and mixed used urban forms should be prioritised and needs to start as soon as possible to avoid more urban sprawl.

We would like the government to allocate increased funding to create more innovative streets that are inclusive of all road users. These projects should be rolled out so at least two blocks of streets are inclusive in every suburb to start off with, because it is a great way of shifting transport behaviour. One of our members lives on a street that is involved in an Innovative Street project (Tasman District Council/Waka Kotahi), and her family has experienced major improvement in wellbeing from various traffic calming measures. The blocked road (for cars), in particular, has made the street so much safer that cycling with her child has become a lot more enjoyable.

Consultation question 5
Are there other travel options that should be considered to encourage people to use alternative modes of transport? If so, what?

There are many school trips and it would be nice if buses are available for taking students to these, rather than parents having to drive cars to take the children. Community-shared E van made available for rural communities. This could act as small 'bus' services with more flexibility.

Consultation question 6
Pricing is sometimes viewed as being controversial. However, international literature and experiences demonstrate it can play a role in changing behaviour. Do you have any views on the role demand management, and more specifically pricing, could play to help Aotearoa reach net zero by 2050?

We believe that congestion and parking charges would reduce single-occupant cars, and hence lead to a reduction in transport emissions. Distance-based road user charges need to be carefully considered. This is because rents are often much higher in inner cities, so the lower income people are often having to live much further away from urban areas and having to travel further to come into the cities/towns. If distance-based road user charges could be waived for low income people (particularly those on benefits), we believe that it could be effective because more affluent people might try to reduce car trips. Similar consideration should be given to smart road pricing.

Consultation question 7
Improving our fleet and moving towards electric vehicles and the use of sustainable alternative fuels will be important for our transition. Are there other possible actions that could help Aotearoa transition its light and heavy fleets more quickly, and which actions should be prioritised?

We agree with introducing a fuel efficiency standard and would like to see the same standard as the EU's adopted for imported cars as soon as possible. Like Energy Efficiency labels, we recommend that the government implement clear labelling accompanied by a public campaign, so that car buyers can understand which cars emit less greenhouse gasses.

We would strongly recommend that more electric rail systems be established throughout New Zealand, to be made available for moving people as well as freight.

In relation to EV's safety, currently the second hand imported Nissan Leaf (the EV driven most in NZ) only comes with a Japanese dashboard and manual. It should become compulsory for car companies to have an English-language dashboard installed before selling a Leaf, and to have an English manual made available with every purchase to increase safety of driving these. In relation to speeding up EV uptake, the government could make it compulsory for any accommodation providers (hotels, motels etc) to provide EV slow charging stations in their car parks because, currently, it is up to the provider and the numbers are limited. EV uptake would speed up significantly if potential buyers could 'borrow' an EV for up to a week, so they can charge the car at their own home and learn how things work. We strongly agree that low income households would benefit from EVs because they tend to travel further into towns and cities, live in areas with higher air pollution and have more children to transport than higher income households. However, if the government were to provide incentives for low income groups to purchase EVs, it is important that higher income groups do not try to purchase these EVs from the low income groups.

We disagree with replacing fossil fuel with biofuel. Biofuel is water intensive and also has a low EROI. "Biofuel production is characterised by low EROI values, especially relative to historic fossil fuel EROI values. Reviewing bioenergy EROI estimates, Rana et al. (2020) find gross EROI values for bioenergy production systems ranging from 0.08 to 1.84:1 for synthetic natural gas from microalgae, to 14.7–22.4:1 for biogas from corn. Assessing rapeseed production for biodiesel in Europe van Duren et al. (2015) concluded that the maximum gross EROI was 2.2:1. These estimates evidence the limited capacity of biofuel production to maintain a sufficient net energy supply to society" (Marshall, Z. and Brockway, P.E. 2020. A Net Energy Analysis of the Global Agriculture, Aquaculture, Fishing and Forestry System. Biophysical Economics and Sustainability (2020) 5:9 DOI: 10.1007/s41247-020-00074-3).

Consultation question 8 (Page 76)
Do you support these possible actions to decarbonise the public transport fleet? Do you think we should consider any other actions?

We strongly support these actions to decarbonise the public transport fleet. For those who prefer more flexibility, we recommend that the government would make 'hitchhiking' points available, too. In Cuba, it is compulsory for the (local and national) governmental car drivers to pick up hitchhikers. In some cases, community-owned E vans should be used as a bus to add more flexibility and affordability, particularly in rural areas.

Consultation question 9 (Page 79)
Do you support the possible actions to reduce domestic aviation emissions? Do you think there are other actions we should consider?

A significant reduction of airplane use should become a priority, instead of trying to replace fossil fuels with biofuel in order to maintain the industry that is not compatible with the net zero carbon goal. We recommend online webinars, meetings, conferences for all governmental agencies, local councils, businesses, education institutes **whenever possible** to reduce aviation emissions. Currently, many organisations still prefer to meet face to face

and people who refuse to fly for meetings are being alienated and marginalised from decision-making processes. Waka Kotahi and the Ministry of Transport must lead the education campaign to challenge this mentality and shift people's attitudes towards "*not flying saves lives (from the effects of climate change). Not flying is being kind and considerate for the needs of our future generations*". The same is true for international travelling - we must educate the public to reduce their expectations so that they come to understand that the unrestricted air travels and the climate goals are simply incompatible. To facilitate this, a high tax should be added for domestic (e.g., $100 per person) and international travel ($500 per person). As seen in France, short distance airplane flights should be removed completely.

Consultation question 10 (Page 86)
The freight supply chain is important to our domestic and international trade. Do you have any views on the feasibility of the possible actions in Aotearoa and which should be avoided?

The current manner of 'online shopping' is one of the major causes of unnecessary emissions from truck deliveries. For example, for many parents it was compulsory to order children's school stationery from Officemax this year, and they delivered these to *individual* households. For example, some of our members live in Nelson and the stationery was delivered from Christchurch by freight. This is completely unnecessary and the government should make it compulsory for all schools to order their stationery and have it picked up by the parents from the schools. The crucial part is, again, public education campaigns on the impact of online shopping and delivery. If the parents understand that emitting CO2 via freight services now would impact *at least* 32 generations (because 20% of CO2 emitted is likely to continue heating the planet for at least 1,000 years), we believe that many would be willing to make some sacrifices by accepting less convenience and a longer delivery time. We hope that the government would provide incentives aimed at eliminating unnecessary freight emissions through a much better trip plan and freight volume management.

There are other areas of improvement in reducing refreight emission. For example, some of produce grown in Nelson is being sent to Christchurch for packaging and then sent back to Nelson supermarkets. The government must endorse supermarkets to minimise freight emissions by working together and monitoring their emission reduction plans including packaging. Food, for example, should accompany food mile labels so consumers could make an informed decision as to which food was grown (and packaged) locally.

Consultation question 11 (Page 97)

Decarbonising our freight modes and fuels will be essential for our net zero future. Are there any actions you consider we have not included in the key actions for freight modes and fuels?

We oppose the use of hydrogen fuel because it represents an extremely inefficient use of energy (we note that we are entering a time of energy scarcity) and has massive infrastructure costs. We acknowledge there may be rare situations where hydrogen fuel should be considered, but we recommend this be the choice of last resort and not be widely employed. Reducing the need for freight is important as we cannot continue to emit. To do this, non-locally grown food and goods should become more expensive than locally-grown

food and produce. The tax on the non-local produce can be used to facilitate further local production and manufacturing.

We highly recommend more coastal shipping to replace land transport by trucks. We would also like more E Vans to be used for transport, rather than trucks. Trucks cause the majority of damage to our roads, so the road tax should be raised for trucks.

Consultation question 12 (Page 104)
A Just Transition for all of Aotearoa will be important as we transition to net zero. Are there other impacts that we have not identified?

While low-income groups will not necessarily face higher costs to purchase ICE vehicles, they do currently face financial barriers for shifting to cleaner vehicles.

We do not agree with the above statement because some low-income groups are struggling to have their cars simply registered and/or have a warrant of fitness. When their ICE vehicles need repairs, some are unable to pay for it, let alone buy another second-hand ICE vehicle to replace it.

As discussed in the report, to reduce transport inequality, more statehouses need to be built in urban areas so that low income families could live close to work, schools and supermarkets etc and be able to use public or active transport. In some cases, car park spaces should be replaced with high density apartments or, high density apartments could be built above existing car parking areas.

For low income families who live in and near urban areas, free or highly-discounted E cargo bikes should be provided. This could be gained from higher charges on SUV imports. ICE vehicle mechanics could be retrained to be able to service bikes and E bikes.

Consultation question 13 (Page 122)
Given the four potential pathways identified in Hīkina te Kohupara, each of which require many levers and policies to be achieved, which pathway do you think Aotearoa should follow to reduce transport emissions?

We strongly advocate for Pathway 4 to be adopted to reduce transport emissions. This is the closest pathway that would achieve the target set down in the Commission's draft advice. Our view is that Commission's recommendation still falls short and we should be aiming for faster and higher emission cuts to avoid the temperature increase of over 1.5C. Fast, effective and far-reaching public education campaigns on the negative impact of transport emissions on our health, safety and prosperity of the planet could change people's awareness and attitudes towards driving ICE vehicles quickly. Once the attitudes change and alternative methods become available, we can transform the way we move around and transport our goods. Before COVID, most people never thought working from home was possible. People's attitudes could change quickly once they understand why they need to change the way they work and travel, and try something new under new necessity. We think that the ban on ICE vehicle import should be brought forward to 2025.

The ways to reduce transport emissions are countless. For example, transport emissions could be hugely reduced by growing your own fruit and vegetables and sharing these

produce with neighbours and friends. This reduces the amount of goods that are transported to and from supermarkets if many people adopt them. Similarly, if most people used a compost bin at home, transport emissions from collecting organic rubbish could be reduced, as well as a reduction in methane being produced from rotting food from landfill. We recommend that the government make subsidies for compost bins so they will become affordable, and be a part of a normal feature of most kiwi homes. Also, the DIY culture inherently reduces emissions because tradespeople do not have to travel to your house. Upskilling, sharing DIY skills and tools within communities along with funding and establishing TimeBank in every town of New Zealand could reduce transport emissions while increasing community resilience.

We do not support Pathway 3 because it relies too much on EVs to replace ICEs and, hence, it will lead to little behavioural change. EVs can be a short term replacement but not a long-term option because the net energy available to society is being reduced very rapidly. In other words, oil (that is required to manufacture and transport EVs) is becoming less and less available in the near future because the high energy oil from easy to obtain areas has been depleted already. The energy return on energy invested at the user-end stage of oil was found to be 6:1 in 2011 (Brockway et al., 2019) and this value is getting lower each year. This means that the true transition must involve the majority of people using public and active transport, rather than relying on cars (whether EVs or not) in the long-term.

We note that "*The government should pursue urban development and land use changes that support emissions reductions from transport as soon as possible*." on page 112 of the document. We strongly advocate that this needs to have a long-term perspective. Sea level rise is likely to claim many parts of our coastal roads and cities. Nevertheless, currently many local governments are still trying to push for high density buildings and new development in highly vulnerable inundation zones including CBD. Sea level is highly likely to rise by another 30 cm by 2060 (IPCC 2018 report), this is unwise and simply a waste of public money. Instead, we should be planning now for managed retreat and building roads and townships away from the sea and rivers that are likely to cause inundation problems.

