JAKE ROOS
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Regional Emissions Reduction Strategy

Stage 1 Report

Prepared by Jake Roos Consulting Ltd
for the Wellington Regional Leadership Committee

June 2022

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Acknowledgements

The author would like to acknowledge everyone who contributed to developing this document including the Regional Emissions Reduction Plan Steering Group and Dee Warring, editor from the Comms Co-op Aotearoa Ltd.

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Purpose

The report takes stock of existing emission reduction plans for activities in the Wellington-Wairarapa-Horowhenua region, identify gaps in emissions reduction action and analyse what issues a new regional emissions reduction strategy will need to address to be successful.

Main findings

Emissions budgets fall short

The recommended national greenhouse gas (GHG) emissions budgets are likely to fall short of what is necessary for Aotearoa New Zealand to play its part in limiting global heating to 1.5°C above the pre-industrial average. This is certainly true if a 'fair-share' approach to accounting for historic

emissions is used. National and regional GHG emissions accounting ignores the emissions of imported goods, and New Zealand is a net emissions importer.

Emissions Reduction Plan sets direction but lacks detail in key areas

The first national Emissions Reduction Plan (ERP) was published in May 2022 and sets the country's direction for climate action for the next 15 years. It addresses all sectors of the economy, but lacks detail in key areas, notably for the agriculture, energy, industry and building sectors. Many actions are 'plans for plans' which will take years to develop. The ERP has proposed little to arrest the upward trend in emissions in the short term, which is a crucial timeframe.

Existing modelling of what is required to meet emissions reduction targets that are aligned with limiting global heating to 1.5℃, and of the impact of individual policies, shows that most, if not all, available opportunities to cut emissions are needed.

Economic growth prioritised over emissions reduction

Governments and businesses consistently prioritise economic growth over reducing GHG emissions. Without transformation of our physical systems away from fossil fuels at a high enough rate, the growing economy increases emissions, which is currently the case.

The International Panel on Climate Change (IPCC) has said economic growth would continue at only a slightly reduced rate even in its most aggressive emissions reduction scenarios. It has also said existing fossil-fuel infrastructure, if used to the end of its useful life, would use up the remaining global budget for limiting global heating to 1.5°C. This would mean no expansion of infrastructure for fossil-fuel extraction and use would be possible while staying within the budget.

Central government is in the best position to influence emissions. Most other players (for example, businesses and individuals) are unlikely to change their behaviour without powerful drivers, given they have other priorities than doing public good. New laws, funding streams and strong incentives are needed, which only central government can create.

Constraints on local government

Local government has a public good objective that obliges it to take action to reduce emissions, but it is constrained by the range of powers, funding and directives it is given by central government to do this. Councils cannot direct other players in their districts to undertake or prioritise emissions reduction activities, other than those activities which are already regulated. However, they can

undertake new activities provided that these would benefit their district and residents, and they are able to set up agencies to deliver these activities.

Māori's ability to influence emissions

As with local government, iwi groups have limited direct control of emissions sources in their rohe. Some may own or control an asset base with a carbon footprint that can be managed, but these asset bases vary in size greatly. The objectives of these organisations are to represent and protect the interests, welfare and culture of their people, which may overlap with emissions reduction. But any emissions reduction activity also competes for priority and organisational capacity, as it does in any organisation.

Representation in central and local government and in other forms of co-governance in line with Te Tiriti principles provides another means for Māori to influence emissions.

The national Emissions Reduction Plan has an action to elevate te ao Māori (the Māori worldview) within the Government's climate response and to support Māori to define, measure and implement a Māori-specific climate strategy and action plan.

Auckland Council and Dunedin City Council have sought to increase Māori involvement in their city-wide emissions reduction plans.

Councils' emissions reduction programmes at varying stages of maturity

Within the Wellington-Wairarapa-Horowhenua region, councils are undertaking a wide range of emissions reduction actions. Most are:

- taking action to reduce their own corporate GHG emissions
- involved in waste minimisation activities
- focusing on increasing housing density around transport corridors
- increasing their funding for active and public transport
- undertaking advocacy to government on climate change-related policies.

However, these organisations' emissions reduction programmes are at varying stages of maturity. There is also untapped potential for councils to influence industrial emissions through their infrastructure procurement requirements and plans. This would be more effective if done in co-ordination with central government.

Both Wellington City Council and Hutt City Council have set emissions reduction targets for their respective districts, with action plans that were created through extensive public and community consultation. Hutt City Council's plan has actions that need to be led by other agencies.

A top-down approach for emission reduction targets

Emissions reduction targets at the regional, city or district level have mostly been set by organisations using a 'top-down' approach. Whether the supporting action plans can achieve these targets has generally not been modelled. This is due to the challenges inherent in this, and as a tacit acknowledgement that these organisations lack the necessary powers to manage all the emissions connected to their respective areas and targets.

Auckland Council and Dunedin City Council established city-wide emissions reduction targets, with supporting action plans, in collaboration with other players in their area. They also commissioned measurement of city-wide energy use and emissions over multiple years and assessed their performance against their plans. However, emissions in both cities continued to rise. Many actions in Auckland Council's plans stalled due to lack of ownership and shifting priorities.

The 7 gaps in emissions reduction

To sum up, this report has identified seven main 'gaps' — which can also be seen as opportunities — in the region's emissions reduction efforts:

1. Greater central government involvement or a significant delegation of its powers to local government so councils have more control over emitting activities.
2. Measurement and management of imported emissions.
3. Evaluating the projected impact of existing emissions reduction plans.
4. Considering more direct involvement of local government in emissions reduction enterprises, such as renewable energy generation and native reforestation.
5. Short-term (possibly temporary) actions to arrest emissions growth, such as re-purposing road space for active and public transport.
6. Withdrawing support for any new fossil-fuel dependent activities and infrastructure.
7. Central and local government collaboration to require low-emissions materials for new infrastructure, providing clear signals to industry to invest in supplies of these.

Introduction

Background

This project is an initiative of the Wellington Region Leadership Committee, a union of councils, iwi and central government in the Wellington-Wairarapa-Horowhenua region. It was formed to work together and coordinate action to positively shape the future of the region.

The Committee is responsible for three key outcomes: regional growth, regional economic development and regional economic recovery. Delivering these outcomes needs action on housing, including for iwi/Māori, infrastructure, transport, climate change, resilience and economic development.

One of the Committee's projects is to develop a collectively owned, regional emissions reduction strategy (RERS) that directs the transition to a low- or no-carbon region.

This report is the first stage of this project. It comprises a technical, emissions stocktake of current and planned local government activities by councils and other key organisations in the region, to establish a baseline for developing the RERS itself.

This report also includes analysis of the gaps in action to reduce emissions and the overall adequacy of the different players' plans to achieve emissions reduction in the region, consistent with the goal of the Paris Agreement to limit the rise in global average surface temperature to 1.5°C above the pre-industrial baseline.

Approach

This report is divided into five sections as follows:

- Section 1 describes the regional emissions profile.
- Section 2 outlines the groups of players and the extent of their influence on regional emissions.
- Section 3 describes the actions being taken or planned in each sector, and the obvious gaps in action and who could address them.
- Section 4 examines the effectiveness of city-wide emissions strategies in New Zealand that have involved multiple agencies to deliver their actions.
- Section 5 comprises a meta-analysis of the overall situation and the issues that the RERS will need to address for the Committee to be successful in achieving its goal of a transition to a low- or no-carbon region.

SECTION 1

Regional emissions profile

Regional greenhouse gas inventory

The nine local authorities in the Wellington region commissioned an update to the regional greenhouse gas inventory in 2019, covering the period from 2000/2001 through to 2018/2019.[1] Figure 1 below summarises the findings. The headline percentages are the change since 2000/2001 and the percentages under each headline are each source's contribution to the overall 2018/2019 total. Gross emissions (that is, excluding forestry) are shown in figure 2 over the page.

1 https://www.gwrc.govt.nz/environment/climate-change/monitoring-emissions/

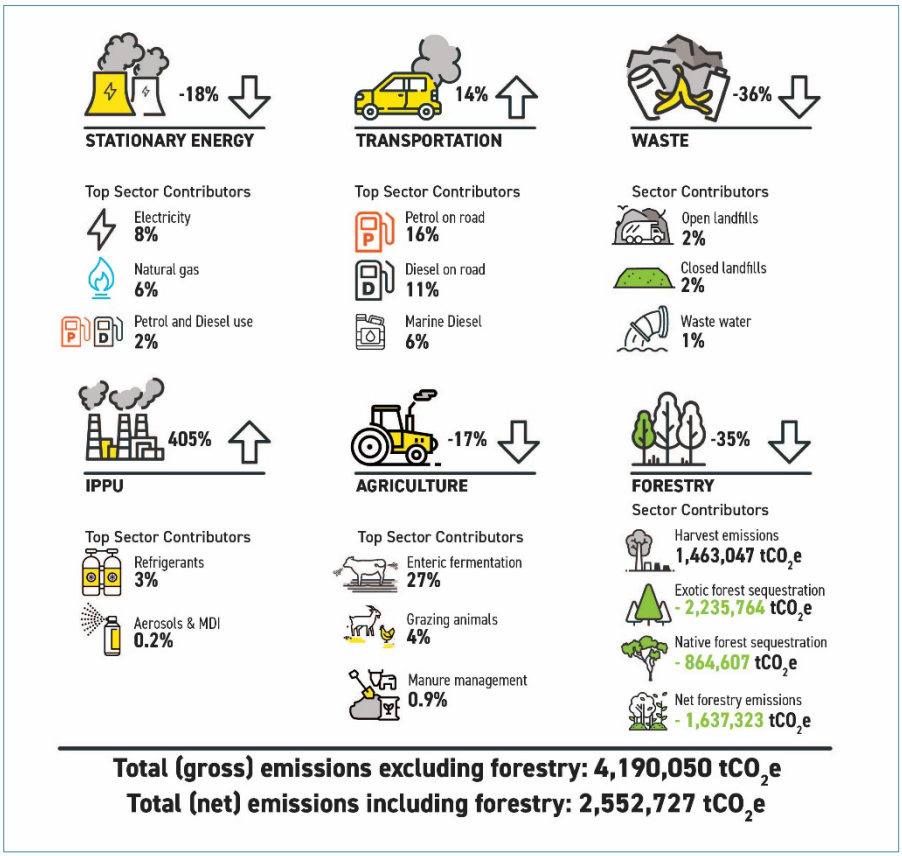

Figure 1: Greenhouse gas emissions in the Wellington region.

