

CHAPTER 15:

Waste



Waste

Lead



MINISTER FOR
THE ENVIRONMENT
HON DAVID PARKER



SECRETARY FOR
THE ENVIRONMENT
VICKY ROBERTSON



Contribution to our long-term vision

By 2050, Aotearoa has a circular economy that keeps materials in use for as long as possible.

The waste sector has contributed to the 2030 and 2050 targets for biogenic methane, and achieved a 40 per cent reduction by 2035 (relative to 2017 levels). The sector has also met successive sub-sector targets.¹



Contribution to Aotearoa New Zealand's greenhouse gas emissions (AR5) in the first emissions budget period

Projected emissions without the initiatives in this plan	14.2 Mt CO ₂ -e
Projected average annual emissions without the initiatives in this plan	3.5 Mt CO ₂ -e
Projected percentage of total gross emissions without the initiatives in this plan	4 per cent
Estimated emissions reduction from the initiatives in this plan	0.2 to 0.4 Mt CO ₂ -e

¹ The Government has also committed to a waste sector sub-target of 13.7 Mt CO₂-e over the first emissions budget period (2022–25). For more information, see [chapter 1: Playing our part](#).

Waste



Why waste is important

In 2019, 94 per cent of waste emissions were biogenic methane – largely generated by the decomposition of organic waste (such as, food, garden, wood and paper waste).² While waste contributes a small percentage of our total emissions, biogenic methane has a warming effect 28 times greater than carbon dioxide.³

Taking steps to reduce, recycle and recover greater volumes of organic waste – and improve services and infrastructure – will also create opportunities. These steps will support the shift to a circular economy, create new employment and business opportunities, improve the ability to dispose of waste responsibly, and generate cost savings for households and businesses.