So far, Waka Kotahi has failed to provide emission data for any of the public consultations (e.g., Nelson Future Access Project) and therefore, the public cannot make informed decisions on which strategies are better in terms of reducing transport emissions. The data on emissions from building roads and/or cycleways and the estimated emission reduction likely to be achieved from each strategy should be made available at the initial consultation stage. We hope that this will become mandatory like the financial costs disclosed to the public.

Consultation question 14 (Page 134)
Do you have any views on the policies that we propose should be considered for the first emissions budget?

We believe that we need to reduce transport emissions faster and a lot more than what has been proposed in the first emission budget. This can happen, for example, by allowing cycle lanes over the Auckland Harbour Bridge. It really needs to start from the shift in the whole mentality of Waka Kotahi and Ministry of Transport employers. Therefore, we strongly recommend that everyone who works for these organisations to take up active and public transport for at least a month, so they become familiar with the need for pedestrians, cyclists

and bus/train commuters. Also, we advise that you employ more women, particularly Maori, Pacifica and other people of colour, and people from low-income groups in the managerial positions as both organisations are dominated by white male. Diversity will bring more creativity, imagination and inspiration to designing better city/town/cycleways/walking paths. Diversity will help get the urgent message of carbon reduction across our communities. Leading by being the change you want to see, and truly embracing diversity in thinking will help Aotearoa with the necessary and urgent transition.

References:

Brockway et al., 2019. Estimation of global final stage energy-return-on-investment for fossil fuels with comparison to renewable energy sources. Nature Energy, 4 (7): 612-621. Estimation of global final-stage energy-return-on-investment for fossil fuels with comparison to renewable energy sources (whiterose.ac.uk)

SUBMISSION TO

Hīkina te Kohupara – Kia mauri ora ai te iwi: Transport Emissions: Pathways to Net Zero by 2050

1. EXECUTIVE SUMMARY

1.1 The New Zealand Airports Association ("**NZ Airports**") welcomes the opportunity to provide a submission on the Ministry of Transport's Hīkina te Kohupara – Kia mauri ora ai te iwi: Transport Emissions: Pathways to Net Zero by 2050 (the Green Paper). As the owners and operators of the aviation sector's essential infrastructure, all passenger and airfreight services land and depart from our facilities. Of most significance for aviation's de-carbonisation, aircraft serving international and regional destinations are re-fuelled at our airports.

1.2 We believe that the Ministry's Green Paper has described very well the issues concerning aviation-related emissions.

1.3 We note the essential role that international and domestic aviation plays in providing New Zealand's economic prosperity and social connections. We also highlight the technological and economic challenges to decarbonising aviation, and set out how the airport sector will play its part.

1.4 NZ Airports is supportive of the New Zealand's Governments goal of decarbonising transport. We endorse the Green Paper's approach that decarbonising New Zealand's aviation sector needs to be focused on changes that are technologically possible at this time while also studying, enabling, and then encouraging the necessary future technological changes that will be required to achieve decarbonisation.

1.5 NZ Airports supports:

(a) Continuing to use the ETS as the main policy lever to decarbonise activities in New Zealand. This is mode-neutral policy and reflects that 'carbon is carbon'.

(b) New Zealand's continuing participation in the CORSIA scheme.

(c) Continuing to have aviation emissions reduction policies administered by the Ministry of Transport, and a policy framework that provides clarity and stability to the sector.

(d) The creation of an aviation sector decarbonisation strategy as suggested in the Green Paper. NZ Airports wishes to be part of this strategy's development.

1.6 We do not support aviation-specific pricing mechanisms to reduce demand for passenger services. Such interventions would have a disproportionate impact on remote and regional New Zealanders.

1.7 While international aviation emissions are not currently included in most national inventories, we are a sector concerned about making our contribution to addressing climate change risks – both in terms of mitigation and adaptation.

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1.8 New Zealand should have a stable aviation emissions strategy and NZ Airports would support its implementation in the mission to transition to a low-emissions economy. Airports, like other businesses, require frameworks that can deliver stable, clear policies and associated regulations, and minimise compliance and transaction costs.

2. THE NEW ZEALAND AIRPORTS ASSOCIATION (NZ AIRPORTS)

2.1 NZ Airports is the industry association for New Zealand's airports and related businesses. Its members[1] operate 42 airports across the country including the international gateways to New Zealand. This infrastructure network is essential to a well-functioning economy and enables critical transport and freight links between each region of New Zealand and between New Zealand and the world.

2.2 New Zealand's airports are part of our nation's core infrastructure, delivering connectivity that our regions need to succeed. Airports are defined as 'strategic assets' under the Local Government Act 2002. Also, 21 airports are identified as 'lifeline utilities' under the Civil Defence Emergency Management Act 2002 and provide important resilience capability.

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4. VALUE OF AVIATION TO NEW ZEALAND

4.1 The necessity and value of aviation to New Zealand's economy and to New Zealanders cannot be over-stated.

4.2 Due to its geographic isolation, small population size, and open economy, New Zealand is the OECD member most heavily dependent on international aviation services, and that those air connections remain high frequency, efficiently run and affordably priced.

4.3 A further factor making New Zealand economically and socially dependent on economical and efficient international aviation linkages is that our per-capita GDP is substantially

[1] Our member airports: Ardmore Airport, Ashburton Airport, Auckland Airport, Bay of Islands Airport, Chatham Islands Airport, Christchurch Airport, Dunedin Airport, Gisborne Airport, Hamilton Airport, Hawkes Bay Airport, Hokitika Airport, Invercargill Airport, Kaikohe Airport, Kaitaia Airport, Kapiti Coast Airport, Marlborough Airport, Masterton Airport, Matamata Aerodrome, Motueka Airport, Nelson Airport, New Plymouth Airport, North Shore Airport, Oamaru Airport, Palmerston North Airport, Queenstown Airport, Rangiora Airfield, Rotorua Airport, Takaka Airport, Taupo Airport, Tauranga Airport, Timaru Airport, Wairoa Airport, Wanaka Airport, Wellington Airport, West Auckland Airport, Westport Airport, Whakatane Airport, Whanganui Airport, Whangarei Airport

lower than the OECD average. Higher costs and hence higher priced international and regional flights will have substantial, and relatively greater, detrimental effects on New Zealanders than in comparable nations.

4.4 For similar reasons, we do not support aviation-specific pricing mechanisms to reduce demand for passenger services. Such interventions would have a disproportionate impact on remote and regional New Zealanders.

4.5 New Zealand is the most geographically isolated developed nation on Earth. The shortest distance from any New Zealand airport to any other developed nation's airport is 1,830km between Dunedin and Hobart, Tasmania. The minimum distance between New Zealand and an equivalent sized population is 2,450km (Auckland to Sydney). Looking further beyond Trans-Tasman flights, journeys by air to the world's major population and economic centres are several hours long and many thousands of kilometres.

4.6 Unfortunately, New Zealand does not have the option of easily decarbonised international road links or the very low emission cross-border rail transport that are options for other nations' decarbonising their international links. Sea transport requires very long transportation timeframes. For international travel, aviation is the only realistic timely option.

4.7 The sharp reduction to air freight capacity caused by COVID-19 is a very good illustration of the economic necessity to New Zealand of having sufficient air freight to allow rapid export and import of high value and/or perishable goods. The New Zealand Government has (to date) committed $542m subsiding air freight services through the International Airfreight Capacity and Maintaining International Air Connectivity schemes to make sure those goods (including essential medical supplies) were rapidly available to New Zealanders and enabled generating export income from perishable foods.

4.8 Domestic aviation is of equal importance to New Zealanders for similar reasons. New Zealand has difficult geography for building land transport infrastructure, low population density, and lacks economically viable alternative modes of rapid transport outside of the Auckland-Hamilton region. New Zealand's two elongated islands, each with substantial mountain ranges running the length of the centre, make cross-island or lengthways land transport expensive and time-consuming.

4.9 Low population density and difficult terrain has led to rapid road and rail transport links being largely underdeveloped, particularly for passenger transport. For example, driving a vehicle from the two extremes of Cape Reinga and Bluff takes 29 hours, including an often-delayed sea ferry trip. Car travel between the main population centre Auckland to the capital Wellington is eight hours. Ground transport between Wellington and Christchurch is by sea ferry and road, taking over $8^1/_2$ hours. We note that, in common with road transport, aviation reaches every region of New Zealand. Rail journeys in contrast take similarly long lengths of time, while not all parts of New Zealand are reachable by the rail network. Coastal shipping and ferries take far longer than other transport modes. In summary, for longer journeys aviation is the only time-efficient transport mode.

5. TECHNOLOGICAL SOLUTIONS FOR DE-CARBONISING AVIATION ARE IN RAPID DEVELOPMENT GLOBALLY

5.1 Private sector global corporations in the commercial engine and airframe manufacturing sector are energetically seeking technological advances that will deliver low or zero carbon flights. There are tremendous commercial advantages to be gained by being first to market with a deliverable and certified solution.

5.2 NZ is an importer of aviation equipment and must use aircraft, engines and fuels certified for use by global agencies. This limits New Zealand aircraft operators' freedom to adapt new low or zero emission technologies.

5.3 In addition, it is highly likely that these new technologies once certified will initially have a very constrained supply and be in very high demand as airlines compete to purchase them to meet national or global emission reduction mandates. This could cause the new technology to be very expensive in the short to medium term and New Zealand's aviation sector may not be able to purchase it easily.

5.4 Hence, policy decisions attempting to 'pick a technology/fuel winner' is foolish for a small, technology-importing nation such as New Zealand. It is essential that New Zealand Government's policy and regulation settings keep our aviation sector's options open for new technology.

5.5 Currently, electric aircraft are constrained in range and payload by the energy density provided by existing battery technology. There is an emerging consensus that electric aircrafts' first use in commercial service will be short-haul routes using smaller aircraft.

5.6 With current battery technologies, electrification of inter-regional flights will likely result in a greater number of flights in the necessarily smaller aircraft, and possibly changes to the current patterns of hub and spoke routes. The increased number of flights if smaller aircraft proliferate will highlight the necessity for New Zealand to have an efficient Air Navigation System.

5.7 For de-carbonising international air travel and freight, ensuring adequate supplies of Sustainable Aviation Fuels (SAF) in the short to medium term will likely be critical as it is the only technology currently available for decarbonisation of long-haul flights. Although new technologies are in development, there are currently severe constraints with battery weight and range, and with hydrogen storage, and this will probably remain the case for many years.

5.8 NZ Airports submits that the New Zealand Government should give serious and careful consideration to subsidies supporting domestic production of SAF, so as to ensure a domestic supply and to close the price and supply reliability gap between fossil-derived fuels and SAF. A biofuel mandate, and/or subsidies to foster a domestic industry are two possible policies that could be used to establish a viable SAF sector in New Zealand.

6. CO-ORDINATION ACROSS THE AVIATION SECTOR IS ESSENTIAL

6.1 Aviation is a very highly integrated and regulated sector because it has an absolute priority on safety and reliability. No part of the industry is able to operate safely or change its operations without the support of other parts. Major reductions in aviation emissions will require all sub-sectors cooperating with, and enabling changes by, other sub-sectors.

6.2 NZ Airports notes with approval that several parts of the Green Paper highlight the need for the Government to act in co-operation with transport sectors to set out a pathway for de-carbonisation. Airports are the most diverse sub-sector within New Zealand aviation, and we have the greatest need for a sector decarbonisation strategy and for government to have clarity of direction.