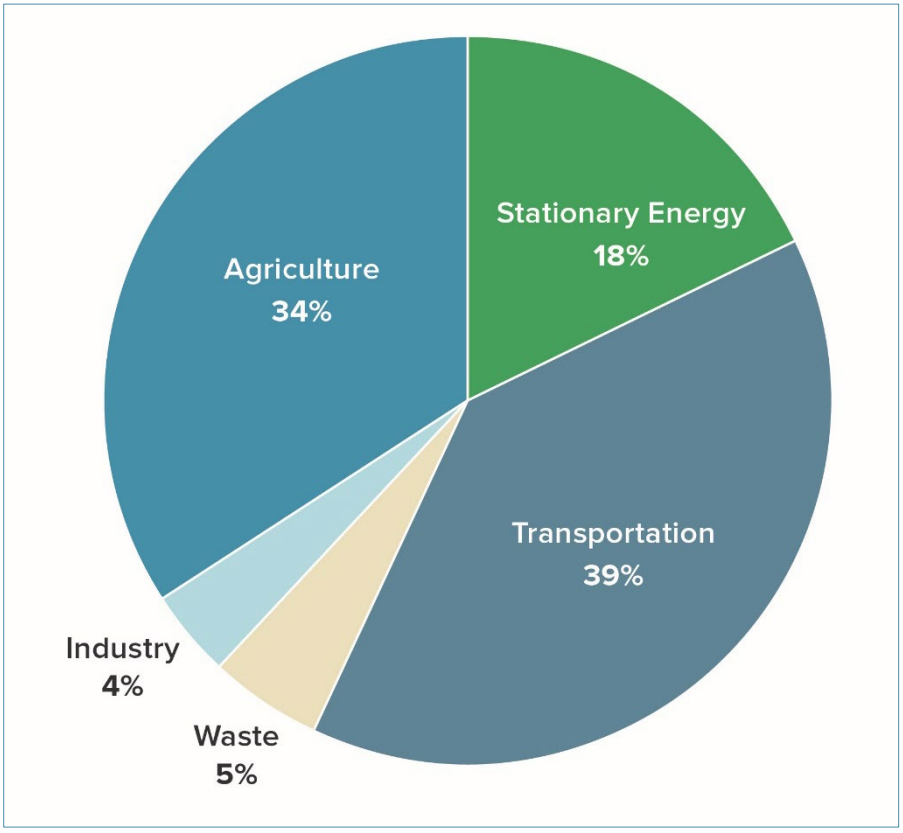

Figure 2: Wellington region emissions by sector 2018/2019, excluding forestry

Horizons Region also has a greenhouse gas inventory, with detail on its individual districts, specifically for the 2018/2019 year. Horowhenua District had gross emissions (excluding forestry) of 819,000 tonnes CO_2e, and net emissions (including forestry) of 983,000 tonnes CO_2e in that period. Around 50 percent of Horowhenua District's gross emissions were from agriculture and around 40 percent from transport.[2]

The Global Protocol for Community Scale GHG Inventories

These regional and district inventories followed the Global Protocol for Community Scale Greenhouse Gas Emissions Inventories (GPC). It includes:

- emissions that occurred within the geographic boundary
- emissions from the generation of electricity that was used in the region
- half of the emissions from journeys that crossed the regional boundary
- emissions from the disposal of waste that originated from the region.

The GPC is a hybrid between a geographic and consumption-based accounting approach. The treatment of electricity, waste disposal and international aviation and shipping emissions relates to the consumer demand in the region for these services. However, products that are exported from the region are not treated the same way. Although people outside the region are consuming these exported goods, the emissions from their production are included because they originated from within the region's geographic boundary.

To some extent, the emissions sources included in the GPC reflect the level of influence people and organisations (particularly sub-national governments) have over emissions. However, most consumption-based emissions sources — such as those associated with imported food, goods and construction materials — are still excluded despite the influence that people and organisations in the region can exert over these.

National greenhouse gas accounting

National greenhouse gas accounting is on a fully geographic basis. International flights and shipping are excluded entirely from the national inventory, which is the major difference with the GPC.

[2] https://www.horizons.govt.nz/HRC/media/Media/Publication/SoE_2020_Horizons-Region-Community-Carbon-Footprint-2018-19.pdf?ext=.pdf

Estimates are available of consumption-based emissions for countries including New Zealand as shown in Figure 3,[3] but not for regions within New Zealand. Online tools such as FutureFit,[4] which was developed by a consortium including Wellington City Council, allow individuals to estimate their personal consumption-based emissions (that is, their 'carbon footprint'). Typically, diet, discretionary spending and travel are the main influences on an individual's carbon footprint.

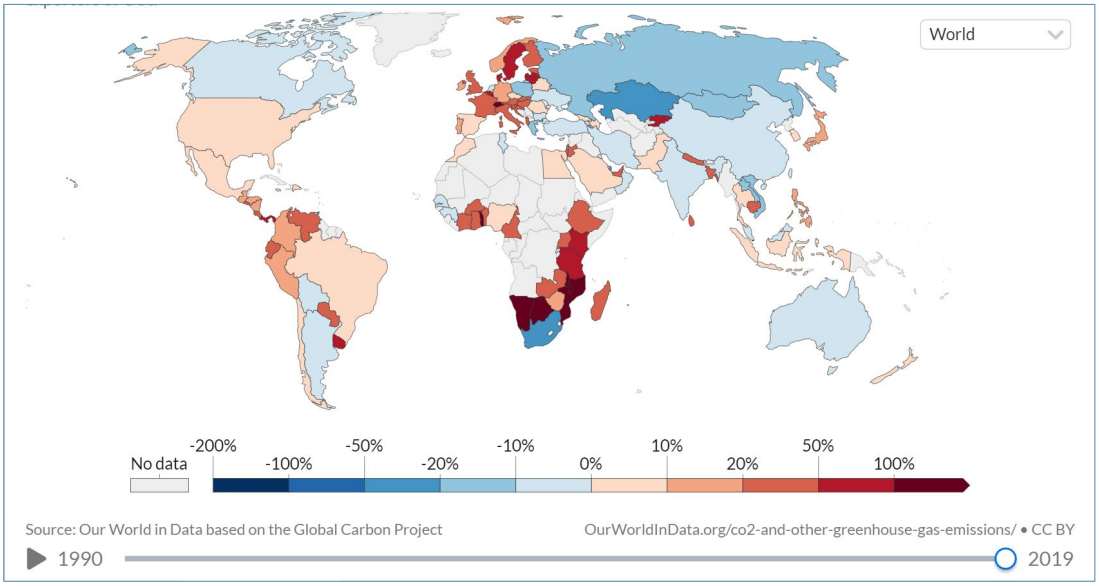

Figure 3: CO_2 emissions embedded in trade, 2019

Statistics New Zealand publishes an annual dataset of regional emissions.[5] It uses a different accounting approach again, allocating national emissions either to household or industrial 'activity units. Its approach means most emissions are allocated to the region where the industry in question is located, including electricity generation. Stats NZ only counts direct emissions, so by its method, 90 percent of 'household' emissions are from the use of private vehicles, as this is the predominant direct emissions source.

3 https://ourworldindata.org/grapher/consumption-co2-per-capita

4 https://www.futurefit.nz/about

5 https://www.stats.govt.nz/information-releases/greenhouse-gas-emissions-by-region-industry-and-household-year-ended-2019

Summary points

- The regional inventory using the GPC protocol provides reasonable coverage of emissions sources and largely aligns with the national GHG inventory.
- However, both national and regional inventories do not fully reflect the influence domestic players have on emissions that occur abroad through their purchases of imported goods, including food.
- The accounting methods to apportion national emissions between regions vary significantly, providing different perspectives on one region's impact on climate compared to other regions.

SECTION 2

Players in the region and how they can influence emissions

Central government

Central government has the widest remit and set of powers available to it to influence both the country's emissions as a whole, as well as those of its regions. Central government may set any rules, regulations, taxes, restrictions and incentives that attract majority support in Parliament to pass into law. Central government can also raise funds for emissions abatement through taxation, borrowing and via the Emissions Trading Scheme (ETS). It has a dominant role in emissions reduction compared to other players. As such, any regional emissions reduction strategy should mainly seek to address the gaps in, and support the implementation of, central government's carbon reduction policies.

Where there are significant gaps, a regional emissions reduction strategy is unlikely to be successful, due to the comparatively limited influence and priorities of the other players.

> "To achieve climate goals, this additional development and economic activity needs to have negligible emissions while any existing activity and emissions are decarbonised, otherwise emissions will continue to grow."

Central government is currently responding to the advice of the Climate Change Commission (CCC) to set national carbon budgets to 2035 and put into place a national Emissions Reduction Plan (ERP) to achieve them. The draft plan was consulted on in November 2021 and the final version published in May 2022[6] and will be examined in the next section.

Central government obviously has other goals and priorities, for example responding to the COVID-19 pandemic and the housing crisis. It must balance these with its climate goals, even when they run counter to each other. Building new houses and infrastructure to support a rising population creates upward pressure on emissions, and indeed national gross emissions have increased 26 percent over the period 1990 to 2019.[7] To achieve climate goals, this additional development and economic activity needs to have negligible emissions while any existing activity and emissions are decarbonised, otherwise emissions will continue to grow.

Central government agencies, including those for healthcare and tertiary education, are part of the Carbon Neutral Government Programme, which requires or strongly encourages them to set gross emissions targets and become 'carbon neutral' as organisations from 2025.

Local government

All the powers that local government (councils) has to regulate activities within its boundaries are delegated to it by central government. Likewise, central government prescribes the types of activities that local government is required or permitted to perform, and to some degree how it should perform these activities. For example, through the National Policy Statement on Urban Development, central government has directed local government to accommodate housing growth in its plans. Furthermore, a large part of local government's funding — particularly for transport

6 https://environment.govt.nz/publications/aotearoa-new-zealands-first-emissions-reduction-plan/

7 https://environment.govt.nz/publications/new-zealands-greenhouse-gas-inventory-1990-2019-snapshot/new-zealands-gross-and-net-emissions/

infrastructure and services — is from central government coffers. Therefore, what local government can do to influence emissions is mostly determined by central government.

However, individual councils still have a significant degree of autonomy, and the level of effort to reduce emissions varies between them because of that degree of autonomy and local factors. Actions councils can take to influence emissions include:

- reducing their own 'corporate' emissions
- prioritising investment in public and active transport infrastructure
- urban and other land-use planning
- advocating to central government
- community education
- offering residents financial incentives to act.

The Local Government Act does not preclude local government from novel ventures if these have a public benefit, so local government could support emissions reduction in more ways than it currently does, but this runs counter to its naturally conservative tendency.

Councils in the Wellington-Wairarapa-Horowhenua region have existing plans and targets to reduce emissions, either from their own operations, their districts as a whole, or from both. These are summarised in **Appendix A**, along with summaries of other relevant plans and statements by other regional actors relating to emissions reduction.

Businesses

The main objective of businesses is to return a profit to their owners and investors. They can be expected to comply with laws relating to emissions reduction, but they have industry groups to represent their members' interests and influence public policy. Some businesses will go beyond what the law requires them to do with regards to reducing emissions if they believe it can improve their profitability, if it is in their long-term interests and/or gives them some other market advantage.

More broadly, businesses require a social licence from the public to operate, and increasingly, being seen to be transitioning to a more sustainable mode of operation is part of that social licence. The capacity of businesses to make such a transition is relative to their size — it is easier for large businesses than for smaller firms to plan and manage. The potential of businesses to affect emissions is significant although limited by the available technologies, the law and the actions of their competitors. But the fundamental problem is that businesses' highest priority is to increase

profits (which can be done by improving efficiency, cutting costs, increasing output or using their market power to increase prices), and their core profit-making competencies are almost always to do with something other than cutting emissions. This combination means that gross emissions of successful businesses, as measured by their size and profitability, tend to increase rather than decrease.

> "The fundamental problem is that businesses' highest priority is to increase profits and their core profit-making competencies are almost always to do with something other than cutting emissions."

In economic terms, the largest employers in the Wellington region are providers of professional, scientific and technical services, the public sector, and financial and insurance services. Emissions come directly from these activities and the services that support them and their workers. Many of the larger employers in the private sector have made commitments to measure and reduce their emissions by joining the Climate Leaders' Coalition, which is a voluntary effort led by Aotearoa's largest businesses.

A large proportion of the region's emissions come from agriculture. The sector has not been required to pay for the emissions from land use (for example, livestock and fertiliser use) or from land-use change, apart from pre-1990 forestry.

The farming representative groups are part of a partnership supported by the Government called He Waka Eke Noa. Its aims are for all farms to know their emissions by the end of 2022, and put an emissions pricing scheme in place by the end of 2025.

Electricity distribution companies

Three electricity distribution companies operate in the Wellington-Wairarapa-Horowhenua region. Wellington Electricity is a privately owned company serving Wellington City, Porirua and the Hutt Valley. Electra Lines is owned by a community trust and serves Kāpiti and Horowhenua. PowerCo is also a privately owned company that serves large parts of the North Island including the Wairarapa. It also operates the natural gas distribution network in Wellington, Porirua and the Hutt Valley.

These electricity distribution companies are all regulated monopolies which provide an essential public service, so they operate somewhat differently to either local authorities or regular businesses. Regulation means they cannot use their monopoly power to increase profits, and it obliges them to accept new connections to their networks and maintain existing connections, rather than these

being purely commercial decisions. Their overriding priority is maintaining security of supply and minimising outages.

