



An image from the Japanese Himawari satellite (January 2020). Source: <https://himawari8.nict.go.jp>

Submission

**Climate Change Response (Emissions Trading Reform)
Amendment Bill**

January 2020

About the McGuinness Institute

The McGuinness Institute was founded in 2004 as a non-partisan think tank working towards a sustainable future for New Zealand. *Project 2058* is the Institute's flagship project focusing on New Zealand's long-term future. Because of our observation that foresight drives strategy, strategy requires reporting, and reporting shapes foresight, we developed three interlinking policy projects: *ForesightNZ*, *StrategyNZ* and *ReportingNZ*. Each of these tools must align if we want New Zealand to develop durable, robust and forward-looking public policy. The policy projects frame and feed into our research projects, which address a range of significant issues facing New Zealand. The six research projects are: *CivicsNZ*, *ClimateChangeNZ*, *OneOceanNZ*, *PublicScienceNZ*, *TacklingPovertyNZ* and *TalentNZ*.

About the author

Wendy McGuinness, Chief Executive

Wendy McGuinness wrote the report *Implementation of Accrual Accounting in Government Departments* for the New Zealand Treasury in 1988. She founded McGuinness & Associates, a consultancy firm providing services to the public sector during the transition from cash to accrual accounting from 1988 to 1990. Between 1990 and 2003, she continued consulting part-time while raising children. Over that time she undertook risk management work. In 2002, she was a member of the New Zealand Institute of Chartered Accountants (NZICA) Taskforce, which published the *Report of the Taskforce on Sustainable Development Reporting*. From 2003–2004 she was Chair of the NZICA Sustainable Development Reporting Committee. In 2004 Wendy established the McGuinness Institute in order to contribute to a more integrated discussion on New Zealand's long-term future. In 2009 she became a Fellow Chartered Accountant (FCA).

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To whom it may concern,

Re: Climate Change Response (Emissions Trading Reform) Amendment Bill

The McGuinness Institute appreciates the opportunity to respond to the consultation on the Climate Change Response (Emissions Trading Reform) Amendment Bill. We would welcome the opportunity to speak to this submission at the select committee hearing.

The Emissions Trading Scheme (ETS) has been an area of interest at the McGuinness Institute for some time. Previously in 2016 the Institute made a submission on the 2015/2016 review.¹ More recently, we also submitted on the 2018 consultations for the Productivity Commission's *Low-emissions Economy* report and the consultation on the Climate Change Response (Zero Carbon) Amendment Act.²

This consultation is particularly timely, given the discourse on ways of funding the transition to a low-emissions economy. The Institute hopes that an updated and fit-for-purpose ETS might be able to contribute to these revenue concerns.

The Institute's 2016 submission on the ETS review asserted the importance of taking a long-term view when assessing the costs and benefits of the ETS. We are broadly supportive of the Amendment Bill because the scheme demonstrates a long-term view.

Areas of concern:

Although we are broadly supportive of the Bill and the amendments it makes to the ETS, we have concerns about the status of the ETS as the 'main tool' for reducing New Zealand's GHG emissions. These concerns arise primarily due to the limited scope of the ETS and how unsuccessful it has been in terms of delivering meaningful outcomes to date (the benefits). Furthermore, any limited benefits of the ETS are even more concerning when balanced against the public resources required to manage the ETS market (the costs). For this reason, we believe the purpose of the scheme must be sufficiently transparent in order for officials and citizens to be sure the ETS meets its legal purpose and delivers on what it was set up to deliver – to reduce emissions.

¹ *Submission on the consultation for the New Zealand emissions trading scheme review 2015/16.*

See www.mcguinnessinstitute.org/submissions

² *Submission to Productivity Commission on a Low-emissions Economy and Submission to Ministry for the Environment on the Zero Carbon Bill.* See

www.mcguinnessinstitute.org/submissions

(i) The purpose of the scheme

The amendments to the purpose of the Climate Change Response Act 2002, although described in the accompanying commentary as aligning with targets and commitments under the *Paris Agreement*, do not align well with the purpose of the ETS in the Act (to reduce emissions).⁴ The proposed amendments⁵ include adding ‘the *Paris Agreement*’, but in practice only refers to Article 13.7 (of the *Paris Agreement*), which relates to reporting emissions, not emissions reductions. A better way forward would be to amend the purpose of the ETS by adding: ‘contributing to the targets outlined in s 5Q⁶ of the Climate Change Response Act 2002 and