6.3 Future government actions include that from aviation regulators. The Green Paper states that "the Government has a role making sure that regulation supports, encourages … the uptake of positive innovations (and does not hinder it)". NZ Airports has identified that the Civil Aviation Authority will firstly need to have clearly scoped which aviation regulations require to be examined to determine if those regulations are barriers, and secondly to then move expeditiously through an appropriate and safe updating process.

6.4 Globally, the aviation sector is co-ordinating rapidly through existing groups such as ICAO, IATA and ACI, and other new groups being formed at the national or regional levels. The sector's global efforts to decarbonise begin with the International Civil Aviation Organisation (ICAO) and the international peak bodies for airports (Airports Council International - ACI) and airlines (International Air Transport Association – IATA). The Air Transport Action Group (ATAG) is a highly respected association that represents all sectors for the air transport industry and enables the different sectors to work together on sustainability issues.

6.5 Political entities such as the European Union have set targets for aviation's decarbonisation. The aviation sector within those regions and nations have responded by forming sector-based initiatives to meet those targets.

6.6 This pro-change dynamic also needs to occur in New Zealand, with the different sub-sectors and regulators willingly and at the right time discussing what changes could occur and how that can be achieved within the regulatory and policy frameworks.

6.7 NZ Airports has identified a need for airports to be aware of the infrastructure and energy requirements for the next generation of aircraft. In order to support those aircrafts' operations across the air network, New Zealand's aviation sector needs to soon start researching, planning and eventually investing in this infrastructure.

6.8 NZ Airports wishes to be part of the aviation's sector de-carbonisation strategy suggested in the Green Paper.

7. AIRPORTS SECTOR APPROACH TO DECARBONISING AVIATION

7.1 The New Zealand airport sector's approach to decarbonisation is four-fold. Airports will progressively in coming years:

- Lower their own emissions from their ground operations and infrastructure,
- Be timely enablers and supporters of aircraft operators' changes to new fuels and new aircraft engines,
- Support and cooperate with other parts of aviation sector – such as air navigation service providers - to improve flight efficiency and flight times, and reduce aircraft fuel burn, and
- Work with local government and other public transport providers to reduce emissions from land travel to and from airports.

7.2 Airports' actions that lie fully within our control include moving to low/zero emission terminal heating and lighting, and waste management practices that reduce the quantity of waste that goes to landfill.

7.3 Other changes within airport boundaries will require co-operation with third parties. Even activities that take place airside on airport campuses can involve close collaboration between industry participants, for example:

- subcontractors to airlines operate ground service vehicles that could become battery powered,
- third-parties servicing aircraft such as catering or fuelling could also use electric vehicles,
- airports providing ground power at gates to reduce aircraft using their own onboard auxiliary power units (essentially small jet engines)

7.4 Airports can also move further towards decarbonisation when replacing their current infrastructure by building where possible with low or zero alternative technologies when these are available, and then operating that future infrastructure and terminals with low or zero carbon energy sources for heating and lighting.

7.5 This type of innovative thinking when rolled out across airports in New Zealand could have a material impact on aviation emissions.

7.6 However, airports are not the major source of aviation's emissions. Both the Green Paper and the airport sector recognise that the great majority of aviation's emissions is from the burning of fossil fuels.

7.7 Airports' greatest contribution to decarbonisation will be through proactively assisting other parts of the aviation sector to change to using low or zero carbon alternative fuels, and also improving their own operations and so reduce use of the current fossil fuels.

7.8 For example, airports can enable and facilitate aircraft operators' change to Sustainable Aviation Fuels (initially at least), and then to hydrogen or electric powered engines.

7.9 Airports can also assist flight operations by aircraft operators and Air Navigation Service Providers (ANSP) become more efficient and so reduce fuel burn.

7.10 Higher levels of co-operation between airports and airlines could improve on-time departures and arrivals so reducing the amount of engine idling while waiting for a gate or departure slot. This also reduces distant 'knock-on' effects across the network.

8. EMISSION REDUCTIONS BY SOME AIRPORTS IS ALREADY OCCURING

8.1 The Airports Council International has a long-established program known as Airport Carbon Accreditation (ACA) for individual airports to follow a staged process of decarbonising and having that progress independently verified. The ACA programme is based on international standard ISO14064-1:2018.

8.2 Several airports in New Zealand are using the ACA process to help reduce their emissions and are already changing how they operate and build in order to reduce their overall emissions produced by ground operations and infrastructure.

8.3 For example, Christchurch International Airport Limited (CIAL) first started independently auditing their carbon footprint in 2007. In 2020 CIAL developed an Emission Reduction Plan that detailed the initiatives required to meet their long-term goal of absolute zero emissions by 2050. This included setting targets to reduce CIAL's Scope 1 and 2 emissions against their FY15 baseline, which includes achieving 85% emissions reduction by 2035.

8.4 Some of the projects undertaken by CIAL to reduce emissions include:

- Replacement of their diesel and LPG boiler system with an innovative clean ground source heating and cooling system
- Electrification of their commercial vehicle fleet
- Installation of Ground Power at Gate for aircraft to use instead of jet fuel
- Waste Minimisation Strategy designed around the concept of a circular economy
- Sustainable Procurement practices that embed carbon reductions into our supply chain practices
- Design Building Guidelines that seek to minimise embodied carbon emissions in new builds
- Internal Carbon Budgets reflected quarterly within the business to all cost centres
- Investigation of onsite renewable energy to provide for future aviation needs

- Development of a Stakeholder Partnership Plan to influence those emissions outside our direct control

8.5 In November 2020, CIAL was recognised as the first airport in the world to reach the highest level of carbon reduction best practice, as recognised by Airport Council International's ACA Programme.

8.6 Another example of an airport reducing its emissions is at Hawke's Bay Airport, where the board recently set a target of net zero Scope 1 and 2 carbon emissions by 2030. Over the last three years of tracked Scope 1 and 2 emissions, HBAL's carbon emissions have been at less than 50 tonnes per annum.

8.7 Hawkes Bay Airport has also joined the ACA scheme and has recently achieved Level 2 accreditation which recognises the 12% reduction (per passenger) in carbon emissions already made.

8.8 This airport is integrating decarbonisation into all its asset and efficiency planning with a Decarbonisation Plan, which has identified more than 42 projects ranging from small operational changes to large scale projects.

8.9 Hawkes Bay Airport's plans include:

- Transitioning away from fossil fuel vehicles
- Producing on-site renewable energy from a solar farm
- Purchasing certified renewable energy
- Upgrading carpark lighting to LED or solar lights
- Installing electric vehicle charging stations
- Providing secure undercover bike parking, maintenance station, charging capability for E-bikes, additional outdoor bike racks and seating
- Working with airlines to trial new technologies such as hybrid / electric aircraft, route development and ground services
- Ensuring businesses building on airport land are likeminded in their approach to sustainability

8.10 Hawkes Bay Airport's recent terminal upgrade enables further energy efficiencies and waste minimisation such as:

- upgraded recycling bins and systems
- working alongside its café tenant to reduce single use plastic and design waste out of the system
- water bottle refilling station
- removing waste bins from office desks and implementing a three-bin system to the staff areas
- Full LED lighting
- More efficient building heating and cooling systems
- Bathroom hot air hand driers eliminating waste from paper hand towels
- Occupancy lighting sensors for less used spaces such as meetings rooms
- Water efficient bathroom fixtures with sensors

8.11 These examples of airports decarbonising illustrate that how an airport can reduce its emissions varies according to its circumstances, and where or how its emission reductions can best be achieved.

9. PUBLIC TRANSPORT TO/FROM AIRPORTS

9.1 Scope 3 emissions in relation to airports also include the land transport emissions from passenger, freight, and staff travel to/from the airports, and for staff business travel.

9.2 As major transport infrastructure within its locality, public transport services are usually available for individuals to arrive at or depart from airports, subject to sufficient demand and the timing of that demand. This in turn is driven by the scale and timing of regular scheduled passenger flights.

9.3 In New Zealand, public transport is a Local Government responsibility (at either the regional council or local authority level) and these authorities either own or contract public transport operators. By a fortunate co-incidence, almost all airports receiving regular scheduled passenger services have some level of local government ownership, so the one organisation owns and/or has some control over both public transport and the local airport. This might provide in the future some synergy for greater integration of aviation and land transport systems.

9.4 All airports are serviced by taxis with a high proportion of hybrids in the taxi fleet, and the major airports also have car sharing services available where such services exist in the locality. It is likely that car share options at airports will grow with the development of car share schemes based in regional towns and cities, and from greater take-up in the major cities where they are already established.

9.5 Several airports already provide EV charging stations in carparks, and this service can readily expand to match demand from EV drivers.

10. SPECIFIC CONSULTATION QUESTIONS

10.1 **Consultation question 6 - Do you have any views on the role demand management, and more specifically pricing, could play to help Aotearoa reach net zero by 2050?**

We do not support aviation-specific pricing mechanisms to reduce demand for passenger services. Such interventions would have a disproportionate impact on remote and regional New Zealanders.

10.2 **Consultation question 9 - Do you support the possible actions to reduce domestic aviation emissions? Do you think there are other actions we should consider?**

We support these possible key actions listed in the Green Paper:

- As technology advances, consider its implementation for Aotearoa, e.g. wider use of electric planes.
- Support research, development and production of sustainable aviation fuel.
- Examine if the current air navigation system is effective or could be more efficient.
- Implement operational improvements such as better air traffic flow management and improved navigation to reduce fuel burn.

We support these additional actions:

- The New Zealand Government giving serious and careful consideration to subsidies supporting domestic production of SAF to ensure a domestic supply and to close the price and supply reliability gap between fossil-derived fuels and SAF.
- Creation of an aviation sector decarbonisation strategy.
- A scan of current aviation policies, rules and regulations to identify any that need review regarding barriers to decarbonisation.

Date: 25 June 2021

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SCION
FORESTS ▪ PRODUCTS ▪ INNOVATION

25 June 2021

To: Ministry of Transport

From: Scion (the NZ Forest Research Institute LTD, trading as Scion)

Contact: s 9(2)(a) [redacted]

Re: Hīkina te Kohupara: Kia mauri ora ai te iwi - Transport Emissions: Pathways to Net Zero by 2050

1. Key Points

- The value of an expanded forest estate as a source of feedstocks for a liquid biofuels industry and a permanent (although finite) carbon store is undervalued.
- There is a real opportunity for liquid biofuels to support the transition from ICE to PHEVs and EVs at a lower GHG emission than transitioning straight off existing liquid fuels. Incentivising vehicles that can utilise biofuels in a feebate system similar to the one recently launched for EVs could be beneficial.
- There needs to be greater emphasis on cost – benefit analysis to determine areas of focus and types of actions / policies to implement.