Electrification of fossil-fuelled activities, such as transport and industrial process heat, and increasing the supply of renewable electricity, are essential actions for New Zealand to achieve its climate goals. Thus, electricity distribution companies have an important role to play in emissions reduction strategies. They also must accommodate increasing demand for electricity driven by population growth. For example, PowerCo needs to maintain the viability of its gas distribution network while demand for natural gas declines due to the decarbonisation effort.

Electricity distribution companies are not presently obligated to help the decarbonisation effort. However, all three in the study area have shown an interest in learning more about the impact of new technologies — such as electric vehicles (EVs), distributed renewable generation and grid-connected batteries — on their networks. They are also investigating innovations that can mitigate potential negative effects of large-scale electrification such as increased load at peak times.

Iwi groups

The iwi whose rohe includes parts of the Wellington region are Ngāti Toa, Ti Ātiawa ki Whakarongotai, Ti Āti Awa/Taranaki ki Te Upoko o Te Ika, Ngāti Raukawa, Rāngitane o Wairarapa, Ngāti Kahungungu and Te Iwi Muaūpoko. Iwi have set up organisations (such as trusts) to represent their people and protect their land, water, fisheries and cultural heritage, to negotiate with the Crown and manage their assets and economic interests.

The purpose of iwi trusts intersects with emissions reduction in the form of political influence, advocacy, their business ventures and investments, for example in forestry, farming, commercial property and papa kāinga (housing). The iwi representative groups in Wellington-Wairarapa-Horowhenua region do not as yet have published plans relating specifically to climate change. Representatives of Māori authorities are on the steering group for He Waka Eke Noa. Māori increasingly co-govern resources, in accordance with Te Tiriti principles. The current proposal for reform of the management of three waters (drinking water supply, wastewater treatment and stormwater management) has mana whenua representation on regional oversight groups.

The national Emissions Reduction Plan has an action to elevate te ao Māori (the Māori worldview) within the Government's climate response and to support Māori to define, measure and implement a Māori-specific climate strategy and action plan.

Voluntary sector, community groups and NGOs

Many of these groups undertake advocacy and can have a large influence on public policy and, through that, emissions. A good example is Generation Zero and the community groups that supported it to advocate for the Zero Carbon Act, which is now the main legislation guiding government climate action.

Other community organisations provide public services of some kind (for example, environmental restoration or food banks) or organise sports or other social events and thereby have some small but direct influence on emissions. All such groups are also networks through which information and social norms can propagate.

Individuals

Individuals can influence emissions through their personal choices such as their diet, how they get around and what they buy. In practice, these choices are constrained by many factors, physical, economic, social and cultural. The weighting individuals put on these factors varies considerably. For example, some people may have access to excellent and comparatively affordable public transport for commuting to work, but still prefer to drive because they like maintaining their personal space, or they believe using public transport doesn't fit with their self-image. Other people won't care about such things at all.

Regardless of the merits and benefits of changing their habits, people have an innate tendency to be suspicious of change and will try to maintain familiar patterns of behaviour. This limits the effectiveness of providing information and incentives to encourage them to switch to low-emissions options. Despite this wariness, people are generally highly adaptable and can adjust quickly and effectively when circumstances change. It is when a person's routines are suddenly disrupted (usually due to factors outside their control, not by choice) that they discover other ways of doing things are okay or indeed better. When this happens, the change to their habits is permanent, even after the source of the disruption ends.

Although a 2021 Ipsos Mori poll found wide support from government, businesses and individuals in New Zealand for action on climate change to reduce emissions, the percentage of people expressing willingness to make personal sacrifices or changes to achieve this was low. Most people reported they were already 'doing their bit' through actions such as recycling and home-energy saving. Less

New Zealanders compared to people in other developed countries reported willingness to fly less, drive less or eat less meat and dairy.[8]

So, while in theory the choices of individuals could have a hugely significant impact on emissions, most of the population are unlikely to make these changes without very powerful external drivers to spur them into action.

Summary points

- Central government, with its wide range of powers and 'public good' purpose, is in the best position to encourage and direct efforts to reduce emissions. It has passed laws that obliged it to set and remain within emissions budgets that were put in place with reference to limiting global heating to 1.5℃.
- Local government also has a public good objective and a degree of autonomy it can use to influence emissions arising from the activities of its communities. However, it lacks the powers to direct sectors of its local economy to decarbonise.
- Businesses do not have a public good objective and are unlikely to self-regulate their own emissions effectively.
- Electricity distribution companies are regulated monopolies that have an important role to play in decarbonising energy.
- Iwi-based trusts of varying sizes and purposes represent Māori interests within the region. Iwi representatives increasingly participate in co-governance as part of, or alongside, central and local government.
- Community and not-for-profit groups provide a variety of services to their members and communities and advocate for their members' and supporters' interests. They can be influential but have little direct control of emissions sources.
- Individuals' impact on emissions via their behaviour and habits are hugely influential on emissions in theory, but in practice their choices are constrained by the circumstances, systems and norms of the society they live in.
- All players in the region have competing priorities, among which reducing emissions is seldom high.

SECTION 3

Decarbonisation plans and gap analysis

Required effort

Global level

The 2015 Paris Agreement describes parties achieving a balance between greenhouse gas sources and sinks globally by the 'middle of the century' as the necessary step to achieving its goals of limiting global heating to 1.5°C. The Agreement does not distinguish between long-lived and short-lived greenhouse gases. This has prompted a wave of 'net zero by 2050' targets for of all greenhouse gases to be set by various players.

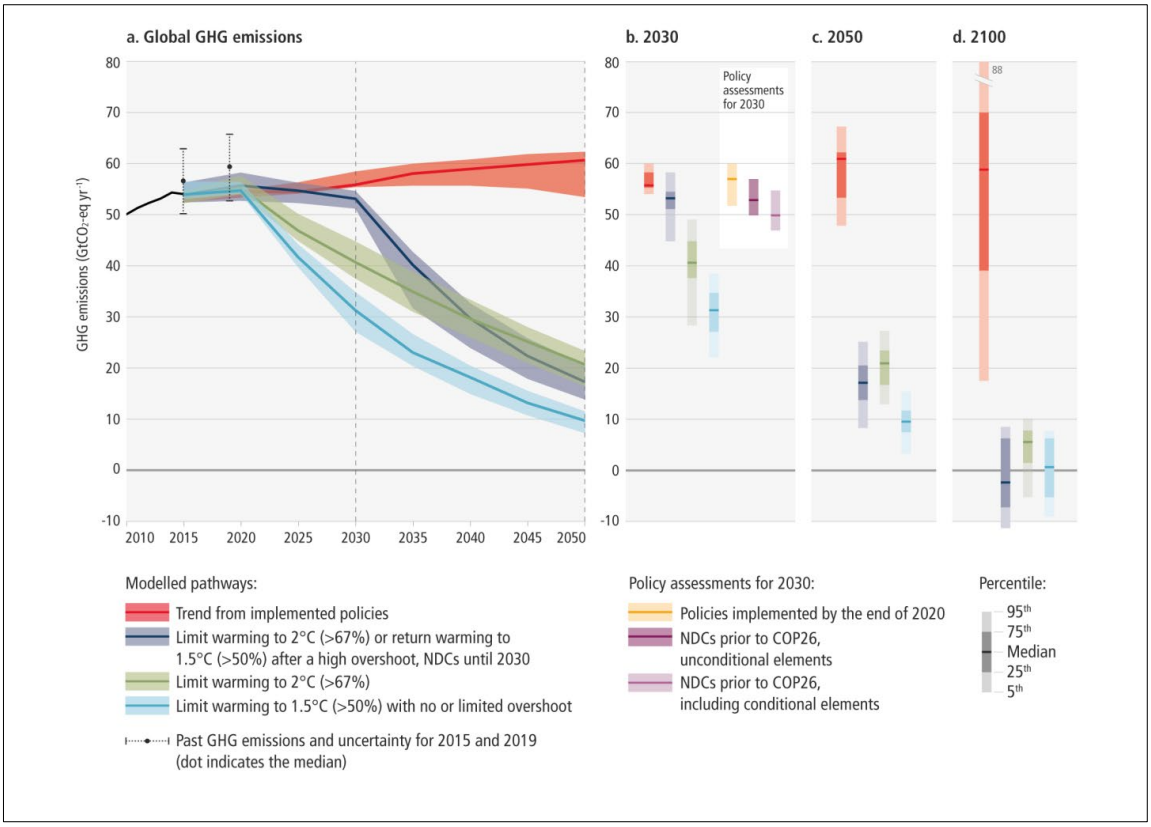

Figure 4: Projected global greenhouse gas emissions from NDCs announced before COP26 would make it likely that warming will exceed 1.5°C and also make it harder after 2030 to limit warming to below 2°C. Source: IPCC Climate Change 2022 Report: Summary for Policymakers

The Intergovernmental Panel on Climate Change (IPCC) issued a special report in 2018 on global carbon pathways that were more likely to limit heating to 1.5oC. It found global emissions would need to decline in a linear fashion from 2020 to reach net zero by 2040. Even in this aggressive scenario, the average global surface temperature was likely to exceed the limit for a time but would return below the limit by the end of the century.[9]

In April 2022, the IPCC issued a new report on mitigation which said that to have a 50 percent chance of limiting heating to 1.5°C with no overshoot, emissions must be nearly halved by 2030. Its assessment of the emissions reduction pledges made by countries (NDCs) was that even if they were all kept, the world would only reduce its emissions by 8 percent by 2030. This would all but guarantee overshoot of the 1.5°C limit, even if drastic cuts were made after 2030.[10]

As most greenhouse gases such as carbon dioxide and nitrous oxide are long-lived, their cumulative emissions are the main determinant of global heating. Deep cuts in the rate of emissions are needed

9 https://www.ipcc.ch/site/assets/uploads/sites/2/2019/05/SR15_SPM_version_stand_alone_LR.pdf

10 https://report.ipcc.ch/ar6wg3/pdf/IPCC_AR6_WGIII_SummaryForPolicymakers.pdf

in the short term because, once these long-lived gases are in the atmosphere, their heating effect can only be reversed by removing carbon dioxide from the atmosphere, enhancing natural sequestration, or through artificial capture and storage. The IPCC has said all scenarios that limit heating to 1.5°C or 2°C by 2100, with or without overshoot, need carbon dioxide removal using a combination of approaches. These include enhanced afforestation, bioenergy with carbon capture and storage, direct air capture, accelerated weathering and increasing ocean alkalinity.[11]

"Deep cuts in the rate of emissions are needed in the short term because, once these long-lived gases are in the atmosphere, their heating effect can only be reversed by removing CO_2, enhancing natural sequestration or through artificial capture and storage."

The heating effect of the short-lived greenhouse gas methane is related to its rate of release — slower rates of emission can cause a cooling effect (as methane emitted in the past leaves the atmosphere and is not replaced by new emissions), which is useful in limiting total heating. The IPCC's special report explained that methane emissions need to be reduced but not brought to zero to limit global heating to 1.5°C. The heating effect of non-CO_2 emissions still needs to be offset by the cooling effect of CO_2 removals from the atmosphere.

The projected lifetime emissions of existing fossil-fuelled infrastructure without abatement action exceed the total remaining carbon budget associated with limiting heating by 1.5°C, with no or limited overshoot. Any expansion of fossil-fuel-based or dependent infrastructure (for example, production and supply, roads, vehicles and airports) is clearly at odds with staying within this limit. Furthermore, the commissioning of new fossil-fuel-based assets requires accelerated retirement of existing ones to neutralise its effect.

National level

In the Climate Change Response Amendment (Zero Carbon) Act 2019, the New Zealand Government committed to contribute to the global effort to limit the Earth's average temperature increase to less than 1.5°C above pre-industrial levels by reducing:

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

[11] https://www.technologyreview.com/2022/04/04/1048832/un-climate-report-carbon-removal-is-now-essential

Under the Act, the Government is obliged to set five-year emissions budgets consistent with these goals and put a national Emissions Reduction Plan in place. Subsequently, the Climate Change Commission (CCC) recommended budget levels up to the period 2031 to 2035. Its projection of emissions that these budgets are drawn from, has long-lived gases reduced by 38 percent in 2030 compared to 2019 on a net basis (including forests) and 24 percent on a gross basis. Biogenic methane is 12 percent lower in 2035 compared to 2019.