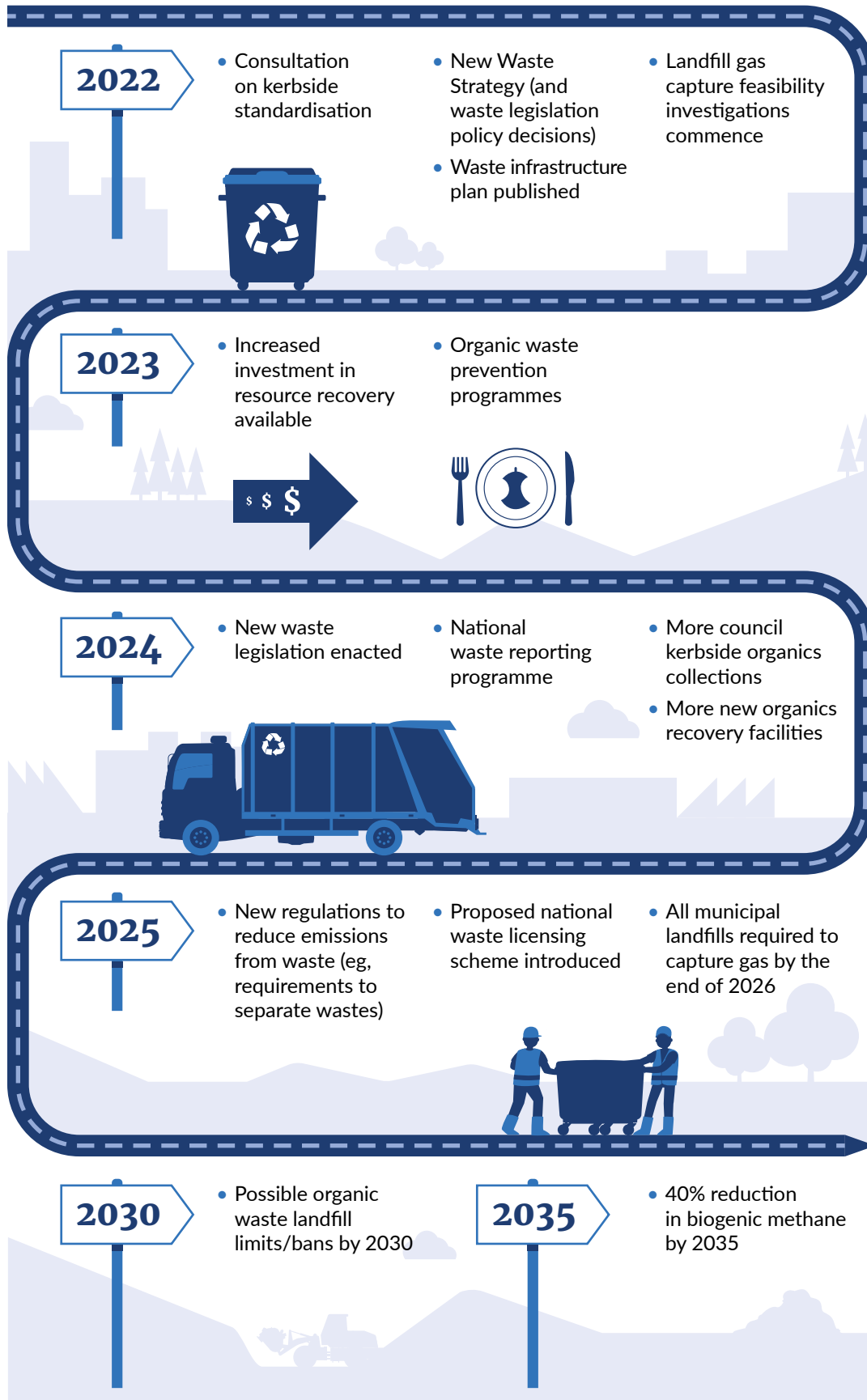
Key actions

- ▶ Enable households and businesses to reduce organic waste.
 - Encourage behaviour to prevent waste at home.
 - Enable businesses to reduce food waste.
 - Support participation in improved kerbside collections.
- ▶ Increase the amount of organic waste diverted from landfill.
 - Improve household kerbside collections of food scraps and garden waste.
 - Invest in organic waste processing and resource recovery infrastructure.
 - Require the separation of organic waste.
- ▶ Reduce and divert construction and demolition waste to beneficial uses.
 - Support the building and construction sector to minimise waste through research and improved capability.
 - Invest in sorting and processing infrastructure for construction and demolition materials.
 - Enable the separation of construction and demolition materials.
- ▶ Explore bans or limits to divert more organic waste from landfill.
 - Investigate banning organic waste from landfill by 2030.
- ▶ Increase the capture of gas from municipal landfills.
 - Regulations will require landfill gas capture at municipal (Class 1) landfills.
 - Feasibility studies will determine the need for additional landfill gas capture requirements.
- ▶ Improve waste data and prioritise a national waste licensing scheme.
 - Develop a national waste licensing scheme.
 - Improve information on greenhouse gas emissions from waste disposal.

² In 2019, the main sources of waste emissions were from the organic waste that is part of solid waste disposal (82 per cent), followed by wastewater treatment (11 per cent), incineration and open burning (5 per cent), and biological treatment of solid waste (compost) (2 per cent). These figures are based on the latest greenhouse gas inventory adjusted to AR5 terms.

³ This statement is based on information in the [Fifth Assessment Report of the United Nations Intergovernmental Panel on Climate Change](https://www.ipcc.ch/assessment-report/ar5/), completed in 2014. Retrieved from <https://www.ipcc.ch/assessment-report/ar5/> (21 April 2022).

Figure 15.1. Waste pathway to 2035



Targeting waste emissions will support the shift to a circular economy

While waste contributes a comparatively small share of emissions, our path to a low-emissions future will support bigger shifts and yield multiple benefits – including enabling emissions reductions in other sectors.

We are working towards an Aotearoa where we waste less. This means making waste is avoided, and discarded organic materials – such as food and garden waste, paper and cardboard, and timber – are used as resources in a [circular economy](#).

In this future, emissions from waste are minimised, captured and – wherever possible – used for beneficial purposes (eg, biogenic methane from landfills is used to generate electricity).

Changing the way we think about waste, alongside improving our services and waste infrastructure, will enable communities and businesses to build resilience. There are also economic opportunities for businesses and communities from more efficient use of materials that also reduce waste.

We need to reduce our biogenic methane emissions from waste

In 2019, waste was responsible for 4 per cent of our total gross emissions. Of these emissions, 94 per cent were biogenic methane generated by the decomposition of organic materials at landfill.⁴

While agriculture contributes the bulk of our biogenic methane emissions (91 per cent), waste has a role to play in meeting the 2030 and 2050 targets for biogenic methane.⁵

4 The remaining emissions were nitrous oxide (4 per cent) and carbon dioxide (2 per cent).

5 In 2019, the agriculture sector contributed around 91 per cent of our total biogenic methane. The remaining 9 per cent came from the waste sector.

Strategic changes will support emissions reductions

Wide-ranging changes to the strategic framework for waste will set goals and priorities for the next 10, 20 and 30 years, guide investment, and enable systemic shifts.

- ▶ **A new New Zealand Waste Strategy (Waste Strategy) will be published in 2022** – The Ministry for the Environment is currently developing a new strategy to address waste in Aotearoa. This will take a broader approach that goes beyond emissions reductions. It will ensure that waste is minimised and that organic and inorganic materials are recovered and available for reuse in a more circular, low-emissions economy. It will also include principles to ensure that changes are delivered in an equitable way.⁶
- ▶ **A new infrastructure plan will guide investment from 2022** – An infrastructure plan will sit alongside the Waste Strategy. This will guide investment into resource recovery and other waste minimisation infrastructure over a 10-year period.
- ▶ **We are updating Aotearoa New Zealand's waste legislation** – New legislation will be developed to replace the Waste Minimisation Act 2008 and Litter Act 1979. This legislation will create new powers to support delivery of the Waste Strategy and this emissions reduction plan. Additional regulatory tools will help achieve emissions reduction goals. The updated legislation is likely to be enacted in 2024.

The Government already has initiatives underway to reduce waste and emissions, including changes to the [waste disposal levy](#), new regulated [product stewardship schemes](#),⁷ and the [Waste Minimisation Fund](#). For more information on the Government's broader approach to waste minimisation, see the [waste reduction work programme](#).