2. Introduction – Who is Scion.

- Scion is a Crown Research Institute with a core purpose to "enhance New Zealand's prosperity, well-being and environment through trees – kia piki te ora, te taiao me te whai rawa o Aotearoa mā to ngāhere".
- Scion led development of the New Zealand Biofuels Roadmap (www.scionresearch.com/nzbiofuelsroadmap)
- A range of other bioenergy related work;
  - Portfolio Leader for Integrated BioEnergy Dr Paul Bennett also Chairs the IEA BioEnergy Organisation
  - Bioenergy Options for New Zealand Project (2007 to 2009); a part of the EnergyScape project.
  - Wood Energy Industrial Symbiosis Project MBIE funded).
  - Residual biomass fuel projections for New Zealand (EECA funded, 2017)
  - Potential for the use of wood-based energy in expanded and integrated primary processing in the Gisborne region - Report for the Forestry Ministerial Advisory Group (2019)
  - Ligno-cellulosic biofuels initiative
  - Stump to Pump project

Signed by

[redacted]

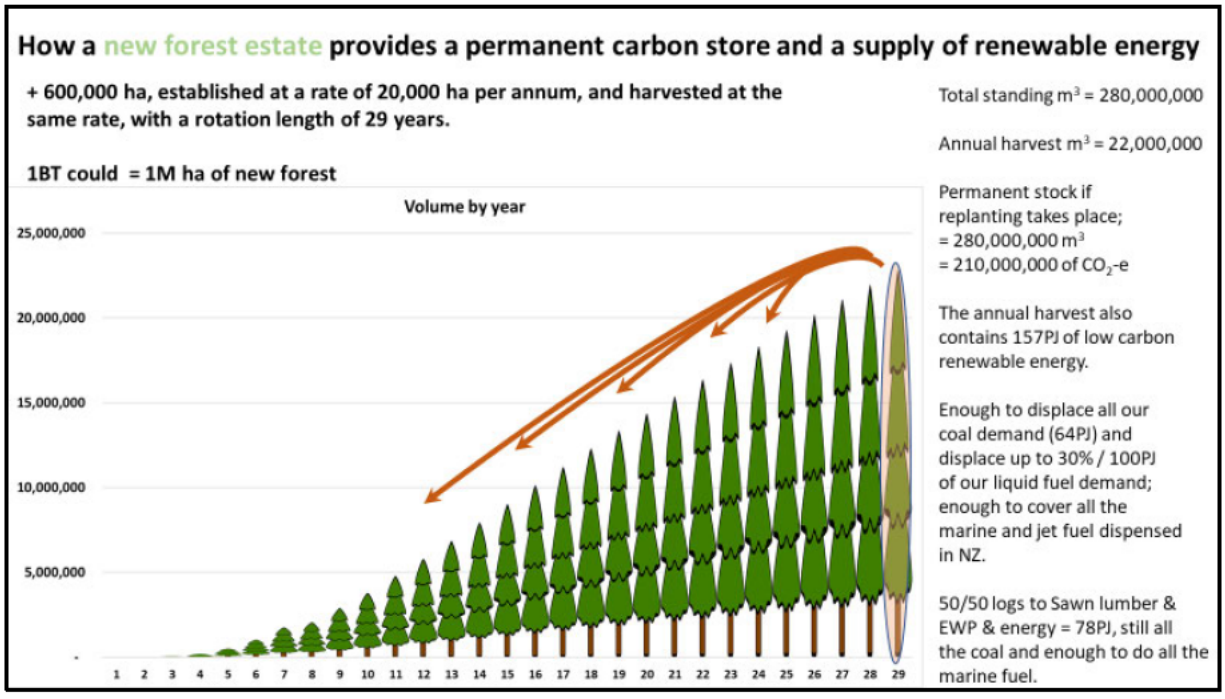
Florian Graichen,
General Manager Forests to biobased products

Consultation question 1.
Do you support the principles in Hīkina te Kohupara? Are there any other considerations that should be reflected in the principles?

We agree with the principles but have some reservations.
The last sentence in Principle 1. The potential of forests, including short rotation energy forests (SREF), as source of short-term carbon absorption, and long-term carbon store as well as a source of low carbon energy, for conversion to transport energy such as biofuels, has been undervalued.

Principle 2. Largely agree, but where there is doubt about the need for offsetting – a possible route is to plant a lot of forest, using regimes that have planned flexibility in their end-use – based on this the end-use of the forests could be sequestration, energy or saw logs – depending on how the demand for off-setting unfolds over time.

Principle 3; again, the value of a well-managed sustainable plantation forest as a flexible tool seems to be undervalued. A forest has both a short-term (carbon store) and long-term (energy store) benefit if they are appropriately used. Energy from a forest will reduce emissions by displacing fossil fuels. It is important to remember that a forest estate planted with a sustained yield in mind both holds a store of carbon as well as providing a long-term supply of low carbon energy.



Note- the rotation length in the diagram above is an example only, the same principle (but different numbers) applies to regimes of 14 to 16 years.

Principle 4. Agree.

Principle 5. Agree. Implementation of biofuels allows existing infrastructure to continue being used, whilst still achieving a significant reduction in GHG emissions. That includes existing vehicles, which remain in use and affordable for all society.

Principle 6. Agree. However, action is required now on many fronts. Waiting for more research, development and seeking more opinion on direction may delay actions. Some actions (planting forests) have multiple benefits and outcomes (based on wood use) and can be taken with low risk.

Principle 7. Agree. Accelerate the development of NZ specific or appropriate technology for biofuels production.

Consultation question 2.
Is the government's role in reducing transport emissions clear? Are there other levers the government could use to reduce transport emissions?

The government has a clear role to play in planning, regulation and providing information that will help build a market.

We will have ICE powered vehicles on our roads and elsewhere for decades to come. Currently there is suspicion of the impact of using biofuels on engine life. There needs to be a government led campaign to get information from manufacturers to consumers on which vehicles are suitable for using biofuels and biofuels blends. The government is also supporting the purchase of hybrids, via its recently announced feebates. Where possible these vehicles should be those that are known to be able to run on a biofuel or a biofuel blend. A hybrid that can run on a biofuel will have a potentially large market and a low carbon footprint. The market being based on these vehicles not having the issues with range anxiety and loss of functionality / flexibility that comes with many of the currently available EVs.
The key lever that is missing is the Government's role as the major funder of RS&I in New Zealand, particularly in this case applied directed R&D to facilitate change.

Consultation question 3.
What more should Government do to encourage and support transport innovation that supports emissions reductions?

See above.
Support the rapid expansion of the use of EVs in urban bus and rubbish collection fleets. Councils need to act quickly on this. Being a passenger on a barely patronised diesel bus convinces no one that they are improving their carbon footprint.

A key issue should be to broaden the scope of innovation. R&D and innovation should cover addressing risk, uncertainty, quantifying costs and benefits, understanding stresses, and offering solutions that facilitate change.

Consultation question 4.
Do you think we have listed the most important actions the government could take to better integrate transport, land use and urban development to reduce transport emissions? Which of these possible actions do you think should be prioritised?
There is a need to separate short- and long-term actions and impacts. Changes to urban form and infrastructure will take many years to have any significant impact. Therefore, it should be seen as a lower priority in a climate where resources (funding) is scarce and immediate impacts are required.

A major barrier is cultural change, we are used to having on demand independent transport with complete flexibility and control on destination, intermediate stops, timing and route. Many would regard something less than this a backward step. Convincing individuals and society at large that change to a less egocentric system is necessary for the good of the planet will be a significant challenge and may take a generation or more. More immediate changes / gains can be had from providing low carbon fuels to be used in the existing transport paradigm.

An immediate impact could be achieved by making buses electric rather than diesel.
The approach of councils in smaller cities needs to be different to those in larger cities. There seems to be a great deal of focus on shifting people in and out of CBDs. For many commuters this is of no use. They move from their homes to their workplaces, many of which are not in the CBD – bus services to industrial areas seem to be very low on the list of considerations.

Consultation question 5.
Are there other travel options that should be considered to encourage people to use alternative modes of transport? If so, what?

Whilst these options will achieve some improvements there are greater gains to be made with focus on other issues, such as fuel type.

Consultation question 6.
Pricing is sometimes viewed as being controversial. However, international literature and experiences demonstrate it can play a role in changing behaviour. Do you have any views on the role demand management, and more specifically pricing, could play to help Aotearoa reach net zero by 2050?

Centralised control by taxes or *disincentives on discretionary travel*; presumably including on things such as trip to the beach seem to be an extremist position and not in keeping with the type of society that most New Zealanders would aspire to live in. The next logical step might be to ban or otherwise limit other discretionary, or to some, frivolous use of ICEs such as motor racing and recreational boating, again this is not the type of approach that most people would wish to see happening.

Pricing is a fair means of encouraging or discouraging use. How people choose to allocate the use they can afford should be up to them. Someone may wish to cycle to work so that they can afford a trip to the beach – the trip to the beach should not be separately or additionally discouraged.

A better approach would be to rapidly enable the production and use of low carbon fuels thus enabling the population to live their lives as they see fit without state sponsored censorship of their activities.

Consultation question 7.
Improving our fleet and moving towards electric vehicles and the use of sustainable alternative fuels will be important for our transition. Are there other possible actions that could help Aotearoa transition its light and heavy fleets more quickly, and which actions should be prioritised?

Encouraging the development of biofuels, which can be used in PHEVs should be a goal. A PHEV will have qualities (longer range, more flexibility, greater functionality) that EVS do not have. PHEVs are being assisted by the new vehicle feebate scheme, having a biofuel available that they can use will further enhance their benefit (less emissions).

Consultation question 8.
Do you support these possible actions to decarbonise the public transport fleet? Do you think we should consider any other actions?

Beyond the public transport fleet there is an opportunity in the public service fleet. This would initially be focussed on urban rubbish and recycling collection trucks. These are well suited to being electrified. These are in some cases owned by contractors / companies, but this should not be a barrier to implementing regulation to improve their GHG footprint.

Consultation question 9.
Do you support the possible actions to reduce domestic aviation emissions? Do you think there are other actions we should consider?
Whilst the support for the production of sustainable aviation fuel (SAF) is welcome, it should not be done on the basis that the approach produces only SAF. Some biofuels technologies by their nature produce a mix of fuels (as does an oil refinery). The best (most efficient / most developed) technology available may be one that produces a mix of petrol, diesel and SAF.

Consultation question 10.
The freight supply chain is important to our domestic and international trade. Do you have any views on the feasibility of the possible actions in Aotearoa and which should be prioritised?
Wider implementation of electronic truck / driver monitoring to ensure greater compliance with speed limits and to improve driving techniques / habits.

Consultation question 11.
Decarbonising our freight modes and fuels will be essential for our net zero future. Are there any actions you consider we have not included in the key actions for freight modes and fuels?
The potential for production and use of biofuels from domestic sources seems to be overlooked.

Consultation question 12.
A Just Transition for all of Aotearoa will be important as we transition to net zero. Are there other impacts that we have not identified?

The potential of transport as a service is not well represented. Including the potential for subsidies for the disadvantaged or less abled (elderly, paraplegic) to access on demand transport services.

Consultation question 13.
Given the four potential pathways identified in Hīkina te Kohupara, each of which require many levers and policies to be achieved, which pathway to you think Aotearoa should follow to reduce transport emissions?

There should be a significant effort made to identify the pathway that incurs the least cost with the most benefit to the well-being of New Zealanders. Which is the best cannot be determined without significant analysis.

Consultation question 14.
Do you have any views on the policies that we propose should be considered for the first emissions budget?

The policies are a collection of possible initiatives. A high-level assessment of their value would be to apply two tests derived from Principle 3 as amended:

- calculate the percentage contribution to emissions reduction in 2050 over and above the base case of just the ETS, and if less than around 10% (a reasonable estimate of materiality given the uncertainties) put the policy aside;
- calculate the marginal value of the policy by multiplying reductions in 2050 by a notional CO_2-e price in that year. Among other things this will give ceiling on the amount p.a. it is worth spending on this policy to make these gains.