New Zealand's current target emissions reduction pledge to the international community, called a nationally determined contribution (NDC), is a 50 percent reduction by 2030 compared to 2005, but uses gross-net accounting. This over-inflates the country's base year and has no basis in logic. Using net-net accounting, the new NDC is only a 28 percent reduction by 2030 compared to 2005, or a 24 percent reduction compared to 2017.

Climate Action Tracker independently assesses NDCs and rates them against what would be a sufficient level of action if every country made a similar level of effort compared to the country in question. It calculates New Zealand's gross emissions in 2017 as 80.3 Mt CO_2e and estimates a minimum reduction (not taking historic emissions into account) would be down to 46.6 Mt CO_2e by 2030, a 42 percent reduction. If historic emissions are included (that is, because New Zealand emitted more per capita in the past than other countries, so should reduce faster now) a 61 percent reduction would be our fair share. Climate Action Tracker rated Aotearoa New Zealand's NDC as 'highly insufficient'.[12]

The Climate Change Commission uses net-net accounting, but it is also required to treat methane differently. By law, the Commission's recommended emissions pathway for long-lived gases needs to be consistent with limiting heating to 1.5°C, but its pathway for biogenic methane doesn't. When the 'demonstration pathway' (recommended emissions scenario) figures for the two groups of different gases are combined, it results in a 27 percent reduction of CO_2-equivalent emissions in 2030 compared to 2019 and a 19 percent reduction compared to 2017.

Regional level

There has been no published attempt to downscale national emissions targets and budgets to a regional level. It is reasonable to expect that at the least, Wellington region will need to follow the legislated national emissions trajectory. That creates a dilemma, given the Paris Agreement does not give special treatment to biogenic methane when it talks about balancing emissions sources and

[12] https://climateactiontracker.org/climate-target-update-tracker/new-zealand/

sinks, whereas New Zealand law does, combined with the fact our NDC is not consistent with limiting heating to 1.5°C.

A project completed in 2019, the 2050 Emissions Calculator[13] created a website where users could make customised projections of the Wellington region's emissions to 2050, assuming certain interventions to reduce emissions had been made. The assumption behind the calculator was that regardless of what commitments were made at the national level, the region should use a science-based, Paris Agreement-consistent emissions pathway, which is net zero for all greenhouse gases by 2050. This level of commitment or stronger has been adopted by various organisations in the region.

Calculator users can carry out the same emissions-projection exercise on individual districts and the Wairarapa districts combined. Although the calculator uses the 2015–2016 emissions inventory as a base year and does not identify and treat biogenic methane separately, it still provides a useful indication of the scale of change needed to achieve a certain level of reduction. There are 35 aspects of the economy that can be adjusted in the calculator. Continuing the status quo would see emissions rise by 40 percent by 2050. Adjusting all the aspects to the most ambitious level of change (as defined in the calculator — greater levels of change are theoretically possible) would see net emissions drop by 126 percent by 2050, suggesting policymakers may have some options to achieve carbon targets other than 'do everything'. Conversely, national emissions have continued to rise in recent years, meaning deeper and faster cuts than those modelled by the 2050 calculator are probably necessary.

For each sector, the amount of change needed as set out by the Climate Change Commission in its advice to the Government, will be discussed relative to actions and policies committed to by players in the region.

[13] https://gwrc.2050calculator.nz/

Summary points

- Globally, human emissions of greenhouse gases need to be cut by approximately half by 2030 compared to 2020 to give a 50 percent chance of limiting global heating to 1.5℃. Projections show current emissions reduction commitments made by countries (NDCs) taken together will not deliver this.
- Emissions projections consistent with limiting global heating to 2℃ or below, with or without overshoot, requires carbon to be removed from the atmosphere by enhanced means — converting land to forestry as well as by artificial methods.
- The legally-binding targets for emissions reduction for the New Zealand Government and its NDC are not consistent with limiting global heating to 1.5℃. The targets are inconsistent mainly due to the special treatment of, and weaker targets set for, biogenic methane, using an accounting method not internationally recognised. The NDC is inconsistent due to the Government's use of net-gross accounting, which has over-inflated its base year. The commitments also fall short of a 'fair share' reduction based on the country's historic emissions.
- No attempt has been made to date to downscale the New Zealand Government's national and international emissions reduction targets to the regional level. Many organisations and districts within the region have adopted emissions reduction targets that are effectively stronger than central government's by virtue of not giving special treatment to biogenic methane, not using a net-gross accounting method, or because they aim to reach net-zero emissions sooner.

Transport

Climate Change Commission demonstration pathway

The Climate Change Commission's 'demonstration pathway' (a scenario consistent with its emissions budgets) increases the distance travelled by walking, cycling and public transport by 25 percent, 95 percent and 120 percent respectively by 2030. Growth in vehicle kilometres travelled by private car is curtailed as a result and combined with a reduced need to travel declines by 6 percent in 2035 compared to 2019. By 2035, all new light vehicles entering the fleet are EVs and just under half of all private vehicle kilometres are driven in them. Fleet fuel economy improves by one percent per year to 2035. Four percent of freight tonne-kilometres switches from road to rail and coastal shipping. By 2035, 1.5 percent of liquid fuel supplied to all uses, including international aviation, is 'low carbon'. Overall, the pathway has the transport sector cutting its emissions by 41 percent in 2035 compared to 2019.

Central government actions and plans

The Government passed the Clean Vehicles Act in February 2022 which introduced rebates and fees on new and imported second-hand light vehicles relative to their emissions. The Act also requires improvements to average fleet fuel efficiency. The policy evaluation projected the Act would have the effect of reducing the emissions of the light vehicle fleet by 39 percent over the period 2022 to 2035 or reducing the country's total emissions by 1.5 percent over the same period.

In the national emissions reduction plan (ERP), the Government summarises the other transport policies it has committed to and indicates others it is developing ('plans for plans').

Committed:

- Make exemptions for EVs from road-user charges (light vehicles until 2024, heavy vehicles until 2025).
- Set up a contestable grant fund for low-emission vehicles for technology demonstration and charging infrastructure.
- Transition public transport bus fleet to all electric by 2035.
- Implement a 10-year national rail plan.
- Invest $35M to $40M in coastal shipping.
- Integrate land-use, urban development and transport planning and investments.

- Implement mode shift plans.
- Ensure further investment in highway and road capacity for light private vehicles is consistent with climate change targets.
- Consider how to repurpose assets for the best transport use, including active modes.
- Make significant improvements to public transport services nationwide, and invest in walking, cycling and shared transport options.
- Change regulation to make it easier for local government to reallocate road/street space rapidly for public transport, walking, cycling and shared mobility in urban areas, and create an expectation that this will occur.
- Enable congestion pricing, and work with Auckland Council to implement it. Create a model that other councils can adopt, with emphasis on Wellington.
- Introduce a vehicle scrappage scheme to support low-income New Zealanders to shift to low-emissions transport.
- Introduce a sustainable biofuels mandate to reduce emissions from existing vehicles, and plan for large-scale rollout and investment in EV charging.

Transport targets

The Government proposed these transport targets:

1. Reduce vehicle kilometres travelled (VKT) by cars and light vehicles by 20 percent by 2035 through providing better travel options, particularly in our largest cities.
2. Increase zero-emissions vehicles to 30 percent of the light fleet by 2035.
3. Reduce emissions from freight transport by 25 percent by 2035.
4. Reduce the emissions intensity of transport fuel by 15 percent by 2035.

Compared to the Climate Change Commission's demonstration pathway, the Government's plan has a greater emphasis on reducing vehicle kilometres travelled and 'low-carbon' transport fuels, and less reliance on EVs.

The ERP includes a projection of the effect of the proposed interventions and estimates they will add up to a 41 percent reduction in transport emissions by 2035 compared to 2019, which is in line with what the Commission has said is required. For 2025, the ERP projects a 4 percent reduction in transport emissions.

Local government actions and plans

The Greater Wellington Regional Land Transport Plan[14] (RLTP) adopted in 2021 has an objective of reducing emissions from land transport by 35 percent by 2030. Horizons' RLTP has an 'aspirational' target of a 30 percent reduction in transport emissions by 2030 compared to 2021–22.[15] The Let's Get Wellington Moving (LGWM) project has been refocused on climate change mitigation and has the objective of enabling housing densification along transport corridors while reducing car dependence.

"All local government's transport ambitions are dependent on central government support."

Projections of the emissions impact of current transport policies nationally, and for the Wellington region, carried out for Let's Get Wellington Moving showed these fell short of the RLTP target, but might deliver over a 35 percent reduction by 2037, if travel demand management using road pricing (for example, a congestion charge) is also implemented.[16]

Individual councils have committed to increasing housing density to give effect to the National Policy Statement on Urban Development. Some councils greatly increased their allocation of transport funding to walkways and cycleways in their 2021 long-term plans. Many have committed to transition their vehicle fleets to electric propulsion and some have made good progress with this.

Waka Kotahi created a mode shift plan for the Wellington region in 2020 which was adopted by the councils. This plan has a target of increasing mode share of active and public transport from 30 percent to 45 percent by 2030. This target is reflected in the 2021 Wellington Region Public Transport Plan, which reflects commitments to increase and electrify bus and rail services in the region, upgrade facilities such as bus stops and train stations, and introduce an integrated ticketing solution.[17] Horizon's Public Transport Plan 2015–2025 has no targets for reducing emissions but has an action to investigate using zero emissions vehicles.[18]

All local government's transport ambitions are dependent on central government support. For example, the regional councils' passenger rail electrification plans for Wairarapa and Manawatu

14 https://www.gw.govt.nz/assets/Documents/2021/10/Wellington-Regional-Land-Transport-Plan-2021web.pdf

15 https://www.horizons.govt.nz/HRC/media/Media/2021-31-Regional-Land-Transport-Plan.pdf?ext=.pdf

16 https://lgwm-prod-public.s3.ap-southeast-2.amazonaws.com/public/Documents/Nov-1-MRT/2021-10-29-LGWM-Carbon-Analysis-of-the-LGWM-Programme.pdf

17 https://www.gw.govt.nz/assets/Documents/2021/10/J001366-Public-Transport-Plan-v5-web.pdf

18 https://www.horizons.govt.nz/HRC/media/Media/Bus-Route-Timetable/REGIONAL-PUBLIC-TRANSPORT-PLAN.pdf?ext=.pdf

routes are contingent on a 90-percent share of costs being borne by the National Land Transport Fund. Central government did not commit to this project in the ERP or the 2022 Budget. However, it did commit to all new public transport buses being electric from 2025.

"The gap between what is being done in the transport sector and what is necessary is continuing to widen as the remaining emissions budget is consumed by continuing business as usual."

Gap analysis

Central government obliges local government to accommodate population, housing and infrastructure growth but not to reduce emissions. These goals are in conflict while our economy is powered with fossil fuels. To stay within a fixed carbon budget consistent with giving the best chance within a 1.5°C heating limit, decarbonisation needs to be prioritised to limit or eliminate the effect of growth consuming an increasing share of that budget. The Climate Change Commission's emissions budgets were criticised for this reason by Generation Zero, Forest and Bird and others, who were concerned about the relatively large budgets the Commission allocated for the earlier periods of 2022 to 2025 and 2026 to 2030.

The ongoing programme of road expansion for the benefit of motorists is at odds with the objective of reducing vehicle kilometres travelled and is likely to put carbon budgets under significant pressure, especially as programmes to expand public transport infrastructure proceed relatively slowly. Similarly, the commitment of central and local government to expand tourism as a way of growing the regional economy creates pressure for increased aviation. Aviation is a transport mode which, in the short term (the timeframe that matters most in limiting heating to 1.5°C), has no significant options for mitigating emissions other than reducing the number of kilometres flown.