⁶ These principles – which also underpin actions to reduce emissions from waste – include (a) recognising the perspectives of local communities, businesses, hapū, iwi and whānau; (b) considering who bears the cost of change and addressing inequity; (c) developing and investing to create opportunities and build resilience; and (d) identifying and fixing problems now to avoid an unfair burden on future generations.

⁷ Six product groups were declared a priority in July 2020, including synthetic greenhouse gases (see [chapter 16: Fluorinated gases](#)) and electrical and electronic products (which includes large batteries, such as those used in electric vehicles).

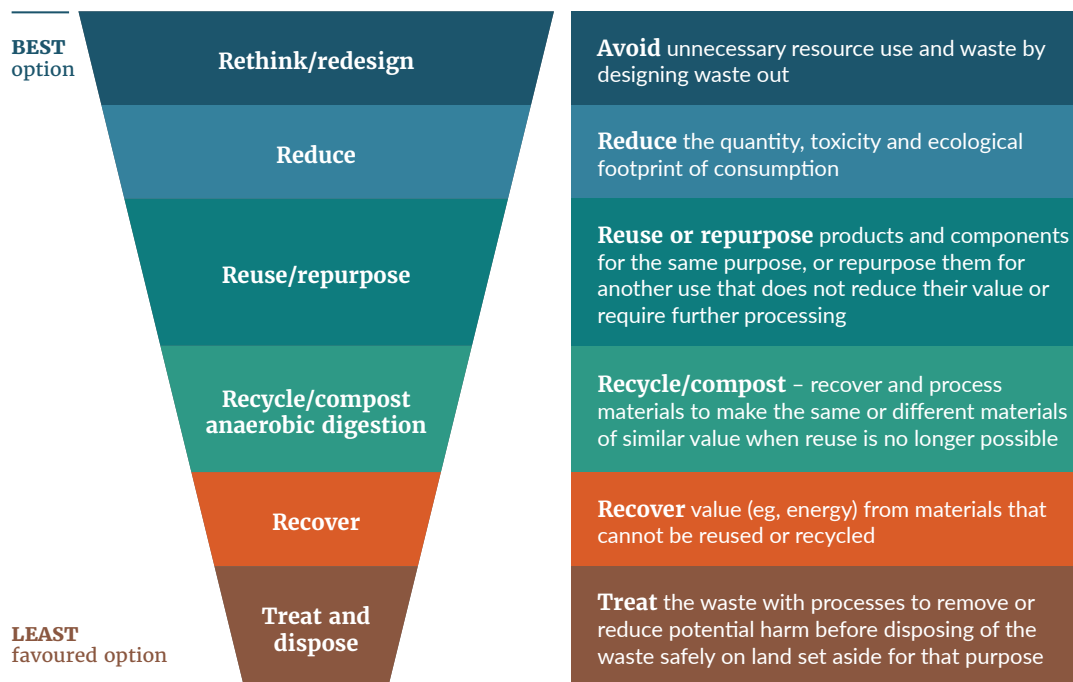
Efforts to reduce waste emissions must focus on organic waste

To reduce waste emissions, we need to focus on organic waste. This includes anything that contains degradable organic carbon – for example, materials like food and garden waste, paper, cardboard and timber.⁸

Our plans to reduce emissions fall into broad categories of the waste hierarchy:

- ▶ avoid and reduce – minimise the amount of organic waste we produce (see [Chapter 9: Circular economy and bioeconomy](#))
- ▶ recycle – divert organic waste to beneficial uses so that it is not sent to landfill
- ▶ recover – reduce emissions from organic waste when it does end up in a landfill – capture biogenic methane emissions for energy.

Figure 15.2. Waste hierarchy



⁸ Future emissions reduction plans may have a broader focus. For example, they may include initiatives to address emissions from farm fills and/or wastewater.

In several areas, actions will be informed by further consultation with local government, sector stakeholders, communities and – importantly – with Māori.

As new waste reduction policies and programmes are developed, the protection of Papatūānuku needs to be paramount. This means engaging with Māori to identify, understand and respond to Māori rights, interests and aspirations.

For example, this will involve:

- ▶ considering whether a location is of significance to iwi and hapū when establishing waste resource recovery facilities
- ▶ understanding tikanga and kawa when considering where different types of compost products are applied
- ▶ working with Māori to ensure that the impacts of policy and legislative proposals are understood and addressed.

Focus area 1: Enable households and businesses to reduce organic waste

Preventing organic waste has multiple benefits. It avoids emissions associated with the disposal of food and garden waste, and saves upstream emissions across the supply chain – from the production of food through to its consumption.

For households and businesses, small changes can result in multiple benefits, including cost savings.⁹

Action 15.1.1: Encourage behaviour to prevent waste at home

Households can prevent and reduce food and garden waste in several ways. Small changes can have an impact – for example, food waste can be reduced through meal planning, food preparation and storage. In the garden, green waste can be reduced through low-cost, home-based solutions (eg, composting, planting and mowing techniques).

Key initiative

- ▶ Support national programmes to help households prevent and reduce food waste and, where possible, garden waste.