In the context of assessing policy options, cost-benefit analysis (CBA) is a must. The CBA should be aimed at identifying the best alternative option(s) to the current one. A policy that is better than the current situation may be worse that the best of the alternatives.

From: [redacted]
To: Transport Emissions
Subject: Consultation
Date: Sunday, 16 May 2021 3:03:09 pm

Question 1
I support Principles 1,2,3,4,6
I don't support Principle 5.We all benefit from cleaner air and less GHG emissions. Let's not complicate this.
I don't support Principle 7. Too vague.

Question 2
Not clear enough, confusing

Question 3
Support the legalisation of autonomous electric vehicles within the next 10 years.They have the potential to reduce lifetime emissions to 1/20th of current vehicles per km travelled.

Question 4
I think you should prioritise:

Set higher Funding Assistance Rates for walking and cycling investments and dedicated/priority bus lanes to strongly incentivise Road Controlling Authorities to prioritise and accelerate street changes.

Set targets for councils to deliver public transport and active travel networks that require street changes (e.g. dedicated/priority bus lanes on some routes; connected cycling networks) by a specific date. There could be funding consequences if Road Controlling Authorities do not deliver these changes within these timeframes.

Question 5
Nothing else

Question 6
I strongly support these carbon charges to get us to Net Zero:

Increase rates of fuel excise duty after 2023.
Implement an increased transport fuels only carbon tax. (Already small charge through the Emissions Trading Scheme)

Question 7
These should be prioritised:

Investigate and implement a vehicle feebate/subsidy.
Investigate the use of a vehicle scrappage scheme to encourage the removal of inefficient, unsafe vehicles
Consider a schedule for phasing out the importation of fossil fuelled vehicles.

Question 8
Yes, I support these actions

Question 9
Yes, I support these actions

Question 10
These should be prioritised:

Examine the potential to improve the efficiency of first and last-mile delivery centres
Support the further use of Intelligent Transport Systems (ITS).

Question 11
No other actions

Question 12
No other impacts

Question 13
Pathway 2

Question 14
I like the Feebate scheme as outlined by the previous government. But I think Plugin hybrids should be on the same subsidy as hybrids as their benefit is marginal.

From: [redacted]
To: Transport Emissions
Subject: Feedback on Hikina te Kohupara
Date: Sunday, 16 May 2021 8:54:27 am

Kia ora

Thank you for the opportunity to contribute to the discussion of proposed initiatives to reduce emissions from New Zealand's transport system. My views are as follows:

1. Spend no more money on new roads. Sure, maintain what we currently have, but building new roads to ease congestion will only lead to more people travelling in cars, thereby increasing congestion, thereby requiring more roads to be built, and so on. This is taught in every year 12 geography class in the country as part of the urban planning curriculum area, and yet as a nation we pay no heed to that. The money saved in building new roads could be put into reducing the costs and increasing the efficiency of public transport.

2. Prioritise public transport systems as basic, fundamental components of urban areas. For people to use public transport it must be quick, efficient and convenient. Surely a functioning public transport system is a non-negotiable component of a functioning city. Subsidise the costs heavily so people will use them. Make the investment in public transport early in the development of urban areas.

3. Proceed with the proposal to tax fuel hungry vehicles and using the revenue to subsidise more fuel efficient ones

4. Establish bus only lanes where possible to utlise existing roads rather than building new rail networks

5. Cart as much freight as possible by rail

6. High speed rail the length of the country

Regards

[redacted]

From: [redacted]
To: Transport Emissions
Subject: Feedback on Hīkina te Kohupara
Date: Thursday, 10 June 2021 2:21:57 pm
Attachments: image001.png

Kia Ora,

Q1. I fully support the principles. The transport sector plays a role not only in meeting our carbon targets but in ensuring the health and wellbeing of our people and natural environment. The advent of the large family car has had enormous negative health impacts, taken over land, polluted the air and taken our time.

Q2. I'm not clear how generational planning can impact current planning as much as it should. We are always playing catch up with building roads – and are still building them – when we know that, in 50 years time, they cannot be useful. There's an awful lot of land that's going to be covered in roads that are of no value to future generations. Te Manatu Waka could look to Transition Engineering to resolve this disconnect.

Q3. The government absolutely needs to make commuting by bike/E-bike a far better option than it currently is. The bike paths in Auckland at least are in no way fit for that purpose. They are frankly terrible for someone who is not 100% confident on a bike to navigate. E biking is enormous fun and should be the preferred option to go anywhere but the construction, obstacles, disconnectedness make it dangerous and even frightening.

The government should actively enable car sharing as a way of making EVs more accessible to poorer communities. We know that cost is a big barrier for EV uptake and enabling people to access transport that isn't sitting in their driveway is key to making it more affordable. Otherwise the old dirty imports will still be king in these poorer communities leading to further disparities in health.

Q4. MOT should use the principles of Transition Engineering to integrate agencies in achieving emissions reductions through engineering of living and working spaces. A perfect example of this is the current traffic shambles in around the Mt Roskill Schools where an industrial zone has been allowed to develop next to one of Auckland's largest schools. A Transition Engineering approach would envisage the school in the best possible setting to enable active transport, reduce emissions and enhance the lives of the children and families attending and engineer for that.

Q5. Very comprehensive summary except that I don't see anywhere the options for low emission transport over water. Electric ferries could provide more regional transport since aviation is going to be very difficult to decarbonize.

Q6. Demand management through punitive measures won't lead to meaningful change unless we provide enough options for the alternatives to be obvious and attractive. This is where the younger generation can lead in embracing alternative ways of getting around and alternative ways of learning and working.

Q7. Range anxiety and lack of recharging infrastructure are 2 further barriers to EV uptake.

Already, there are queues for recharging which may add an extra hour on to a journey. Road closures due to accidents/slips etc. may reroute vehicles onto roads that are not serviced by chargers. The fastest way of decarbonizing the fleet is though other, non car battery powered vehicles such as E-bike, E -scooters and other personal mobility devices. Providing direct, safe, uninterrupted pathways for these vehicles will get cars off the roads and should be prioritized over new motorways which will be superfluous in 50 years time.

Q8. I support the actions to decarbonize public transport

Q9. Aviation will necessarily become more expensive than it is now and biofuels will not be able to be manufactured as cheaply as oil. Even if aviation is powered by fossil fuels, the reduction in the size of the fossil fuel industry will increase costs. As far as possible, overland trips should be made by other means.

Q10. We are currently experiencing lengthy and unpredictable delays in freight and this situation will worsen. We absolutely have to manufacture more products locally and restore our capacity for self sufficiency. This could ride on the back of waste minimization strategies – we recycle waste into products locally.

Q11. As a Materials Engineer with 35 years of experience, the suggestions you have explored under the heading of "Exploring opportunities for the domestic production of sustainable alternative fuel" are highly problematic. Green hydrogen is very inefficient as an energy store and is difficult to store and distribute but has uses in the chemical and steelmaking industries. Wood fibre has structural properties entirely unlike those of concrete and steel. It would require complete re-engineering and reimagining of structures, as in, you can't swap out one material for the other.

Q12. Standards of living must be decoupled from employment. We can't be carrying out energy intensive but wasteful tasks for the sake of "having a job" and putting a roof over our heads. Currently people are spending hours moving themselves inside tonnes of metal from one side of town to the other so that they can pay the mortgage or the rent. If they didn't have that cost, they could use a lot less – as in, this system is broken.

[redacted]
Advanced Materials Technologies – NZ Limited
Mobile [redacted]

Advanced Materials Technologies
NZ Limited

From: [redacted]
To: Transport Emissions
Subject: FW: Get your public infrastructure transport right first please
Date: Monday, 24 May 2021 9:49:11 pm

Hi – I would like to make a submission on the transport emissions proposal.

Firstly I would like to see first:

- The Rail Main Trunk line fully electric – the government has been trying to do this for over 30 years now ?
- Buses are currently a mess.. Every time I try to use a Wellington bus to travel home I seem to at least get one cancellation.. Where are the electric buses ?
- More power generation that does not require coal generation at peak times.. practically we are seeing coal powered EV's at the moment.. Not good
- Establishment of recycling centres now – do not wait until later then decide that it will be cheaper to ship them to a third world country.
- Investigate what environmental issues might be created by mining for over 100,000 batteries to be imported into NZ per year.. Is there a possibility that a mining company overseas may be desecrating their own environment to save ours ?

There are 3 reasons that I would not like to see petrol cars banned by 2050

- Availability of charging stations. There are so many Wellington houses that do not have a garage. Furthermore some streets like Pembroke road in Wilton do not have any parking spaces free so there is little chance of sharing a charging station. So will there be charging stations all along Pembroke road ? Where will all the charging stations be ? Will there be a charging station for every space in all carparks in town ? I do not see this working easily.
- The price of EV's will take a long time to filter down to be affordable to families on minimum wage..
- On major highways when travelling from Auckland to Wellington.. If all cars were EV's wouldn't there be massive queues to charging stations.. if they take half an hour to charge where would the massive carparks be that would allow mass charging of thousands of vehicles ? Have traffic counts been taken into consideration ?

Yes we have to make hard choices but we should be make it easier for people to take public transport. We should be encouraging EV's rather than the government tell me what car I can drive when it can't get its own act sorted out. I believe the have their own place but are not practical for the whole population to drive.

Thanks for your consideration of other views on this topic.

[redacted]

From:	[redacted]
To:	Transport Emissions
Subject:	Hīkina te Kohupara – Kia mauri ora ai te iwi / Transport Emissions: Pathways to Net Zero by 2050
Date:	Wednesday, 23 June 2021 9:41:01 pm

My submission to the initial discussion paper: **Pathways to Net Zero by 2050:**

This date is not ambitious enough! I may or maybe not alive by then, but that is not the point. Another 29 years of pumping more carbon into Mother Earth's atmosphere will only cause more havoc to the already changing climate crisis we are experiencing right now.
Please heed the words of our next generation, who will have to deal with our mess that they will inherit.
The future of transport in Aotearoa should look much more different, and indeed it has to. We are in a climate crisis and transport is our fastest-growing source of emissions.

This is a huge opportunity for positive change. We could transform our transport systems so that our towns and cities are safer, quieter and easier for us all to get around as we reduce pollution.

You are moving in the right direction right direction. I **support the** investment in:

- clean and accessible public transport;
- walking and cycling projects;
- better urban compact design and liveable streets;
- electric vehicles and bikes
- moving freight onto rail and coastal shipping

There are powerful vested interests who will push back on any change away from business as usual. You will need a strategy to counter that. Perhaps rolling out a mass education project for in our schools for people over the age of 45 years. Learning with the school children in their neighbourhood will be fun!

As the paper itself says "...this transition could make Aotearoa a healthier, safer, more vibrant, resilient, and prosperous place to live and work. There are many opportunities to reduce emissions while improving well-being and the liveability of our towns and cities." You are on the right track, but please be more urgent about it.

Many thanks and all the best.

[redacted]

From: [redacted]
To: Transport Emissions
Subject: Hīkina te Kohupara –Kia mauri ora ai te iwi
Date: Sunday, 16 May 2021 5:15:25 am

The assumptions on which this report is based are probably wrong.