The gap between what is being done in the transport sector and what is necessary is continuing to widen as the remaining emissions budget is consumed by continuing business as usual. Short-term

The gap between what is being done in the transport sector and what is necessary is continuing to widen as the remaining emissions budget is consumed by continuing business as usual. Short-term actions to stop transport's emissions upward trajectory are needed, to allow longer-term strategies to be implemented, such as building better public and active transport infrastructure, increasing housing density and transitioning to EVs. Short-term actions could include the rapid repurposing of existing road space for active and public transport and carpooling lanes, reviewing and delaying any road network expansion plans and reducing speed limits. Intercity passenger rail and coach services

(daytime and sleeper services) could be set up or expanded using the existing rail and road network to substitute for domestic passenger flights.

Liquid biofuels are likely to increase emissions, not decrease them

The Government's desire to supply 'sustainable' liquid biofuels to use with existing internal combustion engines is unlikely to have a useful impact on emissions and runs the risk of having the opposite effect. Liquid biofuels are only available in significant quantities when a food-based feedstock is used which have large and diverse global supply chains available. The increased demand for food crops or arable land to make biofuels induces land-use change, which, in turn, increases emissions, often to a level greater than the fossil-fuel use it replaces.[1] The added demand also increases food prices globally. A sustainable biofuel would need to somehow circumvent this effect, which can only be achieved at scale by it being made from a non-food-based biomass feedstock, such as plant husks or woody material (that is, cellulose).[1] The infrastructure for this does not exist in New Zealand or abroad, and it is unlikely to be created without significant government investment and leadership. However, the Government's main policy is instead for a biofuels mandate.

Faced with a requirement to supply biofuel, fuel suppliers are more likely to lobby for the sustainability requirements to be relaxed or removed than to undertake the necessary infrastructure investment themselves, given its scale and technical risks. Because national emissions accounting does not count the emissions of imported goods, the true emissions impact of using these food-based biofuels would be hidden.

It should be noted that liquid biodiesel can be made from waste cooking oil or tallow from meat processing. Using these feedstocks to make biofuel does not appreciably induce land-use change but their supplies are relatively small and insufficient to meet the demand of the planned biofuels mandate.

Summary points

- Projections show that current and proposed transport policies are not consistent with limiting global heating by 1.5℃. Instead, they would achieve the amount of reduction needed by 2030 around five to seven years later.
- The Government has adopted a strong target for reducing the amount of private vehicle kilometres travelled, but continuing expansion of the road network is at odds with this and emissions reduction goals.
- As with other sectors, transport lacks short-term actions that might arrest emissions growth.
- Reliance on a mandate to deliver 'sustainable' biofuels is unlikely to encourage the investment required to deliver biofuels in the desired quantities while avoiding emissions from induced land-use change and a host of other negative effects.

Stationary energy, industry and buildings

Central government actions

The energy sector and emissions-intensive industries are direct participants in the NZ Emissions Trading Scheme (NZ ETS). This imposes a price on emissions they must pay, through the purchase and surrender of emissions units. This price signal is intended to motivate them to invest in reducing their emissions rather than pay the cost of emissions units. In practice, there is limited evidence this is occurring, although the impact of recent changes that decrease the availability of new emissions units and increase their price has not yet been evaluated.

Apart from the NZ ETS, there are no other regulatory measures for these emissions. The Government offers advice and incentives to businesses and households for demand-side management of energy and requires energy performance labelling of appliances through the Energy Efficiency and Conversation Authority's programmes.

The large electricity generating companies in the New Zealand electricity market are focussed on increasing their profits, and this does not necessarily align with decarbonisation. The design of this market pays all generators the highest price per unit of electricity bid in each half-hourly market

clearing round, which is typically from a fossil-fuelled power plant. Central government has taken the following steps in this area:

- It is investigating reform of the electricity market to align it with decarbonisation goals. Any change will not come before 2025.
- It is researching the New Zealand Battery Project, which seeks to address the issue of inter-seasonal energy storage for electricity generation. The research will inform reform of the electricity market as deploying stored energy to avoid the use of fossil-fuelled power plants (most likely during 'dry-year events' when hydropower lakes are low) will reduce the market clearing price paid to generators, and therefore their profits.
- It is also proposing to review and possibly strengthen the National Policy Statement on Renewable Energy Generation which seems to not have had the intended effect of making resource consent applications for renewable energy generation more likely to succeed.

The Government has not committed to the Climate Change Commission's recommendation that no gas heating systems are permitted after 2025. The ERP has simply described making a plan for the gas industry. The Government has committed to a ban on new low- and medium-temperature coal boilers and phasing out existing ones by 2037. It has moved away from its 100 percent renewable electricity target and is instead focused on a new target of 50 percent of delivered energy to be from renewable sources. It has indicated a ban on fossil fuels being used for baseload electricity generation, but there are no generation projects of this kind in the pipeline in any case.

For other industrial emissions, central government has no other firm commitments other than to complete and issue national guidance on how planning authorities (that is, regional councils, the Environmental Protection Agency and the Environment Court) should implement changes to the Resource Management Act. These changes take effect from December 2022 and require them to consider the climate change impact of point-sources of emissions when considering resource consent applications. Without a national policy statement on this topic, planning authorities will need to interpret the law change themselves and mostly likely need to defend their decisions in court.

Most emissions from the construction and operation of buildings reside in the energy, industry and waste sectors. The main building-specific measure limiting their emissions is clause H1 of the Building Code (relating to energy efficiency). The Government's Emissions Reduction Plan (ERP) outlines new measures for buildings including increasing the requirements for energy performance and/or emissions reduction (as well as emissions embodied in the materials used) for new buildings in the Building Code. The ERP also proposes looking at mandatory energy performance programmes for commercial public buildings.

The Climate Change Commission's demonstration pathway scenario has these sectors reducing their emissions by 37 percent by 2030 compared to 2019. The ERP shows the energy and industry sectors meeting and exceeding the Climate Change Commission's targets, but this scenario is reliant on the Tiwai aluminium smelter closing and the Marsden Point refinery becoming 'import only', significantly reducing its activities. As the closures will not decrease global demand for aluminium and local demand for refined fuels (all other things being equal), the emissions from these activities will be transferred or 'leak' to other jurisdictions, becoming other countries' challenges to address.

Local government actions

Local government can provide advice to residents on improving household energy efficiency. For example, Hutt City Council has done this since 2006 through the Eco Design Advisor Service and Wellington City Council provides a similar service via the Sustainability Trust. Most councils are focusing on the energy performance from their own buildings and phasing out fossil fuels from their facilities through programmes that manage their corporate carbon footprints. Kāpiti Coast District Council has been installing solar photovoltaic systems to generate renewable energy at its sites since 2011, each system larger than the previous one. Wellington City Council is supporting solar energy installations at community facilities.

Hutt City Council has adopted a no-new gas heating policy for its housing development agency, Urban Plus, and requires the agency to achieve a HomeStar sustainability rating of six for all new homes that it builds. However, local government lacks the legal ability to require higher standards for emissions reduction from development than those set by the Building Code. The alternative is to provide incentives. For example, Wellington City Council has an incentive whereby applicants for resource consent for houses or buildings can lower the development contributions they need to pay by 50 percent by achieving a certain sustainability rating.

As planning authorities, councils are gatekeepers for new renewable energy generation projects that are seeking resource consent in their districts. To some extent they can have a positive influence on such developments.

Gap analysis

The Government is still developing its proposals for these sectors. In the short term, the only policy with a potential to make an impact is the NZ ETS. However, to date the Government has engineered the NZ ETS in such a way that while it puts a price on emissions it does not yet provide a cap on emissions. This allows polluters to continue business as usual, albeit with slightly higher prices

passed on to their customers. Changes to the NZ ETS introduced in 2021 mean the supply of emission units via government-run auctions will eventually be restricted, once the 'cost containment reserve' the Government has set aside to hold prices down is used up.

Polluters will then need to use up their stockpiles of emissions units to meet their obligations under the NZ ETS. The Environmental Protection Agency estimates the total stockpile to be currently 106 million units,[19] excluding those needed for forestry harvest. By comparison, the emissions of the energy, industry and buildings sector in 2019 were 21.4 million tonnes. This suggests it could take several years for the stockpile to be depleted and the restricted supply of units from Government to start stifling emissions. Meanwhile, the rising emissions price will encourage new forests to be planted and registered in the NZ ETS, adding to the unit supply available to polluters.

"Councils are significant electricity users, often own land or buildings that could accommodate solar panels, can borrow capital funding at lower interest rates than the private sector, and have a long-term view of investment."

Local government is not in a good position to plug this shortfall in action, due to its lack of direct regulatory power or control of these emissions sources. The aforementioned changes to the Resource Management Act with regard to emissions will allow councils to have more influence through the planning process on some types of activities, but this will take several years to have any impact on emissions.

One useful arena of activity may be for councils to become more directly involved in renewable energy generation through investing in utility-scale renewable energy, such as solar farms, which would accelerate the decarbonisation of the electricity sector. Councils are significant electricity users, often own land or buildings that could accommodate solar panels, can borrow capital funding at lower interest rates than the private sector, and have a long-term view of investment.

Councils, ideally in cooperation with central government, could use their infrastructure procurement plans to influence supply chains to gear up to provide lower-emissions products (for example, low-emissions cement and structural timber instead of steel).

[19] https://www.newsroom.co.nz/growing-emissions-stockpile-threatens-climate-targets

Within the business sector, users of low- and medium-temperature heat — which in the Wellington region includes aged care, hotels, food and wood processing — can proactively transition away from natural gas (and coal, although its use is limited in the region) as a heat source, despite a ban on new gas connections not being forthcoming in the ERP.

Summary points

- For the energy, industry and buildings sectors, central government has indicated in the ERP it will rely on existing policies (such as the NZ ETS and the Building Code), new plans it has yet to develop, and, to a large degree, on the closing of the Tiwai Point smelter combined with Marsden Point refinery changing to an 'import only' operation.
- Local government has some potential to increase advice and support for home energy conservation, although some councils have been active in this space for many years.
- Local government could use its power to undertake any legal activity that would benefit its ratepayers to invest in renewable energy generation and sustainable housing. Such activities could be self-funding.
- Infrastructure procurement by central and local government presents a significant opportunity to influence industry to reduce its emissions, if they collaborate to create a market for lower-emissions materials.

Waste

Central government actions

Landfills are part of the NZ ETS. Their methane emissions are treated no differently to long-lived greenhouse gases. The rising price of emissions units has motivated many landfill operators to instal gas capture systems. The Waste Levy also adds to the cost of waste disposal, and the funds the Government raises from the Levy are directed toward waste minimisation activities.

In the national Emissions Reduction Plan (ERP), central government set out the following new policies to reduce waste emissions:

- require all Class 1 (municipal) landfills to install gas capture systems from 2026
- ban Class 2–5 landfills from receiving organic waste after 2030
- ban Class 1 landfills from receiving food, green and paper waste from 2030
- move from demolition as the default for buildings to a deconstruction model, so materials are separated and conserved to maintain their value and allow for recovery and reuse. This is particularly important for treated wood, which is a problematic organic waste stream
- require recyclable materials to be separated from other waste (for example, at transfer stations), preparing for the eventual ban on disposal of paper at landfills
- invest in recovery facilities for new materials found in construction and demolition waste.

Modelling in the ERP, projects these measures would cut waste emissions by 22 percent by 2030 compared to 2019, and 30 percent by 2035, in line with the Climate Change Commission's demonstration pathway.

In February 2022, the Government released a consultation on reform of recycling systems in New Zealand. One of the proposals is to require a standard set of recyclable materials to be collected from the kerbside in all urban areas of the country. The requirement would include paper and food waste. Another proposal is to require all businesses to collect food waste separately from other waste materials.