³ Climate Change Response (Emissions Trading Reform) Amendment Bill: Explanatory note

Updating purpose of CCR Act

The Bill will update the purpose of the CCR Act to support implementation of New Zealand’s international climate commitments under the Paris Agreement and domestic targets and emissions budgets, to be set under the Climate Change Response (Zero Carbon) Amendment Bill.

⁴ Climate Change Response Act 2002

Section 3: Purpose

(1) The purpose of this Act is to—

(aa) provide a framework by which New Zealand can develop and implement clear and stable climate change policies that—

(i) contribute to the global effort under the Paris Agreement to limit the global average temperature increase to 1.5° Celsius above pre-industrial levels; and

(ii) allow New Zealand to prepare for, and adapt to, the effects of climate change:

(a) enable New Zealand to meet its international obligations under the Convention and the Protocol, including (but not limited to)—

(i) its obligation under Article 3.1 of the Protocol to retire Kyoto units equal to the number of tonnes of carbon dioxide equivalent of human-induced greenhouse gases emitted from the sources listed in Annex A of the Protocol in New Zealand in the first commitment period; and

(ii) its obligation to report to the Conference of the Parties via the Secretariat under Article 7 of the Protocol and Article 12 of the Convention:

(b) provide for the implementation, operation, and administration of a greenhouse gas emissions trading scheme in New Zealand that supports and encourages global efforts **to reduce the emission of greenhouse gases** by—

(i) assisting New Zealand to meet its international obligations under the Convention and the Protocol; and

(ii) reducing New Zealand’s net emissions of those gases to below business-as-usual levels; and

(c) provide for the imposition, operation, and administration of a levy on specified synthetic greenhouse gases contained in motor vehicles and also another levy on other goods to support and encourage global efforts to reduce the emission of those gases by—

(i) assisting New Zealand to meet its international obligations under the Convention and the Protocol; and

(ii) reducing New Zealand’s net emissions of those gases to below business-as-usual levels. [Bold added]

⁵ Climate Change Response (Emissions Trading Reform) Amendment Bill

Section 3 amended (Purpose)

(1) In section 3(1)(a), replace “and the Protocol” with “, the Protocol, and the Paris Agreement”.

(2) In section 3(1)(a)(i), after “period”, insert “starting on 1 January 2008 and ending on 31 December 2012”.

(3) In section 3(1)(a)(ii), replace “Article 7 of the Protocol and Article 12 of the Convention” with “Article 12 of the Convention, Article 7 of the Protocol, and Article 13.7 of the Paris Agreement”.

(4) In section 3(1)(b)(i) and (c)(i), replace “and the Protocol” with “, the Protocol, and the Paris Agreement”.

⁶ Climate Change Response Act 2002

Section 5Q: Target for 2050

(1) The target for emissions reduction (the 2050 target) requires that—

(a) net accounting emissions of greenhouse gases in a calendar year, other than biogenic methane, are zero by the calendar year beginning on 1 January 2050 and for each subsequent calendar year; and

(b) emissions of biogenic methane in a calendar year—

(i) are 10% less than 2017 emissions by the calendar year beginning on 1 January 2030; and

(ii) are 24% to 47% less than 2017 emissions by the calendar year beginning on 1 January 2050 and for each subsequent calendar year.

(2) The 2050 target will be met if emissions reductions meet or exceed those required by the target.

(3) In this section, 2017 emissions means the emissions of biogenic methane for the calendar year beginning on 1 January 2017.

more broadly to New Zealand’s Nationally Determined Contributions (NDCs) under the *Paris Agreement*. We would also prefer to see a requirement for entity specific emissions data to be publicly available, or at least an acknowledgment that the ETS has a responsibility to be understandable and accessible to the public. Lastly, the term ‘business-as-usual levels’, currently defined in s 3(3), should be reviewed to ensure it puts in place a useful and clear meaning within the purpose and intent of the proposed amendments.