1) "Even if countries meet commitments made under the 2015 Paris Agreement, the world is heading for a 3.2 degrees Celsius global temperature rise over pre-industrial levels.." https://news.un.org/en/story/2019/11/1052171

It is not enough simply to meet our obligations under the Paris Agreement. At the same time, we must plan to adapt and survive in a plus-three-degrees world. The report does not address this scenario. UN latest report predicts an overall three-degree rise in temperatures by the end of this century. It makes no sense to base the plan on the assumption that the world will keep warming to 1.5 degrees. My guess is that in reality by 2090 the climate of Auckland will approximate current climate in Noumea. Please refer to NIWA RCP8.5 projections for 2090 to substantiate this.

2) The timeframe is too short. We need sustainable solutions that will take us through the next century. There is no point in building a solution that will work in 2050 if it then turns out to be no good by 2060 or later down the track. The report assumes that the global supply chain will remain intact and effective. This is unlikely to be the case. https://www.theguardian.com/science/2021/mar/08/global-heating-tropical-regions-human-livability?fbclid=IwAR2HfB3bkHgfF7cyc_4G_J8Cn28-KQ3Jm86W6FYjUDsEoOX09ooqrjbCOAk

3) The motto for planning should be "ADAPT AND SURVIVE'. This means NOT relying on the global supply chain as it exists at the moment. Instead, we need locally sourced solutions. We need resilience and backups, 'NUFO' (Null-Fehler-Orientierung) or 'FIB' (Five-Insurance-Backups) or something.

4) The report bases population projections on StatsNZ, with population rising to six or seven million. Why do we need these extra people? So-called 'economic growth' is a receipe for environmental and ecological disaster. It is extra people, economic growth, and misguided technology that have created climate crisis. We will not be able to adapt and survive without controlling the population level. We must therefore create a population policy, which presumably would limit population increase to zero. This would include zero immigration, easier access to euthanasia, abortion, family planning and something like a 'two -child' policy. Extra people means extra emissions and will just sink our lifeboat.

5) The report assumes that population increase will be centered around Auckland area. I question this. Firstly, Auckland will become increasingly unliveable as temperatures rise, and summer becomes longer, and rainfall makes water supply difficult.

6) In the longer term we should be looking at abandoning the North Island. By the end of the century, with inadequate rainfall thru Northland, northern Waikato, Bay of Plenty and Hawkes Bay, agriculture will be very different. It is quite possible that forests will have burnt off, that livestock farming will be over, and that there will not be ,much economic hinterland for Auckland to support. Auckland's importance as a port of entry may well be diminished as industry and suppliers in tropical areas struggle (ie India, Indonesia, SE Asia except SE China, SE USA, all Central+South America, southern Europe, Africa ...) There just won't be the traffic. Look at the temperatures and rainfall on the NIWA RCP8.5 projections for 2090. Abandoning the North Island and focusing on somewhere round Timaru (where temperatures should only rise by two degrees) makes a lot of sense. This adapt and survive approach is known as "Abandon-North-And-Live" (ANAL).

7) The report utterly fails to address international air travel and air cargo and international shipping. Yes, I know it is not in the Paris agreement. But the idea is to mitigate climate change, right? So, we must address it. My understanding is that the prospects for sustaining pre-COVID levels are slim. There is no drop-in techno replacement yet. There are pandemic issues. And in the longer term, climate change implies violent storms which may disrupt shipping and air travel to the point where it is no longer viable. We need to remove reliance on the global supply chain entirely. This means, inter alia, no tourists, no lithium, no importing thousands and thousands of EVs, at least not as a long-term solution.

8) Think of NZ in the early 1920's. We relied on rail, tram, and local produce and local solutions. We could do the same again. Sustainably. We need to bring our systems down to the point where we can operate within the limits of hydro- solar- geothermal- (sustainable) power. No coal. And build our economy round that principle. It might entail limiting population too.

9) So yes, we need to focus on rail, light rail, trams. But we should also focus on building 'New Auckland' in South Canterbury, a series of sustainable locally-supplied small towns where our great-great-grandchildren will stand a chance of surviving thru the next century and beyond. Whatever happens to the rest of the world.

Cheers

From: [redacted]
To: Transport Emissions
Subject: Hīkina te Kohupara submission
Date: Monday, 17 May 2021 4:49:15 pm

Kia ora,
My name is [redacted], and I am a transport planner at [redacted] I am also a mother of three children, and a resident of beautiful [redacted]. The views I express here are my own. [redacted] will submit a separate submission reflective of [redacted] views.

I strongly believe that Pathway 4 is the only acceptable option of the four scenarios. We do not have the liberty of time to prolong our shift to becoming zero-carbon. Our very livelihoods depend on it.

It is scary to think of the amount of change that will be required of us all here in Aotearoa, and also across the globe. These are unprecedented times, and we cannot continue with business as usual, or business as usual with a side dish of mode shift.

I don't need to give you the statistics. The numbers are in and the data tells the story. We cannot live in a fantasy land of mediocre policy that is too afraid of rocking the boat, and only gives lip service to the great task before us. The NZ government needs to lead the way and take a bold stance on changing the way we get around. This no doubt will not be popular, but without strong leadership, we run the risk of failing to protect our land, our country, our future generations and our planet. Allowing this to happen is a choice. Inaction and weak policies are a choice, and eventually NZ will be held accountable.

Aotearoa is already a world leader. This is a chance to really shine and take on the incredible job of role modeling to the rest of the developed world how to change a very entrenched cultural system. This is our moment to get ahead of history. If we chose a weaker pathway, or allow ourselves to pretend that EVs will get us out of this mess, or that we only need to change a little bit, we are doing a disservice to our country, our children and our world.

Kia kaha, and do the right thing.
Ngā mihi nui
[redacted]

[redacted]

From: [redacted]
To: Transport Emissions
Subject: Hīkina te Kohupara submission
Date: Friday, 14 May 2021 3:34:48 pm

Tena koe,

I support most of the proposals in the Hīkina te Kohupara green paper, however I would like to see classic ICE vehicles exempted.

I own a 1954 Land Rover that was bought new by my grandfather, passed down to my father, and then to me. I intend to pass it on to one of my children. It is a family taonga. I am not alone. There will be many classic vehicles in New Zealand that are treasured by their owners. They should not be banned from the roads.

Yes they emit greenhouse gases, but most classic vehicles are probably only driven once or twice a week, and usually no great distance. My Land Rover has averaged about 1200 miles (1900 km) per annum in the last 20 years. It uses about 11 litres per 100km, so that's about 200 litres per annum. That's less than a modern hybrid which would typically drive 12000 km per annum.

Also, the numbers of these vehicles are small in comparison to the whole fleet. Their combined fuel usage would be insignificant. I suggest a great deal less than that of the current lawn mower fleet.

They are part of our heritage. Those who love them should be allowed to keep and use them.

[redacted]

From: [redacted]
To: Transport Emissions
Subject: Hīkina te Kohupara submission
Date: Saturday, 19 June 2021 11:58:28 am

Hi
I am a retired scientist and my submission concerns some issues regarding electric vehicles, and cycling.

1. I am concerned about the lack of recycling facilities for the rare earth materials (samarium, neodymium, praseodymium, etc) used in the high strength permanent magnets of some, but not all, electric vehicles. For many years these same rare earth metals have found their way into landfills around NZ, via discarded technology of other forms, especially computer hard drives. Our world supply of rare earth materials is limited, and limited to certain continents including China. To encourage consumption of such materials without provision of recycling facilities is irresponsible.

2. I would encourage the provision of science research grants for a New Zealand contribution to the development of sodium batteries, which will eventually replace lithium batteries of various types, once certain technological problems (such as hard carbon anode construction) have been sorted. World supply of easily mined lithium is restricted, again to certain geographical areas. (I acknowledge that certain New Zealand rivers such as the Waikato contain lithium in reasonable quantities from geothermal areas, but that is not easily extracted.)

3. The trend in electric car purchases in NZ to date has been toward the lower cost vehicles, where smaller battery capacities have led to higher depth of battery discharge in everyday use, with subsequent short battery life in terms of degradation of battery capacity over time. The second hand market is already flooded with cheap, reduced capacity EV batteries. Recently I incorporated a set of such batteries into a home-built electric packwheel, and they are great for such a purpose, but, overall, use cases of these reduced capacity "spent" EV batteries is limited. Storage units for photovoltaic panels is another potential use for "spent" EV batteries, but ultimately these lithium batteries need recycling. Sending lithium to landfills via cheap electric vehicles is perhaps not a good environmental goal.

4. In my view, light electric vehicles such as scooters, cycles, and cargo cycles make more sense than electric cars. In the last eighteen months I have personally clocked up over 2000 kilometers of travel on my ebike, and much of that travel has been in and out of the city (Dunedin) where I live.

The factors which restrict my own EV (ebike) use are:
(a) Lack of covered parking facilities for cycles in the city.
(b) Cycle lanes which are "add-ons" to motor vehicle roads, i.e. narrow lanes whose main drawback is the difficulty of passing other cyclists.

5. Shifting our transport habits:
If NZ is serious about adoption of non-car technologies, the infrastructure provided for those technologies has to be first-rate. It has to be easier to ride your bike into the city than to take your car. In Dunedin, where I live, the advice of cyclists was substantially ignored by NZTA in its design of the city's current cycle lanes, which are frustrating to use, every time. High concrete blocks separating cycleways from car lines can throw a cyclist off their bike when a pedal catches them. Other NZ cities have similar problems with their cycleways (e.g. the plastic planter boxes in Palmerston North).

With a mixture of electric and non-electric cycles on the roads, the need for passing ability in cycle lanes is essential.

With 20% of NZs GHG emissions deriving from the transport sector, and most of that from motor cars, there is a need for cycling to be treated as a first-class alternative to motorcar travel. This will only happen, in my view, if cycleways are properly designed. The advice of cycling advocate groups such as Cycling Otago must take precedence over the current attitudes of bureaucrats, which sees cycle lanes seen as a lower priority in our transport networks.

Cheers
[redacted]

From: [redacted]
To: Transport Emissions
Subject: Hīkina te Kohupara
Date: Wednesday, 23 June 2021 9:48:44 pm

Hi
I have a very basic submission.
Instead of trying to get (subsidizing the rich) people to throw their cars away for EV cars which use a huge amount of materials, energy and waste byproducts to make (instead of using the one you have already got) how about subsidizing public transport more? Putting more buses on. Extending the train further west . I catch the train everyday to work , its great but if I try to get anywhere else its not the best system .
I know of lots of people who say that even though they get angry in traffic going to work its still cheaper for them to take their cars. Make it cheaper for people to get out of their cars and they will. Make it easier for people to catch it I.e more frequent, better routes, express routes(we have just had all of ours taken away) better information at bus stops (so people arnt scared of them!) and it will be easier for people to do.
I also find it confusing that in your first graph the biggest emission source is agriculture. Yet instead cars are the issue? We need education that eating the amount of meat NZers are eating is excessive. Just look at our bowel cancer and obesity rates. Education on healthy diets and more support to horticulture to help bring the cost of fruit, veges and pulses/grains down and less throwing money at agriculture and milk will help our emissions. Less animals required to feed people means less emissions from the animal, pretty simple.
Thank you for your time to read a few of my thoughts.
Kind regards
[redacted]

Sent from my Galaxy

From: [redacted]
To: Transport Emissions
Date: Wednesday, 23 June 2021 8:53:08 pm

I am totally in support of changes to public transport that reduce our toxic emissions.
HOWEVER not everyone can cycle and realistic alternatives for transporting children and old people around MUST be built ito the changes.
Walking needs the support of good, walkable footpaths in urban and suburban areas .
Transport between rural communities and to nearby cities is almost non existent . Try getting a job in a down-trodden rural town! People without cars NEED access to jobs, training, etc. Where there is a railway why not railcars or an updated equivalent?
Mini buses between communities would be a cost effective alternative to big diesel buses.
Please stop this inward-looking policy making that fits young, single, childless, urban policy makers, and start looking at how life works for those who dont fit your mould please.
respectfully.
[redacted]

From: [redacted]
To: Transport Emissions
Subject: Re: Automatic reply: Ban cars??????? What???
Date: Sunday, 20 June 2021 11:15:46 am

Good. I hope somebody is reading all the emails I can imagine you're receiving. How can you ban internal combustion engines when there arent even any alternatives??? Let's just all run to work, so healthy! Carbon footprint so low! Wow!!!! New zealand offset Chinas emissions single handedly !!! Very impressive!!!!!!!!