Local government actions

All district and city councils license waste collection operators in their districts. Most operate landfills, transfer stations and/or materials recovery facilities, and some provide kerbside waste and recycling collection services directly or through contractors, recovering the costs of the operation

from rates. All have a role in providing support for waste minimisation such as public education campaigns and community grants.

For those councils that operate a landfill in the region (Wellington City, Hutt City, Porirua City and Horowhenua) it is by far the largest part of their corporate carbon footprint and a focus for their emissions management and reduction plans. Mitigation measures available to them are the same as those set out in the ERP – fitting efficient landfill gas capture systems and diverting organic material from landfill if possible.

For those councils that also operate wastewater treatment plants, the treatment processes and disposing the sewage sludge is also a significant source of emissions. Treatment emissions are very difficult to address. Sludge disposal emissions can be minimised by sending them to a landfill with gas capture, or by in-vessel anaerobic composting. The latter process, like landfill gas capture, can be used as a renewable energy source and both Palmerston North and Christchurch City Councils do this.

Hutt City Council is responsible for the closed Wainuiomata landfill. It is not subject to the NZ ETS but is an ongoing source of emissions. The Council is investing the feasibility of fitting a gas flare to it.

Gap analysis

The emissions embodied in imported, manufactured goods through their production are not captured in national or regional greenhouse gas inventories. When manufactured goods are sent to landfill there is an induced emissions effect. This is because those discarded goods are presumably replaced with new goods, mostly likely made with virgin materials rather than recycled materials, thereby creating new emissions. The focus on recycling in waste minimisation plans mitigates this to some extent, but these emissions are not measured so the scale of the impact is not apparent.

> "Lawmakers can potentially address the problem of premature obsolescence by requiring manufacturers to make and support their products so they have a longer, useful life."

Complex manufactured goods like electronics and appliances are generally difficult to recycle because of the variety of materials used and how they are combined. The cost of this processing is high compared to landfill disposal fees, making it unviable without subsidy. Compulsory product stewardship schemes, where manufacturers are required to take back their end-of-life products, can help this issue but these schemes face challenges such as establishing collection networks and reprocessing facilities. Also, smaller manufacturers do not have the economy of scale to do this, or the longevity to still be around to receive their old products when they reach obsolescence. Product

stewardship is part of the Government's work programme for six priority product categories: tyres, e-waste, plastic packaging, agrichemicals and their containers, refrigerants and farm plastics.

Complementary approaches to deal with this issue are for lawmakers to require manufactured goods to be repairable, increase standardisation of competing products, and provide incentives or tax relief for those that get their goods repaired. Regional authorities in Germany and Austria introduced incentives of this kind in recent years, which have had good uptake and spurred the creation of local repair workshops.[20]

Businesses are strongly motivated to constantly develop new products to keep up with their competitors and maintain revenue growth, while transferring the costs of their behaviour (in terms of greenhouse gas emissions, resource depletion and other forms of pollution) onto others. Premature obsolescence is an especially prevalent trend in personal consumer items such as clothing and mobile phones. Some large internet retailers are landfilling or incinerating returned items, as this is simpler than putting them back into stock, or because the items are already obsolete by the time when they get them back.[21] Lawmakers can potentially address the problem of premature obsolescence by requiring manufacturers to make and support their products so they have a longer, useful life. Without such laws to level the playing field, those producers and retailers that try to act responsibly are punished in the marketplace by their competitors undercutting them.

Summary points

- The ERP policies go a significant way towards addressing the direct emissions from waste disposal through gas capture and organic waste diversion from landfills. Local government will have a crucial role in implementing these policies.
- In theory, recycling and product stewardship measures will reduce the generation of greenhouse gas emissions from the processes to extract raw materials and manufacture replacement products. But these benefits are not quantified in the national emissions inventory.

[20] https://repair.eu/news/germany-and-austria-implement-repair-bonuses/

[21] https://www.cnbc.com/2022/04/10/how-amazon-plans-to-fix-its-massive-returns-problem.html

Agriculture and forestry

Central government actions

Agriculture

The Government-supported He Waka Eke Noa partnership is working towards measuring emissions from all farms in the country and introducing an on-farm emissions pricing scheme. The Government has committed to bringing agriculture into the NZ ETS if He Waka Eke Noa does not deliver the desired outcomes by 2025.

The Government is also providing funding for research and development of methane inhibitors for stock and for integrated farm management planning, some of which is delivered by regional councils. It has increased funding for these activities in the Emissions Reduction Plan (ERP), and said it will make more knowledge, expertise and tools available to the rural sector. The estimate in the ERP of how much emissions abatement these measures and proposals could deliver undershoots the Climate Change Commission's carbon budget allowance for agriculture. Projections have a large dependence on the success of developing and implementing methane inhibitors from 2025.

"Redwoods show particular promise at storing large amounts of carbon for the long term, withstanding natural disasters. They also provide high quality wood and suppress weed species without becoming weeds themselves."

Forestry

The Government has created a strong driver for new exotic plantations by including forestry in the NZ ETS. The Government projects the NZ ETS carbon price will mean plantation forestry will overshoot the amount of sequestration needed to deliver on its targets. The Climate Change Commission's demonstration pathway has equal amounts of new plantation forests and permanent native forests, and no increased rate of exotic permanent forests. However, this outcome will not be delivered by the NZ ETS.

Exotic forests, particularly pine, are extremely cheap and straightforward to establish, and sequester far more carbon per hectare than natives. They can deliver carbon sequestration for a few dollars per tonne, and harvested wood can be sold. Redwoods show particular promise at storing large

amounts of carbon for the long term, withstanding natural disasters. They also provide high quality wood and suppress weed species without becoming weeds themselves.[22]

Planting new native forests to sequester carbon can theoretically break even or provide a return at current carbon prices, but there are severe risks relating to pests, high upfront costs and a lack of plant supply, all while locking in one kind of land use in perpetuity. This means the opportunity cost of opting for native forest is too high compared to exotic forest to spur private landowners to undertake establishing them at the desired scale.

The Government was planning to allow permanent exotic forests to be registered in the NZ ETS from 2023, but it is now backing down from this plan. This would be very attractive for owners of the over 1 million hectares of steep, inaccessible land in New Zealand which has no other economic use.

The Government provided direct funding for native and plantation forests through the 1 Billion Trees programme, however this programme has now closed.

Local government actions

Regional councils as planning authorities administer national policy statements, including the National Policy Statement for Freshwater Management. This national policy statement has been modelled to have a small emissions-reducing effect by limiting nitrogen loads (from animal effluent and fertiliser use) and riparian planting.[23]

Regional councils can set more stringent policies than national policy statements and exert influence over land use, provided these policies are defensible. Such policies are better at restricting activities and imposing conditions on them than national policy statements which direct particular activities to occur.

Land management advisors employed by regional councils help farmers and other landowners in rural areas with their integrated farm management and compliance with regulations, for example those for excluding stock from waterways. The land management teams also provide plants and funding for erosion control planting on private land. Exotic tree species such as willow and poplar are typically used for this. Emissions reduction and sequestration on rural land has not been a focus for land management advisors to date.

[22] https://www.scimex.org/newsfeed/redwoods-could-outperform-pine-for-lowering-emissions-in-warm,-wet-parts-of-nz

[23] https://motu-www.motu.org.nz/wpapers/17_10.pdf

District and city councils give effect to national policy statements in their district plans and administer resource consents according to those plans, but beyond this their influence on agriculture and forestry is limited. They often support small-scale environmental restoration efforts by community groups, providing grants and direct material support such as plants and labour. Some councils also own rural land which is forested or has the potential to be reforested.

Greater Wellington Regional Council manages 33,000 hectares of regional parks. Although much of this land is already covered in native forest, the Council has identified approximately 1,500 hectares of grazed land within its parks which are suitable for environmental restoration and it is planning to complete this work by 2030. Horizons Regional Council does not manage any regional parks in the Horowhenua district.

"The deferral of emissions pricing for agriculture until 2025 means there is little occurring in the meantime that could spur significant action to reduce the sector's emissions."

Gap analysis

The deferral of emissions pricing for agriculture until 2025 means there is little occurring in the meantime that could spur significant action to reduce the sector's emissions.

The latest Intergovernmental Panel on Climate Change report details at length the large emissions reduction opportunity from changing to more plant-based diets that have less meat and dairy. The Government's Emissions Reduction Plan (ERP) is silent on this matter, aiming instead for traditional meat and dairy farming to continue by using currently unproven technology to lower emissions. While this approach may pay off eventually, it is not guaranteed, and agriculture emissions continue unabated in the meantime.

The Government increased its nationally determined contribution (emissions pledge) at the United Nations 'conference of parties' (COP26) in Glasgow at the end of 2021. However, at the same time it said meeting the increased target would require it to buy offshore mitigation. However, there is untapped potential in the forestry sector as the Government has said plantation forestry is overperforming compared to its targets. By allowing appropriate kinds of permanent exotic forests on steep inaccessible land to be registered in the NZ ETS, subject to a suitable permitting regime, good outcomes for climate, local environment and economy could be achieved. It should be noted that as owners of such land, many iwi stand to benefit economically from this as well. Local governments could help with this in both a regulatory and advisory role.

The NZ ETS is not creating a sufficiently attractive financial driver for permanent native forests on private land relative to other land-use options. In the absence of other incentives to make this more attractive (or conversely restrictions to make the other options less attractive), the only other approach is for the public sector to get directly involved by buying land and establishing and managing these new native forests themselves. For most city and district councils, this would be a wholly new activity. For regional councils, it would be an extension of some of their existing activities. Central government could direct or support councils to do this or undertake the activity itself. Regardless, it would represent a significant expansion of the public sector, requiring costs to be met from the public purse, while also carrying a substantial opportunity cost. On the positive side of the ledger, it would provide economic stimulus and create new jobs.

Summary points

- The Emissions Reduction Plan for the agriculture sector relies heavily on researching, developing and deploying methane inhibitors rather than cutting stock numbers and fertiliser use, and self-regulation. This approach does offer any significant reductions in the short term and may not pay off in the longer term.
- The forestry sector has untapped potential to absorb emissions at low or negative cost, provided exotic species are used. This may be the most appropriate and economically beneficial use of low-productivity, inaccessible and steep land. Native species can be used but the rate of deployment, combined with the rate and total amount of sequestration, will be lower while the costs are higher. As such, the private sector is currently unlikely to undertake native plantings at anything close to the necessary scale.

SECTION 4

Other regional emissions reduction strategies

Auckland Council

Auckland Council adopted a city-wide Emissions Reduction Plan in 2014 ('Low Carbon Auckland'), the first regional or unitary council in New Zealand to do so. It set a target of a 40 percent emissions reduction target for the city's absolute emissions (as calculated using the GPC methodology) for 2040. The plan was co-developed with key partners and representatives from central government, industry, academia, research institutions, non-government organisations (NGOs) and the wider Auckland community with actions for each sector.

The Council reviewed its plan in 2018 and found that between 2009 and 2015, net emissions increased by 2.1 percent while gross emissions increased by 7.1 percent.

Of the 101 actions in the 2014 plan:

- 21 percent were completed
- 30 percent were stalled or undeliverable in their current format due to either a lack of ownership or a shift in priorities and understanding
- the remaining actions were rated as 'in progress', but of these 26 percent were behind schedule.

Council officers stated, "Low Carbon Auckland will not deliver the required level of emissions reductions in its current state with emissions continuing to rise".[24]

This led to work to reformulate Low Carbon Auckland into a new plan: Te Tāruke-ā-Tāwhiri: Auckland's Climate Plan, with a target to reduce the city's greenhouse gas emissions by 50 percent by 2030 and achieve net zero emissions by 2050. It was adopted in December 2020.

"Auckland Council's preliminary modelling, which was reported in December 2021, indicated it is possible for the transport sector to deliver the required level of emissions abatement, but the level of transformation needed is 'immense'."

For the new plan, Auckland Council strove to take a te ao Māori perspective guided by mana whenua and it partnered with the mana whenua iwi of Tāmaki Makaurau (Auckland) in developing the plan.