⁹ Reducing organic waste can lead to significant co-benefits. For example, households could save an average of NZ\$644 a year by throwing away less edible food (see Love Food Hate Waste. 2021. *Don't let food go to waste* – retrieved <https://lovefoodhatewaste.co.nz/food-waste/> (accessed 22 April 2022)). Restaurants and cafes may also see reduced costs by, for example, using better stock management or storage, using non-traditional parts of ingredients and reducing plate waste.

Action 15.1.2: Enable businesses to reduce food waste

Businesses can take steps to prevent food waste, save money¹⁰ and support manufacturing, retail and hospitality sectors across the food supply chain.

Key initiatives

- ▶ Develop programmes to drive business practices that prevent food waste, including by encouraging businesses to engage in voluntary agreements to reduce food waste. These programmes are planned to start in 2023.
- ▶ Continue to investigate the production and consumption of food waste as a symptom of the failure of wider food systems. This reflects the Ministry for the Environment's priority on sustainable and resilient land use and food systems.

Action 15.1.3: Support participation in improved kerbside collections

Providing the services and infrastructure for kerbside organic collections makes it easier for households to manage their organic waste in a responsible way. However, the success of these collections relies on households using them correctly.

Key initiative

- ▶ Provide support and education to households for better use of kerbside organic collections. Potential [improvements to kerbside collections across the country](#) will be consulted on from March to May 2022.

10 One study from the United Kingdom found that “for every \$1 (or other relevant currency) invested in food loss and waste reduction, the median company site realized a \$14 return”. [The business case for reducing food loss and waste: A report on behalf of Champions 12.3](#). March 2017. Report prepared by Craig Hanson (Global Director of Food, Forests, and Water at World Resources Institute) and Peter Mitchell (Head of Economics at Waste & Resources Action Programme). Retrieved from <https://champions123.org/sites/default/files/2020-08/business-case-for-reducing-food-loss-and-waste.pdf> (accessed 22 April 2022).

Focus area 2: Increase the amount of organic waste diverted from landfill

Organic material – such as food or garden waste – does not need to go to landfill. Instead, it can be used for other purposes. For example, food waste can be turned into compost (or other soil amendment products), used as stock food or used to generate energy through anaerobic digestion. Other edible food waste can be donated to food rescue groups.

This diversion has wide-ranging benefits, including job creation for the circular economy.¹¹ It can:

- ▶ significantly reduce emissions and reduce landfill disposal costs for households and businesses
- ▶ give communities more options for disposing of waste responsibly
- ▶ increase donations to food rescue and other community-led programmes, increasing food security.¹²

Reuse, redistribution, recycling and recovery can all result in a range of social, economic and environmental benefits. The relative benefits need to be carefully assessed when determining how best to divert organic waste.

To ensure that the shift to greater resource recovery is equitable, the Government will also continue to engage with the resource recovery sector to encourage training and skills development. The following actions can help to address inequity by supporting infrastructure development for organic waste diversion in areas less well serviced.

11 Transforming our waste and resource recovery infrastructure is likely to have a positive effect on the workforce overall. Studies show that – on average – for every five jobs in landfilling, 15 to 20 jobs could be created in resource recovery. See Ministry for the Environment, 2019. [Reducing waste: a more effective landfill levy consultation document](https://environment.govt.nz/assets/Publications/Files/reducing-waste-a-more-effective-landfill-levy-consultation-document.pdf). Retrieved from <https://environment.govt.nz/assets/Publications/Files/reducing-waste-a-more-effective-landfill-levy-consultation-document.pdf> (accessed 22 April 2022).

12 In New Zealand, food rescue organisations redistribute around 8,000 tonnes of food each year.



HAMILTON CITY COUNCIL: KERBSIDE COLLECTION OF FOOD SCRAPS

By 2024, Hamilton City Council aims to achieve a 10 per cent reduction in the amount of waste each person sends to landfill. This goal – established in 2017 – is part of the council’s Waste Minimisation and Management Plan.

Food scraps made up more than a third of household waste collected at the kerbside. To divert this organic waste from landfill, the council rolled out a city-wide, rates-funded ‘Para Kai’ kerbside collection of household food scraps. The weekly collection began in 2020 and is serviced by a fleet of specialised collection trucks, half of which are electric.

Food scraps are taken to the Hampton Downs composting plant, mixed with garden waste collected from residential drop-off points, and processed over 12 weeks to produce compost.

The compost is sold to commercial businesses, used for community projects, and residents can buy it for use in their gardens.

So far, over half of eligible properties have been using the food waste service. In just over a year, some 8,073 tonnes of food waste have been diverted from landfills.

Action 15.2.1: Improve household kerbside collection of food and garden waste

Kerbside collections for food and garden waste services, as well as home and community composting programmes, enable New Zealanders to manage their organic waste responsibly, rather than sending it to landfill.

While many councils offer home composting programmes for households and a growing number offer separate kerbside collections for food and/or garden waste, the availability of these services varies from district to district.