On Saturday, June 19, 2021, Transport Emissions <transportemissions@transport.govt.nz> wrote:

> Thanks for your email and response on Hīkina te Kohupara.
>
> This email box is being monitored, so your email will have been seen.
>
> ---
>
> **MINISTRY OF TRANSPORT**
>
> **Wellington (Head Office) |** Ground Floor, 3 Queens Wharf | PO Box 3175 | Wellington 6011 | NEW ZEALAND | Tel: +64 4 439 9000 |
>
> **Auckland |** NZ Government Auckland Policy Office | 45 Queen Street | PO Box 106238 | Auckland City | Auckland 1143 | NEW ZEALAND | Tel: +64 4 439 9000 |
>
>
>
> ---

From: [redacted]
To: Transport Emissions
Subject: Submission
Date: Wednesday, 23 June 2021 9:29:56 pm

Hello,
I would like to make the following submissions in support of investment in:

- Prioritised, clean and accessible public transport;
- Increased and joined up walking and cycling projects;
- better urban compact design and liveable streets;
- electric vehicles and primarily electric bikes with full lock-up & support infrastructure
- moving freight onto rail and coastal shipping and develop a National coastal shipping strategy
- Active transport infrastructure across the Auckland harbour bridge

I would like to see this urgently actioned in order to meet our climate change obligations under the Paris accord.

Thank you.
Sent from my iPhone

From: [redacted]
To: Transport Emissions
Subject: submission on Hīkina te Kohupara discussion document
Date: Saturday, 15 May 2021 12:22:12 pm

Generally I want you to "go hard or go home", meaning pathway 4. You can't throw too much money at cycling (it all pays back multiple times over because of the health and social benefits) so just get on with it like every other proper country in the world. The 2035 ban on petrol car sales is laughable so fix that (no proper country is over 2030 and many are doing 2025). Financial disincentives need to be immediately slapped on the biggest scourge (utes in cities) and the Clean Car Discount is a great way to do it so now that NZfirst is gone, just get on with that one too. Why in 2021 are Government Departments and Agencies still allowed to buy ICE vehicles? Gone by lunchtime (exceptions for DOC etc where needed)! Why are parents allowed to idle their ICE engines on school grounds? Ban it tomorrow! Why are school sports programs not based 90% around cycling? Bring it in next semester!

By the way, at Midday 15/5/21 the email link is missing a "p" so anyone who clicks on it will not be able to send a submission.

From: [redacted]
To: Transport Emissions
Subject: Submission on Hīkina te Kohupara
Date: Friday, 11 June 2021 5:58:56 pm

Kia ora,

Thanks for the opportunity to comment on this.

In general I support the proposals and strategy set out in the consultation document.

In particular, I strongly support introducing a new form of **road use pricing** that would:

- discourage behaviours we need to discontinue (e.g., use of ICE vehicles, particularly single occupancy);
- encourage behaviours we need to increase (e.g., use of public and active transport, uptake of EVs); and
- generate revenue to help in that transition, including by assisting lower income households (consistent with a just transition).

I reckon this could be the most powerful policy of those listed in the consultation document as it could address a number of different objectives at the same time.

Road use pricing must be **targeted to times and places where desirable transport alternatives are available**, and therefore when and where people choose to use ICE vehicles. Based on this, I would favour a more general application of **congestion or road use** (e.g. tolls) **pricing** in urban areas, where desirable alternatives (e.g., public transport, cycle ways, etc.) are often available, and where the bulk of transport emissions are coming from. This should not be limited to Auckland, provincial cities like Tauranga/Western Bay of Plenty, Napier/Hastings, Nelson/Richmond are also facing huge levels of congestion, and no doubt increasing GHG emissions. Pricing through additional fuel taxes, distance pricing or additional road user charges would unfairly penalise rural households, who often do not have access to desirable transport alternatives, and non-transport use of fuel. Ideally, targeted road use pricing should recognise the fuel efficiency of vehicles (e.g., EVs could be exempt or pay a cheaper rate, while inefficient ICE vehicles would pay a higher rate).

Revenue generated from targeted congestion/road use pricing could then be re-invested in improving desirable transport alternatives (e.g., better/cheaper/more frequent public transport, more and safer cycle ways, etc.). Revenue could also be used to help lower income households to shift to EVs, e.g., through an interest-free loan facility or other type of incentive scheme. By re-investing revenue from road use pricing, the policy could probably be cost-neutral in the end, if prices are set correctly.

It is counterproductive that, at present, the cost of local authority plans to improve/increase public transport generally falls (at least in part) on ratepayers. For example, recent decisions by the Bay of Plenty Regional Council to offer free public transport to children, students and CSC holders were significantly influenced by the impact on ratepayers, and uncertainty regarding Waka Kotahi co-funding. Ideally, other road users, particularly those driving inefficient ICE vehicles, should be covering these costs. Ratepayers will often be facing increased rates over the next few years as local authorities try to fill current infrastructure gaps. Therefore, there may be an increasing reluctance from ratepayers and elected representatives for significant increases in funding for public transport or transport infrastructure. A targeted form of road use pricing, as described above, would be a much better way.

It would also be important to consider the most efficient institutional framework within

which such a scheme is implemented. Local government, at least in its current form, may not necessarily be best placed to lead implementation of road use pricing, although obviously it will need to be a key stakeholder. The limitations of local government (such as those described in InfrastructureNZ's Building Regions report) may prevent it from efficiently implementing such a scheme, including by its limited ability to deal with local opposition, as described in the consultation document. As an example of this, for over a year now, WBOPDC, Waka Kotahi and TCC have failed to finish the Omokoroa to Tauranga cycleway due to the (unfathomable) opposition of some opinionated locals.

While low emission zones would certainly have amenity benefits, and may be worth pursuing on that basis alone, I question their actual emission reduction benefit. Presumably, such zones would be located in CBDs or town/village centres. Yet, the bulk of emissions are likely to come from travel to such CBDs and town/village centres in the first place, as opposed to from driving within them.

In particular, I also support:

- phasing out imports of ICE vehicles from 2030 (or even earlier);
- more stringent fuel efficiency standards;
- a review of the public transport operating model;
- exploring means of car/e-bike/bike sharing, shared fleets, etc.
- extending incentives for uptake of EVs, including a permanent exemption of RUC (the revenue of which could be replaced by targeted road use pricing) and removing incentives for inefficient ICE vehicles (e.g., tax benefits for ICE utes).

Nga mihi,

[redacted]

From: [redacted]
To: Transport Emissions
Subject: Submission on the future of transport in New Zealand
Date: Saturday, 15 May 2021 12:40:31 pm

This government, like previous governments, knows already what is needed to decarbonise our transport system. The time to actually take action is long past, maybe 40 years ago.
We have been sleeping on the job and there must be no more procrastination. The delays to real action have made the task ahead of us much harder than it could have been.
Further delays will only serve to exacerbate our problems.
The measures to date have been weak and largely ineffective to tackle the massive task of educating the people on the changes we all must make.
Public and active transport are great if they are ubiquitous, as they can be in our cities and there is so much more that needs to be done to make that happen.
For almost half of New Zealand's population who don't live in the cities, prising them out of their cars when no viable alternative exists, is going to be an impossible task, which is why we need immediate and strong support to get the fossil fuelled cars out of the media and off our streets in favour of electric vehicles.
There are plenty of people who can afford to buy an electric vehicle as they are not much more expensive than vehicles like Toyota Hilux or the Ford Ranger, our best selling vehicles.
People are getting all the wrong signals from the media and the tax system which is skewed in favour of these high emiting vehicles. We also have a crazy situation where Road User Charges at the current rate make operating electric vehicles more expensive than petrol vehicles. The current system of RUC and PED is not fit for purpose and needs a drastic overhaul. Temporary exemptions to RUCs don't give vehicle buyers the confidence that the costs of operating their vehicles in the future will stack up against a cheaper fossil fuelled vehicles.
We should by now have mandated that every petrol station also provides at least one EV charging point to let the damaging fossil fuel industry carry some of the load and to serve ALL the travelling public, including those in EVs.
We need strong measures to disincentivise the purchase of fossil fuelled vehicles with punitive purchase taxes which can be used to incentivise the purchase of low emission vehicles and to fund a scrappage scheme for older vehicles. There must be no more tax advantages to buying double cab utes.
Fossil fuelled vehicles pollute our cities, ruin our health and are killing our very existence.
We need to get them out of our cities with congestion and parking charges while at the same time encouraging non polluting vehicles, cars, motorcycles scooters and bicycles with lesser or no charges. The sooner you make it difficult for these polluting vehicles to enter our cities, the sooner people will switch to other modes of transport or simply stay at home and work from there.
We need to put an immediate stop to all new road building and put that money into developing our rail network and electrifying our buses and building a complete network of sealed cycleways.
Electric shuttle aircraft are on the horizon and are likely to become autonomous and inexpensive forms of transport for domestic intercity travel. We need to retain our regional airports to facilitate this development.
There is however, nothing tangible on the horizon for long haul carbon free travel

and we need to stop encouraging people to make these journeys and stop developing more jet capable airports.
Can we please stop the never ending consultations, discussions, and talking about what we might do in the future. The time for all that has long gone. Other countries who take these things seriously are doing so much more and we need now to follow the lead of the best of them and get on with some real action.

[redacted]

From: [redacted]
To: Transport Emissions
Subject: Submission on transport emissions
Date: Monday, 21 June 2021 2:50:47 pm

Good Morning I would like to submit my thoughts on ways to reduce transport emissions in NZ

Electrify Rail
Previous governments have de-electrified our rail network. The only future for rail is an electrified one. In Tauranga we have diesel trains moving logs through the center or town even in the middle of the night. Diesel trains harm the environment, cause respiratory disease and diminish brain function. The noise from trains also harms sleep patterns in cities. Electrifying the rail network will save money, remove emissions and make trains quieter.

Build Large Charging Infrastructure
New Zealand must (and will be forced to) take responsibility for the carbon footprint of the products we export to the world. Electric/hydrogen shipping is the future. New Zealand should invest and support large scale wind and solar to produce the electricity/hydrogen needed to support an electrified shipping fleet.

Hydro will fail us
Hydro generation is reliant on snow melt. Climate change will cause our snow melt cycle to fail. New Zealand will be left with an energy crisis if we don't build significant wind & solar generation backed up by battery grid storage. If we do nothing we will be running coal/gas generators to keep the grid powered.