In the early stages of planning, all mana whenua iwi of Tāmaki Makaurau were invited to take part in workshop hui to give input into the public consultation document. The Mana Whenua Kaitiaki Forum, a collective of the 19 hapū and iwi authorities of Tāmaki Makaurau, worked closely with the Council throughout the plan's development. This approach led to 25 percent of consultation responses coming from Māori, a new record for Auckland Council.

Auckland Council used the CURB tool developed by the World Bank to develop an emissions pathway for the plan, which is similar to the way the 2050 Emissions Calculator for Wellington could give the combined impact of certain changes to the economy (for example, a certain degree of mode shift, population growth, change in electricity generation mix, and improvement to vehicle fuel

[24] https://infocouncil.aucklandcouncil.govt.nz/Open/2017/12/ENV_20171205_AGN_6835_AT_WEB.htm

efficiency) However, the tool doesn't allow the impact of policies aimed at bringing about these changes to be rated.

The Auckland Council's emissions pathway requires a 64 percent reduction from its transport sector by 2030 to achieve the targets for total emissions. Auckland's Climate Plan allocated responsibility for many actions to groups (such as central government and businesses) over whom the Council has no control, nor any formal agreement with regarding their role in the plan. The plan described 'ongoing discussions' with these groups about their involvement.

A review of Te Tāruke-ā-Tāwhiri in December 2021 found 33 percent of the 179 actions were on track, 39 percent were underway and 28 percent were not in progress. Auckland's emissions rose a further 2.5 percent in 2018 compared to 2016 levels, as calculated by the GPC methodology.[25]

Spun out of its climate plan, Auckland Council undertook detailed emissions modelling of transport to inform a specific transport Emissions Reduction Plan (TERP). The Council has developed a bespoke TERP emissions model to identify the scale of the challenge. Its preliminary modelling, which was reported in December 2021, indicated it is possible for the transport sector to deliver the required level of emissions abatement, but the level of transformation needed is 'immense', requiring the Council to implement all feasible reduction options. The modelling also found the actions in central government's draft Emissions Reduction Plan for transport did not go far or fast enough.

In 2022, Auckland Council plans to establish a regional leadership group for its climate plan, including leaders from the Council, mana whenua, central government, business, community, district health boards and youth.

Dunedin City

In 2013, the Dunedin City Council adopted an economic development plan that was endorsed by the local regional council, the university, the polytechnic, the employers' association, the chamber of commerce and iwi representatives. As part of this growth-oriented plan, the signatories formed a 'Dunedin Energy Leaders Accord' (although this did not have mana whenua represented on it) and committed to establishing a Dunedin Energy Plan 1.0 which was published in 2017. Among the plan's goals were to increase energy security and "reduce Dunedin's climate change effects". It has eight action areas as shown in figure 5.

[25] https://infocouncil.aucklandcouncil.govt.nz/Open/2021/12/ECC_20211202_AGN_10127_AT_WEB.htm

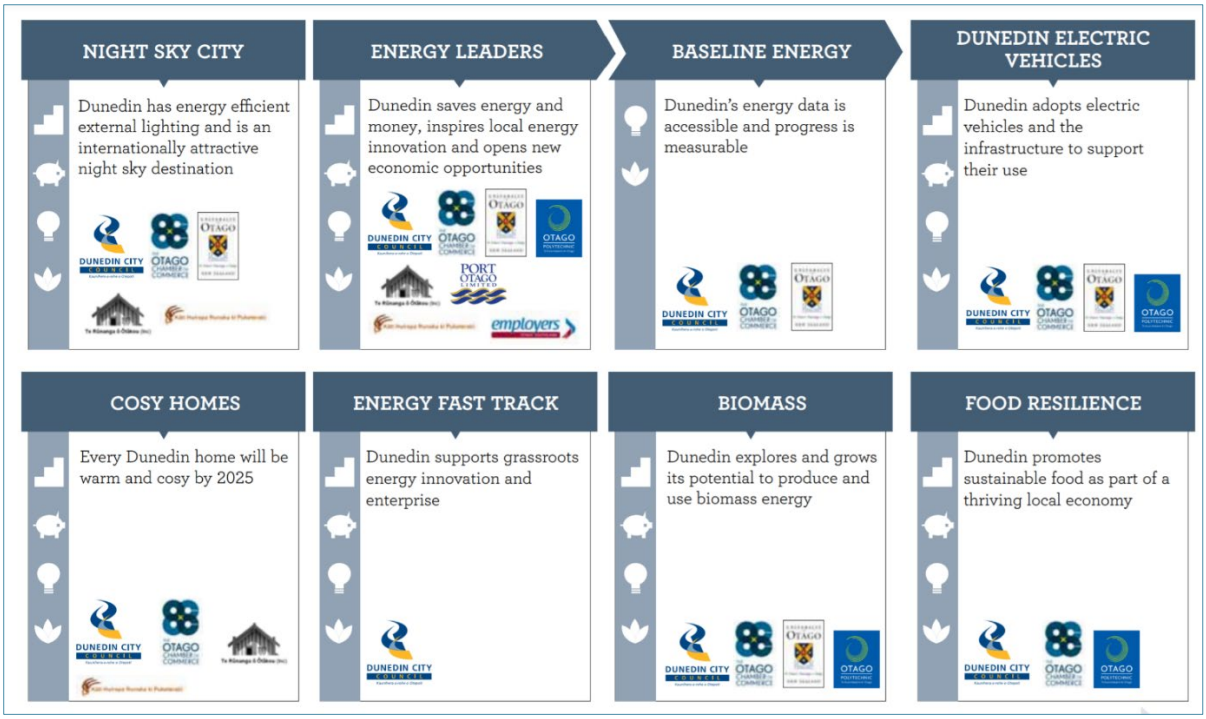

Figure 5: Action areas in the Dunedin Energy Plan

Also in 2016, Dunedin City Council adopted its Environmental Strategy 2016–26. One of the strategy's goals was to achieve a net zero carbon city, although the strategy didn't specify when. The strategy had a wide variety of supporters, including all those for the Energy Plan, plus Forest and Bird, Federated Farmers, the Department of Conservation and community advocacy group, Sustainable Dunedin City.[26] In June 2019, the Council declared a climate emergency and adopted a target date for being a 'net zero carbon city' (specifically for long-lived greenhouse gases) by 2030.

> "A new 'Zero Carbon Alliance' of Dunedin organisations was created which differs from the Accord by having a focus on all greenhouse gas emissions and mana whenua representation."

In support of the Energy Plan, the Dunedin Energy Study was commissioned from the Centre for Sustainability at the University of Otago. The Centre published its findings in November 2020 and found the city's energy and emissions indices were all increasing for the period 2016 to 2019:

- energy consumption per capita up 3.25 percent per year
- energy consumption per unit of GDP up 2 percent per year

[26] https://www.dunedin.govt.nz/__data/assets/pdf_file/0010/618598/Te-Ao-Turoa-The-Natural-World-Dunedins-Environment-Strategy-2016-2026.pdf

- non-renewable fuels up from 63 percent to 67 percent.[27]

Also in 2020, the Dunedin City Council completed an updated greenhouse gas inventory for the city and found that total greenhouse gas emissions (as calculated by the GPC methodology) had increased by 4 percent between 2014-15 and 2018-19, with a 30 percent increase in transport-related emissions, which was partially offset by a decline in waste and agricultural emissions. Alongside the inventory, staff reported to councillors that "the regular meetings, public engagement and degree of collaboration originally envisaged by the (Dunedin Energy Leaders) Accord have not been realised. As such, the Accord itself can best be described as inactive." A new 'Zero Carbon Alliance' of Dunedin organisations was created which differs from the Accord by having a focus on all greenhouse gas emissions and mana whenua representation.[28]

Summary points

- Both Auckland City Council and Dunedin City Council have district-wide emissions reduction strategies, which involve multiple players, that have run for five to eight years.
- These strategies have had no obvious effect on emissions yet – their emissions, as measured using the GPC method, have been increasing, not decreasing.
- Auckland City Council updated and relaunched its plan in 2020 in partnership with local iwi.
- Auckland City Council's emissions modelling found the level of transformation needed to get its desired 64 percent reduction in transport emissions by 2030 was 'immense'. The level of reduction for transport emissions Auckland City Council is seeking is higher than the national Emissions Reduction Plan as it has taken an 'all gases' approach to setting targets. Its transport reductions also need to be higher to compensate for other sectors, such as agriculture, being even harder to reduce.

27 https://www.otago.ac.nz/news/news/otago747687.html

28 https://infocouncil.dunedin.govt.nz/Open/2020/09/CNL_20200929_AGN_1317_AT_WEB.htm

SECTION 5

Meta-analysis and conclusions

Aotearoa New Zealand's national targets and emissions budgets fall short of what the Intergovernmental Panel on Climate Change (IPCC) and Climate Action Tracker say are necessary to give a better than 50 percent chance of limiting global heating to no more than 1.5°C. This shortfall is even more pronounced if a 'fair share' approach — that takes account of historic responsibility for emissions — is used.

Particularly lacking in emissions reduction plans are effective short-term actions that will arrest the upward trajectory of emissions. This is especially important as the global emissions budget consistent with limiting heating to 1.5°C is fixed – the longer emissions stay high, the faster the remaining budget is used up.

Emission reduction is not prioritised over economic growth in New Zealand. The IPCC has said eliminating fossil fuels from our energy supply and decarbonising industry could allow economic growth to continue while still achieving emissions reduction goals, but the pace of this decarbonisation is not presently fast enough. The global emissions budget consistent with limiting

heating to 1.5°C is still essentially unmanaged, with all players locally and globally using as much of the remaining budget as they wish.

The IPCC says enhanced carbon dioxide removal from the atmosphere is needed in all emissions pathways consistent with limiting heating to 1.5°C, over and above what can be achieved with forests. But none of these other approaches feature in central or local government emissions reduction plans.

National and regional greenhouse gas accounting ignores the carbon embodied in imported goods, even though as purchasers we can influence these emissions through our choices. New Zealand is a net importer of emissions.[29] Sweden has become the first country to commit to measure, report and manage its imported emissions at a national level,[30] showing that governments are starting to act to address this gap.

"Gaining central government support and direction for any regional emissions reduction strategy is crucial."

The Government's commitment to using biofuels to reduce emissions is not likely to deliver the reductions sought from it. The only viable biofuels at present are food-based, and when the land-use change effects (direct or induced) from the added demand for food crops is considered, they usually have higher emissions per litre than fossil fuels. The fact these land-use change emissions are accounted for by other countries rather than by New Zealand would hide this effect domestically. Properly accounting for imported emissions, as Sweden is attempting to do, would give it visibility. Regardless, a mandate requiring 'sustainable' biofuels, which the Government is planning, is unlikely to induce the market to provide truly low-emissions fuels, given the significant cost and capital investment barriers.

Strategies for regional emissions reduction that are built collaboratively but without central government direction and support rely on many players to voluntarily change their activities and priorities in concert with each other, all the while working within existing laws, regulations and funding levels. Continuously rising emissions in districts with such plans suggest this approach has not been successful in New Zealand to date. Gaining central government support and direction for any regional emissions reduction strategy is crucial.

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29 http://www.globalcarbonatlas.org/en/CO2-emissions

30 https://climatechangenews.com/2022/04/08/sweden-set-to-be-worlds-first-country-to-target-consumption-based-emission-cuts/

Auckland City Council's climate plan, Te Tāruke-ā-Tāwhiri, was co-developed with Māori, has a strong focus on co-governance and uses te ao Māori principles to frame the challenge and the response. This is commendable.

Local government does have some additional ability to influence emissions that it could take advantage of, in that the Local Government Act empowers councils to set up ventures for the benefit of their districts, which could be outside their traditional areas of activity. For example, Hutt City Council set up and owns Urban Plus, a trading organisation that aims to build new social housing. Councils could venture into developing utility-scale renewable energy generation or large-scale permanent carbon forests, provided that such moves had popular support from their residents.