Key initiatives

- ▶ Introduce enabling regulation to standardise and improve kerbside collections – by requiring household kerbside food scraps collections and accelerating complementary organics processing infrastructure investment – as part of [improving household kerbside collections nationwide](#). Options for diverting more garden waste will also be considered, including combined collections or separate opt-in collections for garden waste. Consultation on detailed proposals is taking place March to May 2022 and includes proposals for improving the collection of paper and cardboard.
- ▶ Engage with local government to support implementation of kerbside food scraps collections.

Action 15.2.2: Invest in organic waste processing and resource recovery infrastructure

The collection of organic waste – such as food and garden waste, paper, cardboard and wood waste – must be supported by appropriate processing and resource recovery infrastructure.

Improving the recovery and diversion of organic waste in Aotearoa will require new infrastructure and upgrades to existing infrastructure (eg, transfer stations). This infrastructure will support our move to a more circular economy, in which less organic waste enters landfills – and more inorganic resources are recovered (eg, metals, plastics and glass).

Key initiatives

- ▶ Prioritise improvements to our resource recovery infrastructure and emissions reductions through the new Waste Strategy. This will be complemented by the long-term Waste Infrastructure Plan, which will guide planning and investment in resource recovery infrastructure across Aotearoa.
- ▶ Invest in processing and recovery of food and garden waste (such as composting facilities), and paper and cardboard recovery and recycling (such as transfer stations upgrades) via a targeted resource recovery infrastructure fund. This will build on previous resource recovery investment by the Government's Waste Minimisation Fund.

Action 15.2.3: Require the separation of organic waste

Business food scrap collections are only available in some parts of the country. Where they do exist, there are several barriers that stop businesses using them. These can include higher costs, less convenience, and the need for property owners or body corporates to agree. A lack of services is often due to a lack of nearby processing facilities.

Requiring businesses to separate food scraps would encourage more providers and processors to enter the market. It could also motivate businesses to look for ways to reduce food waste in their general rubbish, including by donating to food rescue organisations.

Key initiatives

- ▶ Investigate whether to require businesses to separate food waste for collection. Consultation is taking place from March to May 2022, with decisions expected later in 2022.
- ▶ Investigate whether to require paper, cardboard (and/or glass) to be collected separately from other recyclables. Consultation is taking place from March to May 2022. If introduced, a separate collection could decrease the amount of paper, cardboard and glass that ends up in landfill.
- ▶ Once appropriate collections are in place, explore whether regulations should be introduced to require businesses, households and transfer stations to separate out organic materials for recovery – including cardboard and paper waste. Enabling powers to allow for future changes are being explored as part of the development of the new waste legislation.

Focus area 3: Reduce and divert construction and demolition waste to beneficial uses

Organic materials – including treated timber, untreated timber and other composite products – are used extensively in our construction sector. With residential and commercial development on the rise, this brings an increase in construction and demolition (C&D) waste. Growth in construction activities and material costs provides an incentive to reduce, reuse and recycle key materials.

We need to increase the recovery and reuse of these C&D materials, rather than disposing of them to landfill, where they can generate greenhouse gas emissions. This will be done through additional research, sector support, investment in resource recovery processing infrastructure and consideration of future regulation for waste separation.



GREEN GORILLA: DEMOLISHING AUCKLAND'S INDUSTRIAL WASTE STREAM

C&D material is the largest source of waste going to municipal landfills. In Auckland, nearly 570,000 tonnes of C&D waste goes to landfill each year. A Kiwi-owned company, Green Gorilla, is tackling this significant waste stream. To do this, they have received over NZ\$5 million in financial support from the Waste Minimisation Fund.

Green Gorilla process about 6,000 tonnes of C&D waste each month in their custom-built waste processing facility in Onehunga, which opened in 2012. Around 75 per cent of the C&D materials Green Gorilla processes are diverted from Auckland landfills for recycling on-site or supplied to other organisations for recycling or reuse.

Waste timber is a large component of the C&D waste received (20 to 30 per cent) and contributes to greenhouse gas emissions in landfills. Green Gorilla diverts treated and non-treated timber by separating it out and processing it into products such as biofuel, landscaping wood chip, and animal bedding. Green Gorilla also collects and processes steel, paper and gypsum.

Over time, an increase in green building techniques in the construction industry and efforts to design out waste will reduce C&D waste. In the meantime, the construction industry continues to produce vast amounts of materials that can be readily recycled and diverted.

Action 15.3.1: Support the building and construction sector to minimise waste through research and improved capability

Greater quantities of C&D waste – including wood waste – could be diverted from landfill.

Wood waste is a mixture of products from the construction industry. Untreated timber, when identifiable, can be more easily reused (native timber in particular) or used as a feedstock for fuel production. Treated timber, on the other hand, forms a large proportion of C&D waste and is more difficult to manage.¹³

Key initiative

- ▶ Scope measures to accelerate the reduction and diversion of construction and demolition waste, including:
 - further research into cost-effective and safe solutions, such as alternative woods or treatments, low-waste design, clearer labelling, and genuinely sustainable end-of-life solutions
 - training programmes to build capability, design out building waste and support the shift from demolition to deconstruction.
- ▶ This work is being scoped by the Ministry for the Environment in collaboration with the Ministry of Business, Innovation and Employment's Building for Climate Change programme.