Reduce speeding
Accepting a culture of aggressive driving is killing New Zealanders and is contributing to increased emissions. If NZ stops tolerating dangerous driving we will save lives and we will reduce emissions. Fines for speeding need to be high enough to be an actual deterrent. Police need to take speeding seriously.

Proper emissions testing as part of WOF
Cars are getting WOFs what are clearly in breach of emissions standards. Cars need to be tested for emissions and cars that fail should be taken off the road. The lax attitude taken to emissions by our governments is harming the health of our children and is harming the environment.

EV Charging infrastructure
EV uptake will improve if proper EV charging infrastructure is in place. Range anxiety is not caused by cars having limited range it is caused by concern that there is nowhere to charge the car when the battery is low. If EV charging is as ubiquitous as petrol stations then EVs with smaller batteries become viable and range anxiety goes away. The Government should support the build out of ev charging stations with multiple (more than 10) stalls so that electric cars are viable.

Promote cycleways
Bikes take cars off the roads. Bikes have zero emissions. People don't ride bikes anymore because our roads are too dangerous (because we tolerate dangerous and aggressive driving in NZ). Cities should be required to make travelling by bike safe by a combination of:

cycleways
- speed reduction
- simple re-design of roads
- change laws to make cars give way to cycles at all times (as they do in holland)

Support EV Owners
Follow the lead of Norway. Give special treatment to EV drivers, let them use bus lanes, let them park for free, reduce registrations costs (evs are safer and do not produce lung and brain damaging emissions)

Educate People
There is so much mis-information about electric vehicles, people need to know how damaging the oil supply chain is. People also need to be told the truth about how perilous the global situation is.

From: [redacted]
To: Transport Emissions
Subject: Submission
Date: Thursday, 20 May 2021 12:33:05 pm

Tena koutou

The main thing I want to say is: **stop creating more roads!** If you keep on providing more roads, there will be more and more cars (which emit CO2, are a danger to people who use active transport etc etc). Providing roads conflicts with intentions to make active and public transport more attractive. We have to make driving so unattractive (and active transport options attractive) that people will get out of their cars to walk, bike or take public transport.

Changing from petrol-driven- to electric cars is not a solution. There is still excessive use of resources, land, electricity etc and there is still the danger to those who use active transport.

Nga mihi nui

[redacted]

From: [redacted]
To: Transport Emissions
Subject: Submission
Date: Friday, 18 June 2021 9:14:38 am

To whom it may concern,
I wish to state I fully support any and all efforts to lower fossil fuel emissions by whatever means.
I support more public transport, bus only lanes, electrification of trains and buses, cycle lanes everywhere, car free precincts in town centres, decreasing the speed limit in general, decreasing parking spaces, bans on the importation of fuel heavy vehicles and an increase in fuel charges. I'd like to see more freight on electric trains and off the road.
I'd like to see some inventive effort into converting as much of the current fleet into alternative fuel burning vehicles instead of dumping them completely.

I think there needs to be a concurrent increase in the income of the lowest earners and free public transport so people who are the poorest don't suffer disproportionally.

I support, as side note, governments intention to close the wage gap and the effort to freeze public servants pay for higher earners. And I support paying more tax. The sooner we adopt more fair policies similar to more progressive countries like Scandinavian countries the better off we'll all be.

Rip the bandaid off and get on with it.

Thanks
[redacted]

From: [redacted]
To: Transport Emissions
Subject: Submission
Date: Wednesday, 23 June 2021 8:55:56 pm

I strongly support the moves to reduce emissions in the transport sector.
We need safer, wider biking lanes and pedestrian areas and higher density housing in urban areas so that trip lengths are reduced.
A subsidy on electric vehicles is a good idea but as mentioned, its also important to reduce the length of daily trips.
Once electric/hybrid utes are available, there should be a good incentive for farmers/ tradies to use them.
I am also in favour of an increased use of rail for commuting and freight. Money will have to be diverted from roads to achieve this, which will be a fine balancing act.

[redacted]

From: [redacted]
To: Transport Emissions
Subject: Transport Emissions: Pathways to Net Zero by 2050
Date: Sunday, 20 June 2021 6:16:58 pm

I understand that the New Zealand Government is looking at various pathways to cut transport emissions with the release of Hīkina te Kohupara – Kia mauri ora ai te iwi - Transport Emissions: Pathways to Net Zero by 2050. I note this report states:

“The transport sector currently produces 47 per cent of New Zealand’s CO2 emissions and between 1990 and 2018, domestic transport emissions increased by 90 per cent."

"Global increases in maritime freight are expected to happen due to new international trade agreements, emerging markets and new trade routes. Growing e-commerce is also expected to increase demand for container shipping. Ninety-nine percent of our international trade is transported by sea.

"Subsequently, if freight movements increase and there has been no change to improving the efficiency of ships that shift freight, it is likely that emissions from this activity would increase."

"Ships visiting Aotearoa are part of the international shipping sector, whose emission reductions are being progressed through the International Maritime Organization (IMO). As part of Hīkina te Kohupara we are focusing on possible actions that could reduce emissions from ships undertaking domestic journeys in Aotearoa’s national waters."

I understand that the NZ Government is calling for feedback on a range of potential policies to eliminate emissions in the transport sector. I think that policies around the use of collapsible shipping containers can play an important part in reducing emissions from shipping/freight movements.

"Spectainer is driving an evolution in global trade by developing and producing technologies that generate better operational efficiencies, better economic savings and better environmental benefits. Centred on its patented collapsible shipping containers, COLLAPSECON, Spectainer’s next-generation shipping container ecosystem is specifically designed to reduce the impact of empty container across the global supply chain. COLLAPSECON is a collapsible intermodal container that collapses and combines 4 empty containers into 1. COLLAPSECON lowers the consumption of space when containers are empty, the costs of relocation, and the environmental and economic waste at every point in the supply chain."

The global logistical challenge of handling and managing empty shipping containers continues to grow as shipping volumes increase worldwide and already costs the industry an estimated USD 30.1 billion every year (which has a material corresponding carbon footprint).

Just over a week ago Spectainer announced a partnership with Climate Fund Managers B.V. (CFM) Climate Investor Two (CI2) Development Fund (DF2). The partnership represents USD 2m in development funding and forecasted construction funding of USD 75m to construct ~ 20,000 #COLLAPSECON containers. The first fleet will be the largest collapsible container fleet ever introduced into the market and the forecasted funding of USD 75m will represent the single largest investment in collapsible containers technology. The project is forecast to have a significant environmental impact avoiding approximately 84,890 TCO2-e per year.

Full Announcements:
https://spectainer.com/partnership-with-climate-fund-managers-for-usd75m-in-forecasted-funding/
https://climatefundmanagers.com/2021/06/11/ci2-partners-with-spectainer-to-scale-the-collapsecon-collapsible-shipping-container-solution/

From: [redacted]
To: Transport Emissions
Subject: Your views will help us to shape the advice we put forward to Ministers for the ERP
Date: Tuesday, 18 May 2021 6:52:35 pm

Dear Sir or Madam,

How can you help?

Thank you for taking the time to read this paper. The Ministry invites your views on the opportunities outlined in this paper to reduce transport emissions and put us on a pathway to zero carbon emissions by 2050. Your views will help us to shape the advice we put forward to Ministers for the ERP, and for the development of transport strategic action plan for the next 10 to 15 years.

Thank you for allowing me to give you my view on the pathway to zero carbon emissions by 2050.

My name i [redacted]

At present our DCC (Dunedin City Council) busses are single axle in design which do a lot of damage to our roads.
Two roads I have seen being torn up with my own eyes by busses are North Taieri Road Abbotsford and Mosgiel side of Morris Road.

The North Taieri Road / Lambert Street damage has been going on for many years.
I have noted the large tandem dual wheeled vehicles just push the road surface around on hot days in summer where the busses tear a strip out out of the road from between the rear tyres.
In fact the heavy trucks loaded with cargo help to press the strip back into the seal on warm days.
By the way the busses are empty when they tore up the roads that I saw with my eyes.

Surely we are wasting a lot of public money running these huge mainly empty buses in Abbotsford week in week out from dawn to dusk.
Mind you I do wonder the mentality of these councillors who insist on the,
" Run Busses and People Will Come " philosophy,
Because it is not happening all over Dunedin's transport area's, including weekends.
Except partly filled busses from 8am to 9am and 4pm to 6:30pm weekdays.

When I was young in the 1950's 1960's the busses had plenty of young people heading to town by bus in the weekends and home again by the last bust at midnight.
Goodness me how terrible,
we would go by bus aged 8 all by ourselves to meet our cousins and friends to see a movie and back home again by bus.
I was driving by age 15 and have never ever used public transport again,
And are now well into my 70's.
But today young people have "multi caregivers" to drop them into town and pick them up.
Teens today often head out to town much later because bars etc are open later.

In the 1960's bars closed at 10pm and dances did not go much later than midnight and my friends without vehicles knew you had to be on a bus before midnight or they would have to run or walk home.

One thing that could be brought in immediately with help from Central Government would be to enforce anybody born after 01 / 01 / 2000 cannot own or drive a combustion engined car, truck or bike.
After 2023 by this time local councils would have had time to upgrade busses and train services to electric.
The pathway to zero carbon emissions by 2050, would come quicker if the same group of people born after 01 / 01 / 2000 can only travel in carbon neutral regional busses and trains.

Electric vehicles are not the answer yet.
Here are some problems to be sorted before we do anything.
One problem is the massive differences between all the EV batteries out there.
Every battery maker uses different ingredients to make their batteries.
They all use different sized and shaped cells and modules, too.

That means there is no standard way to recycle EV batteries.
They're just too different for any company to design a one process to recycle them all.
They're not like aluminium cans, paper, and glass.
They're different from each other on a structural level.
That makes recycling them even more complicated and expensive.

As batteries start to power more and more vehicles, that's going to have to change.
They will have to have the same standards in every EV battery.
Having a standard, means processes can be designed to recycle that standard EV battery easily and efficiently.

At present only two countries in the World recycle EV's and their Batteries and only a fraction of an EV can be recycled.
The biggest pollutants in them are the batteries and are pretty much un-recyclable and packed full of toxic metals.

Nickel has been shown to cause lung and nasal cancers and bronchitis.
Cobalt can cause asthma and pneumonia and it might be carcinogenic, too.
Manganese can cause problems to develop in the lungs and the neurological system.

Lithium batteries are an amazing piece of technology when they were invented years ago, they represented a quantum leap forward in tech.

But they really haven't changed since their conception and now we've got devices we want to power with batteries that are just too demanding for the batteries we've got.

The drawbacks of lithium-ion batteries:
They're bulky and heavy.
They take forever to charge.
They lose capacity every time you charge them.
Also they are prone to randomly exploding and they're incredibly expensive.

So for all that weight, size and price, most EV batteries give the car about 350 kilometres of drive time before they need to be recharged. And they take hours to recharge unless you want to take the life out of them by fast charging.

So if you're on a long road trip in an EV with even the best battery Tesla has to offer, you can plan for an eight-hour nap every 450 kilometres.
I don't know about you, but 450 kilometres a day just doesn't cut it unless you've got a month to make your trip.

That's why EVs still make up such a small percentage of the New Zealand fleet and the Worlds fleet.
They're just not as good as cars with internal combustion engines.
They don't have the endurance.
Every time you charge them, they lose capacity.
The batteries are expensive to replace.
You will have to replace them unless you want to buy a new car when they die.

Yours Sincerely
[redacted]