Quantifying the effect of planned emissions reduction actions at the district and regional level is piecemeal. The modelling required is complex and based on a wide range of assumptions and dependencies. However, what is obvious is that most, if not all, viable emissions reduction policies and actions, both short term and long term, will need to be enacted by all agencies with influence over emissions.

The final national Emissions Reduction Plan falls short of this level of activity, particularly in the short term. The short term has now become a crucial timeframe owing to the rapidly disappearing emissions budget consistent with limiting global heating to 1.5°C.

Appendix A – Summaries of emissions reduction-related plans and targets

Organisation	Document	Target/relevant objectives	Measures summary	Observations/comment
Carterton/South Wairarapa District Councils	2020 Ruamāhanga Climate Change Plan	Reduce gross corporate GHG emissions by 2030, increase sequestration and reduce biogenic methane by 10% below 2017 levels.	• Fuel-efficient driving training • Install LED streetlights • Carry out energy audits • Assess land holdings for sequestration potential • Community education.	
Climate Leader's Coalition	Website	2019 commitment: "We will measure and verify our footprint, adopt science-based targets, disclose climate risks, support people and suppliers to decarbonise."		Not all members have signed up to the 2019 commitment. Some are committed to the 2017 one which is: "We measure our GHG emissions and publicly report on them, we set a public emissions reduction target consistent with keeping within 2°C of warming, we work with our suppliers to reduce their GHG emissions."
Electra Electric Lines Ltd	2021 annual report	"We integrate environmental sustainability into our network planning and delivery... facilitating the adoption of new energy technologies or renewables that support the decarbonising of our regional and the wider New Zealand economies."	• Unclear what are forward plans for emissions reduction. • Have implemented a few measures internally. • Main objectives are safety and reliability of electricity network, and maximising customer rebate.	Anticipates growth in operation on top of population increase due to decarbonisation/ electrification drive.

Organisation	Document	Target/relevant objectives	Measures summary	Observations/comment
Fonterra	2021 sustainability report	Need to create productivity gains without increasing inputs.	Phasing out coal and working on methane inhibitors and vaccines.	• 90% of emissions from on-farm; 9% processing; 1% distribution. • Milk production up in 2020–2021 by 1.5%, partly attributed to the use of supplementary feed (PKE). • Has a business target for share of New Zealand's processing market. • No milk drying plant in Wellington region (nearest is Pahiatua).
Greater Wellington Regional Council (GW)	2019 Climate Emergency Response	Net zero emissions of the GW 'group' of organisations by 2030 and to be climate positive (net negative emissions) by 2035.	• Buses and trains largely electrified by 2030. • Phase out grazing from regional parks and establish native forests in their place. • Set up a low-carbon acceleration fund. • Increase supply of renewable electricity. • Develop a regional emissions reduction plan.	
Greater Wellington Regional Council	2021–2031 Long Term Plan	Reflects climate emergency response actions and targets.		

Organisation	Document	Target/relevant objectives	Measures summary	Observations/comment
He Waka Eke Noa (all agriculture industry representative organisations plus Ministry for Primary Industries)	Website	• All farms know their GHG emissions by end 2022 • An emissions pricing system for farms is in place by end 2025 • Recognise and promote on-farm sequestration.		
Horizons Regional Council	2021–2031 Long Term Plan	• Climate change named as a strategic priority. • A corporate emissions reduction plan is named as an action.		
Horizons Regional Council	Climate Change Action Plan (Stage 1 review Sept 2020)	Review of existing actions by councils within Horizons Regional Council's rohe.		
Horizons Regional Council	Climate Action Strategy (Stage 2 Nov 2020)	Corporate target 30% by 2030 as an interim target (Horizons RC only).	Climate Action Committee's job: development of a regional Climate Action Plan for adoption by the member councils.	

Organisation	Document	Target/relevant objectives	Measures summary	Observations/comment
Horowhenua District Council	Climate Change Action Plan Nov 2021	To take actions in line with Government 2050 goal. Includes community-focused actions as well as corporate.	• "Council's master plans for new residential and business areas create good local connections, making it easier for the community to get from A to B without being so dependent on private car trips." • EV chargers • Community education.	
Horowhenua District Council	Tairaika Master Plan	420 hectares of development just beyond current eastern boundary of Levin (SH57).		Medium density planned but is not close to existing amenities.
Hutt City Council	Te Ara Whakamua o Te Awa Kairangi ki Tai - Lower Hutt Climate Action Pathway	• 50% reduction in city emissions • 30% reduction in biogenic waste emissions (methane) by 2030 • Carbon neutral district and Council by 2050.	• $120M in funding for cycling and micro-mobility over the next 10 years • Waste measures (landfill gas flares, green waste recovery) • Reforestation • EV charging stations and EV rubbish trucks • Phasing out gas at all council facilities. • Solar at schools.	This is a community emissions reduction plan developed in partnership with the community.

Organisation	Document	Target/relevant objectives	Measures summary	Observations/comment
Hutt City Council	2021–2031 Long Term Plan	Accommodating population growth, stimulating economic growth.		Notes that National Policy Statement on Urban Development requires councils to plan for housing growth.
Kāpiti Coast District Council	Te Tupu Pai – Growing well	Growth principles: • support Mana Whenua aspirations • value our environment • fostering strong communities • encourage low carbon living • embrace opportunities for growth • enabling choice.	Strong emphasis on intensification around current transport hubs.	
Kāpiti Coast District Council	2021–2041 Long Term Plan	Planning for growth, acting on climate change.	• Ōtaki Pool energy efficiency upgrades • Exploring whether council should have a role in the airport • Setting up a council-controlled organisation but purpose of this is unclear.	Tripling rate of spending on infrastructure including Three waters, coastal protection and roading 'community connectors'.

Organisation	Document	Target/relevant objectives	Measures summary	Observations/comment
Kāpiti Coast District Council	Climate Emergency Action Framework	"The Framework will guide Council decision-making to ensure consistent practices, embed sustainability across Council, provide a platform to raise awareness about existing workstreams, and provide a platform to agree plans and priorities for future work."	None — guides decision-making.	
Masterton District Council	Long Term Plan 2021–2031	"An engaged and empowered community; pride in our identity and heritage; a sustainable and healthy environment; a thriving and resilient low-carbon economy; efficient, safe and effective infrastructure."	Climate corporate plan, community forum.	
Muaūpoko Tribal Authority	MTA Strategic Plan 2014-2020	"Kia hono kia tu kaha Muaūpoko" – Unite stand strong Muaūpoko. • empower our Hapū, Whānau and Marae • protect our identity, assets and environment • enhance our economic wealth, health, culture and social wellbeing.	Includes an action to "Work with hapū to develop an environmental strategy".	

Organisation	Document	Target/relevant objectives	Measures summary	Observations/comment
Ngāti Kahungunu Iwi Inc	Website	• Promote or assist the education of members. • Promote the custody and preservation of the beliefs, customs and language of Ngāti Kahungunu. • Promote the social and economic welfare and advancement and vocational training of Ngāti Kahungunu iwi. • Promote community and personal physical, spiritual and mental health and fitness, and raise the living standards of members.		
Ngāti Toa Rangatira	He Kākano	"Nurturing a resilient environment to sustain future generations."	Iwi Environmental Management Plan development starts June 2022.	Is a statement of principles — a plan for a plan.
Ngāti Toa Rangatira	Te Rūnanga o Toa Rangatira Annual Report 2020-21	Focus on growth and expansion of operations.		

Organisation	Document	Target/relevant objectives	Measures summary	Observations/comment
Porirua City Council	2021–2051 Long Term Plan	• "Our people, our harbour, our home" • Strong emphasis on environmental protection and responding to the climate crisis. • Investing in Three Waters assets.	• Titahi Bay shared path. • $6M extra funding for climate actions next two years including reducing emissions from council facilities, an EV fleet transition and reducing organic waste to landfill.	• Goal of being 'ready for growth'. • Expect population increase of 30,000 in the next 30 years. Somehow must accommodate it without compromising other objectives (for example, harbour and climate).
Porirua City Council	Our Climate Change Strategy Rautaki o te ao Hurihuri	Repetition of Long-term Plan objectives.	Commitment to reduce corporate emissions (targets to be agreed) including diverting organic waste from Spicer landfill.	
PowerCo	Climate change policy	• "Developing and implementing strategies to monitor and mitigate our physical and transitional climate change risks" • Aims to be net zero by 2030 for scope 1 and 2 emissions.	Carrying out two trials: • hydrogen • smart EV home charging.	

Organisation	Document	Target/relevant objectives	Measures summary	Observations/comment
Port Nicholson Block Charitable Trust	Website	"To maximize wealth creation and achieve economic and financial wellbeing" "To achieve social and whanau wellbeing" "To enhance cultural wellbeing" "To restore and enhance our natural resources and environmental wellbeing".	Five-year strategic plan 2011–15: • Develop a Taranaki Whānui environmental and spatial plan • Promote eco-city exemplars • Promote eco-friendly conduct among Taranaki Whānui members.	
Rangitāne o Wairarapa Inc.	Website	'Rangitāne people succeeding in their chosen activities and pursuits.' Cultural leadership and advice, working with the Crown and local government, social services, health.		
Rangitane Tū Mai Rā Charitable Trust	Rangitane Tū Mai Rā Strategic Plan 2021-22	"…business sustainability; whānau resilience; maintenance and retention of land, wāhi-tapu and sites of significance; ensuring waterways are clean; whānau-focused conservation and self-sustainability initiatives.		

Organisation	Document	Target/relevant objectives	Measures summary	Observations/comment
Raukawa ki ti Tonga Trust	Annual report 2020–2021	• Protect iwi fisheries interests. • Also 'Protect asset base'.		
Te Atiawa Ki Kapiti	2021 Annual report	Protecting the health of the Waikanae Awa is a key objective.	• $8.5M of Jobs for Nature funding for 92 jobs for four years. • Environmental restoration work.	
Te Rūnanganui o Te Āti Awa	2019 Strategic Report	• Giving effect to the Treaty Partnership • Connecting and building strategic relationships • Developing strong and resilient whanau • Being innovative and seeking • emerging opportunities • Being sustainable (in terms of their own governance arrangements).		
Upper Hutt City Council	Sustainability Strategy (2020)	Carbon neutral council by 2035.	• New walking and cycling strategy • New climate strand to community funding (Sustainability Stimulus Grant).	

Organisation	Document	Target/relevant objectives	Measures summary	Observations/comment
Upper Hutt City Council	2021–2031 Long Term Plan	"Growing Sustainably".	Civic Centre and H2O Extreme low-carbon upgrades funded.	
Waka Kotahi	Regional Mode Shift Plan – Wellington (2020)	To increase the share of travel by public transport, walking and cycling by 40% by 2030	• Shaping urban form • Making shared and active modes more attractive • Influencing travel demand	Responsibility for actions shared between WT, Wellington councils and Kiwirail
Wellington City Council	Te Atakura – First to Zero (2019)	Both council and city to reach net zero emissions by 2050 with the most significant reductions in the first 10 years.	• Transport action centres around Let's Get Wellington Moving. • The built environment sector actions refer to the Planning for Growth strategy. • Establishes funding for community-led, climate-related projects. • Includes a significant expansion of public EV charging.	• Contends growth in Wellington is good because the city has lower emissions per capita than elsewhere. • No planned restraint of airport growth.
Wellington City Council	2021–2031 Long Term Plan	"A sustainable, climate friendly eco capital, a people-friendly, compact, safe and accessible capital city, a dynamic and sustainable economy."	Extra funding for cycleways, $226M over 10 years.	

Organisation	Document	Target/relevant objectives	Measures summary	Observations/comment
Wellington Electricity	Website	No carbon reduction strategy, objectives or action plan for organisation published on website.	Leading development of "EV Connect", an industry roadmap for integration of electric vehicles into the electricity network. This is still in draft.	Has contributed to the costs of establishing some public EV fast chargers.
Wellington Water	2021–2024 Statement of Corporate Intent	"Supporting growth". Net Zero by 2050.	• WCC sludge minimisation project • Start measuring emissions of capital projects.	

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