13 It is possible to burn or otherwise process treated wood for energy. Yet doing so remains a challenge, as there are risks that extremely harmful toxins (such as arsenic) may be emitted and/or concentrated into hard-to-manage hazardous waste streams if treated wood is not appropriately managed.

Action 15.3.2: Invest in sorting and processing infrastructure for construction and demolition waste

Diverting and recovering greater volumes of construction materials could generate savings and emissions reductions in other parts of the economy. For example, separating out organic material streams, such as timber, could also facilitate the separation of inorganic materials (such as concrete and steel). By increasingly recovering and reusing these materials, we could reduce the need to produce and use new materials, and avoid associated emissions.

Key initiatives

- ▶ Prioritise improvements to our resource recovery infrastructure and emissions reductions through the new Waste Strategy and complementary long-term Waste Infrastructure Plan.
- ▶ Increase support for resource recovery infrastructure through:
 - the expansion of the waste disposal levy to construction and demolition landfills (Class 2). This will act as a price signal to foster resource recovery from mid 2022
 - the Waste Minimisation Fund (which identified C&D waste as a strategic outcome and investment signal in 2021)
 - a targeted resource recovery infrastructure fund, providing co-investment in sorting and processing infrastructure for C&D waste, targeting wood waste.

Action 15.3.3: Enable the separation of construction and demolition materials

Improving the separation of organic materials will support the diversion of waste from landfill and enable increased recovery of construction and demolition waste, such as treated and non-treated timber products.

Key initiative

- ▶ Explore enabling powers to allow for future changes as part of the development of the new waste legislation. These changes could include regulations that introduce obligations to separate C&D waste, with a particular focus on wood waste.

Focus area 4: Explore bans or limits to divert more organic waste from landfill

Action 15.4: Investigate banning organic waste from landfill by 2030

In order to reduce emissions in line with the waste sector sub-target, modelling suggests that it may be necessary to limit or ban disposal of all or some types of organic materials to landfill by 2030.

Banning organic materials from a range of landfill types would also incentivise businesses and households to look for ways to reduce or recycle/compost their organic waste. Any ban would ideally be supported by data, detailed research, and enabling infrastructure – providing a reasonably practicable alternative to disposal. Without viable alternatives, there is a risk of perverse outcomes, such as stockpiling, illegal disposal and levy avoidance.

Key initiative

- ▶ Investigate banning organic waste from landfill by 2030, subject to consultation, further analysis and viable alternatives being in place.

Focus area 5: Increase the capture of gas from landfills

Landfill gas (LFG) is a by-product of decomposing organic waste in landfills. It is mainly composed of biogenic methane and carbon dioxide. With the appropriate equipment, modern landfills can capture some of the gas and either flare (burn) it or use it to produce energy. The process converts the biogenic methane to carbon dioxide, which has a lesser impact.

Capturing LFG is a valid way to reduce harmful biogenic methane emissions and, in some cases, gain added benefits. However, it is not a perfect solution. Improving LFG capture does not encourage the recovery of organic materials and – because of practical and economic limitations – still results in some biogenic methane emissions.¹⁴

14 On average, the latest [New Zealand greenhouse gas inventory](https://environment.govt.nz/assets/Publications/New-Zealands-Greenhouse-Gas-Inventory-1990-2019-Volume-1-Chapters-1-15.pdf) assumes the lifetime efficiency of LFG capture at open landfills as 68 per cent. Ministry for the Environment. 2021. *New Zealand's Greenhouse Gas Inventory 1990–2019*, at p. 377. Retrieved from <https://environment.govt.nz/assets/Publications/New-Zealands-Greenhouse-Gas-Inventory-1990-2019-Volume-1-Chapters-1-15.pdf#page=401> (accessed 22 April 2022).

Action 15.5.1: Regulations will require landfill gas capture at municipal landfills

Increasing the amount of biogenic methane captured at municipal (Class 1) landfills will require capture systems to be installed (where feasible). Municipal landfills receive organic waste from households and businesses mixed with rubbish. Sites without LFG capture could be banned from receiving organic waste.

Key initiative

- ▶ Require all municipal (Class 1) landfills to have LFG capture systems by 31 December 2026.¹⁵

Action 15.5.2: Feasibility studies will determine the need for additional landfill gas capture requirements

A phased approach will provide time for the sector to adapt and for research into whether additional LFG capture requirements or organic material bans should be implemented.

As noted in action 15.5.1, the first phase will require LFG capture at all municipal (Class 1) landfills by 31 December 2026. This will allow time to improve enabling systems and infrastructure. It will also provide time to assess whether similar requirements should be applied to non-municipal (Classes 2 to 5) landfills that receive less organic waste.

Key initiatives

- ▶ Phase the introduction of additional LFG capture requirements to avoid unintended impacts across the landfill system.
- ▶ Undertake feasibility studies to determine whether additional LFG capture requirements or organic material bans should be implemented at non-municipal (Classes 2 to 5) landfills.

15 The Government intends to enact this requirement by lowering the threshold and related provisions under the National Environmental Standards for Air Quality (or its equivalent under new resource management legislation), or potentially using new tools under revised waste legislation. See Ministry for the Environment. [National environmental standards for air quality](#). Web page. Includes a link to the [Resource Management \(National Environmental Standards for Air Quality\) Regulations 2004](#). Retrieved from <https://environment.govt.nz/acts-and-regulations/regulations/national-environmental-standards-for-air-quality/> (accessed 22 April 2022).

Focus area 6: Improve waste data and prioritise a national waste licensing scheme

Future emissions reduction policies rely on having quality data on emissions and the waste materials that produce them. Currently our waste data has high levels of uncertainty. This applies to managed landfills, where there is a lack of information about waste composition and LFG capture rates. The data gaps and uncertainties are even greater for other waste disposal types (such as unmanaged fills, farm fills, composting and wastewater).¹⁶

Action 15.6.1: Develop a national waste licensing scheme

A national licensing scheme allows more coordinated and efficient data collection and management of the effects of waste, including emissions. A national scheme would build a better evidence base to help prioritise and measure actions to minimise waste and reduce emissions in Aotearoa.

Key initiatives

- ▶ Explore proposals to enable the collection of data. A proposal to regulate the waste and resource recovery sector through licensing and related measures was included in consultation on new waste legislation in late-2021. The Government will undertake further engagement with the sector before any new regulatory system is developed. This could include obligations and reporting requirements for individuals and entities in the waste and resource recovery sector, including disposal facilities, waste transporters, exporters and resource recovery entities.
- ▶ Engage with local government and waste service providers to ensure that obligations and data reporting requirements of a national scheme are feasible.

¹⁶ For Class 2 to 5 landfills, data uncertainty is estimated to be ± 140 per cent. For more about landfill classifications and waste disposal to land, see Waste Management Institute New Zealand (WasteMINZ). August 2018. [Technical Guidelines for Disposal to Land](https://www.wasteminz.org.nz/wp-content/uploads/2016/04/Technical-Guidelines-for-Disposal-to-Land-9Aug18-FINAL.pdf). Retrieved from <https://www.wasteminz.org.nz/wp-content/uploads/2016/04/Technical-Guidelines-for-Disposal-to-Land-9Aug18-FINAL.pdf> (accessed 22 April 2022).

Action 15.6.2: Improve information on greenhouse gas emissions from waste disposal

Changes to the [waste disposal levy](#) have extended tonnage reporting requirements to all landfills and to transfer stations and are set in regulation. Future data reporting includes requirements for landfill operators, transfer station operators and territorial authorities to report the activity that generated the waste received.¹⁷ In addition, a new national data collection and reporting programme on emissions reductions from waste is planned.

Improving waste data and building our understanding of waste sector emissions will help to identify future opportunities, including those around farm fills and wastewater treatment.

Key initiatives

- ▶ Undertake a national data collection and reporting programme to improve our understanding of emissions from waste.
- ▶ Publish national waste statistics each year (this is likely to begin from 31 December 2023).

¹⁷ These reporting requirements will be introduced as part of the expansion of the waste disposal levy.

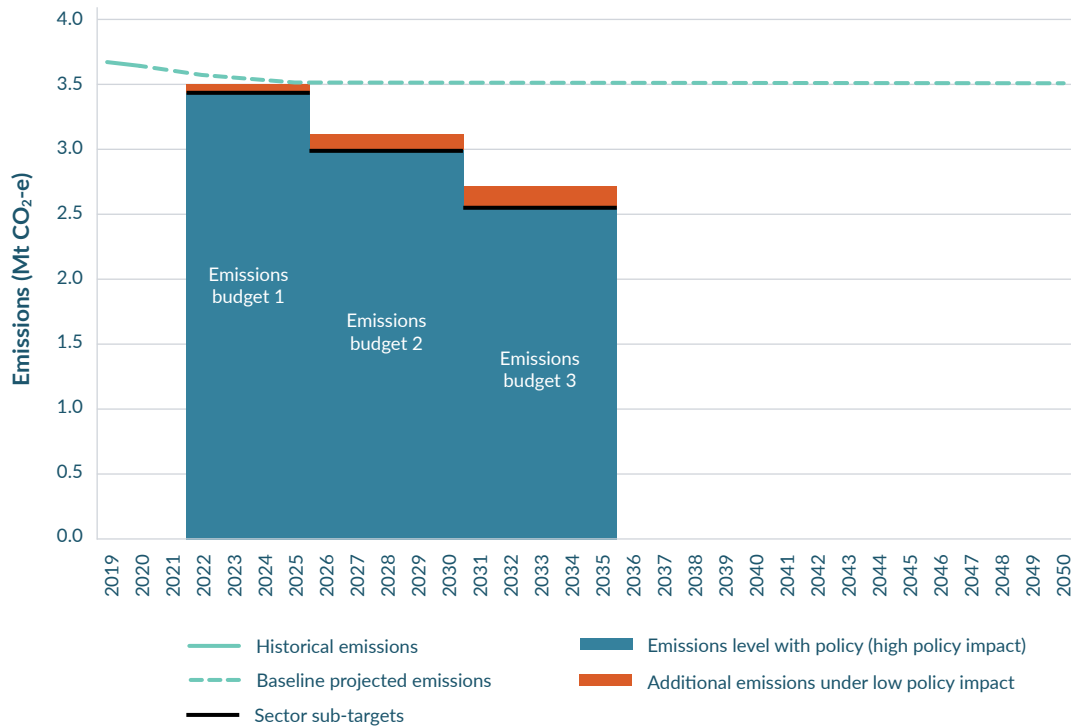
What this means for the emissions budgets

Waste emissions are expected to be reduced. This emissions reduction plan describes the policies and potential pathway to reducing organic waste disposal emissions in Aotearoa.

Figure 15.3 shows that in a 'do everything' scenario the sum of the waste policies comes close to achieving the pathway necessary to meet the first waste sector sub-target (2022–25). This scenario also indicates that greater emissions reductions from 2026–35 will mean the waste sector comes very close to achieving its provisional sector sub-targets for the second and third emissions budget periods.

While the waste sector is initially expected to fall short to 2025, improving our evidence base will support the development of future interventions.

Figure 15.3. Waste sector emissions reductions



Note 1: Modelled impacts have varying degrees of uncertainty and, for completeness, figure 15.3 shows all sources of waste emissions, including those that produce more of the other greenhouse gases such as carbon dioxide and nitrous oxide.

Note 2: This model is based on a cumulative policies scenario that assumes:

- a broad and high abatement approach to 2035, with organic materials increasingly diverted to resource recovery by 2030 ahead of a potential material disposal ban
- a mix of processing options for the various organic waste types¹⁸
- regulatory measures that require materials separation at source
- that there is some interaction between options (for example, coupled together, improved LFG capture and diverting food waste to composting will have less emissions savings than the sum of their individual emissions abatement potential).

¹⁸ This assumes 40 per cent of food waste diverted to composting (20 per cent window and 20 per cent in-vessel composting, or IVC) and 60 per cent to anaerobic digestion. It also assumes 100 per cent of diverted green waste to composting (60 per cent compost and 40 per cent IVC). In practice the best processing option should be selected based on availability of waste types and markets for potential products.

We all have a role to play in reducing emissions from waste

We all create waste and we can all help reduce the emissions it generates.

Resource recovery infrastructure to collect and process household waste has been largely led by local government. Councils will need to provide services, such as kerbside collections and related infrastructure, that enable us to reduce and recycle organic waste. New Zealanders should be able to recycle organic waste responsibly no matter where they live.

In addition to local government, the private sector (in this case, waste and recycling companies and landfill operators) also has a key role in supporting the provision of resource recovery infrastructure, participating in national licensing and waste data collection, and implementing LFG capture systems. Businesses across the supply chain will need to design out waste and look for innovative opportunities to reuse and recycle resources.

Individuals and communities can also help to reduce waste and emissions from waste. Individuals can make personal efforts to avoid creating waste in the first place, compost at home or use collection services. At a community level, groups can lead waste minimisation education, operate local recycling centres and advocate for change.

With the right support from government, partnerships and clear direction, there is significant scope for local government, Māori, community agencies and the private sector to invest in the transition to a low-emissions, low-waste future.

Helping the waste sector adapt to the effects of climate change

Climate projections and impacts

Climate change effects, such as sea-level rise, flooding, temperature rise and the risk of wildfires, have the potential to negatively impact on waste infrastructure and disposal sites.

Flooding can have compounding effects for waste. For example, flooding can result in house-loads of damaged material being disposed to landfill, as well as contaminated waste. Severe weather events can also lead to beaches and waterways littered with contaminated and hazardous materials, creating risks for human health and the environment.

Failing to adequately prepare for and build resilience to climate impacts, can put waste recovery services under pressure and reduce the capacity to recover materials.

There is also a risk that contaminants will be discharged from disposal sites, affecting water quality. For Māori, this degrades the mauri of waterways, contaminates mahinga kai (food-gathering areas), affects taonga species, and is likely to impact cultural practices.

Some landfills (active and closed) and contaminated sites are considered vulnerable, as they are situated in high-risk flood and erosion prone areas.

Measures to improve the waste sector's ability to adapt to the effects of climate change

The risk to human health and the environment from vulnerable landfills and contaminated sites is moderate at present but will likely increase.

As a result, the development and implementation of waste policy needs to consider:

- ▶ increasing the waste sector's resilience to the effects of climate change
- ▶ the effectiveness of short- and long-term solutions, so we address the hazard and the risk
- ▶ climate impacts when siting and designing new landfills, waste infrastructure and LFG capture
- ▶ how assets are adaptable to future changes (for example, increasing LFG capture could encourage more organic waste to be disposed to landfill and/or result in infrastructure that is redundant when the amount of organic waste going to landfill decreases)
- ▶ how data improvements (such as climate projections and impacts) can help to identify opportunities for the waste sector to build resilience (for example, when planning infrastructure).

The upcoming national adaptation plan will be published in late-2022 and will include actions to respond to the risk posed by vulnerable landfills and contaminated sites.



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