- (b) provide for the implementation, operation, and administration of a greenhouse gas emissions trading scheme in New Zealand that supports and encourages global efforts to reduce the emission of greenhouse gases by—
 - (i) assisting New Zealand to meet its international obligations under the Convention, the Protocol, ‘and contributing to the targets outlined in s 5Q of the Climate Change Response Act 2002 and more broadly to New Zealand’s Nationally Determined Contributions (NDCs) under the Paris Agreement’
 - (ii) reporting on existing emissions in an accessible and verifiable manner, and
 - ~~(ii) reducing New Zealand’s net emissions of those gases to below business as usual levels; and~~

(ii) Retaining the opportunity to establish a carbon tax in the future

Given the reservations about the costs and benefits of the ETS, the Institute considers a carbon tax to be a more appropriate mechanism for reducing emissions. A carbon tax, we believe, would be cheaper, simpler (easier for citizens to understand), easier to alter (by changing the tax rate), easier to target to specific audiences, easier to stage if need be (e.g. by changes in tax rates and by applying to different emitters) and the funds collected can be targeted for specific purposes (e.g. R&D grants made available to carbon tax payers).

Operationally, a carbon tax will require independently verifiable carbon emissions data. For this reason we are strongly supportive of the Bill in terms of requiring emissions data of individual organisations to be made publicly available. This leads us to three important recommendations:

1. Require emissions to be disclosed in line with the three ‘scopes’ of the GHG Protocol.⁷
2. Require emissions data to be independently assured against best practice. We note that ISAE (NZ) 3410: *Assurance Engagements on Greenhouse Gas Statements* is part of the XRB’s suite of assurance standards.⁸
3. Require emissions data to be disclosed in the annual report of organisations participating in the ETS. We explain how this should be progressed in our *Submission to MBIE and MfE on climate-related financial disclosures*.⁹ See also Appendix 1 of this submission for an example of emissions disclosure in Z Energy’s 2019 annual report.

⁷ Page 55, *Discussion Paper 2019/01 – The Climate Reporting Emergency: A New Zealand case study*. See www.mcguinnessinstitute.org/discussion-papers

⁸ Page 58, *Submission to MBIE and MfE on climate-related financial disclosures*. See www.mcguinnessinstitute.org/submissions
This discussion refers to page 57 of *Climate-related financial disclosures – Understanding your business risks and opportunities related to climate change: Discussion document*. See www.mfe.govt.nz/sites/default/files/media/Climate%20Change/Climate-related-financial-disclosures-discussion-document.pdf

⁹ See www.mcguinnessinstitute.org/submissions

(iii) **Putting in place a requirement for mandatory climate-related financial disclosures**

Given the Institute's Submission to MBIE and MfE on climate-related financial disclosures, we suggest that the proposed amendments to the Climate Change Response Act 2002 (see Box 1 below) be included as a further amendment under this Bill (possibly through a further Supplementary Order Paper [SOP]).

The current Bill already refers to Article 13.7¹⁰ of the *Paris Agreement*, which relates to reporting emissions, therefore making this an appropriate time and place to make these further amendments (illustrated in Box 1 overleaf).

Box 1: Climate Change Response Act 2002

Suggested new part (e.g. Part 6)

Part 6: External Reporting on mitigation and adaptation

New section: External Climate Reporting Organisations

(1) For the purposes of this section, the following are **external climate reporting organisations**:

- (a) Participants of the New Zealand Emissions Trading Scheme (ETS) listed under section 54 of the Climate Change Response Act 2002;¹⁰²
- (b) Reporting organisations as listed in 5ZW(8) of the Climate Change Response Act 2002;¹⁰³ and
- (c) XRB Tier 1 for-profit entities and public benefit entities.

New section: Statement of Climate Information

- (1) Every reporting organisation must prepare an audited annual Statement of Climate Information to be disclosed in the annual report of the reporting organisation;
 - (2) The Statement of Climate Information must comply with a reporting standard and assurance standard issued by the External Reporting Board; and
 - (3) The Statement of Climate Information must include:
 - (a) a description of the organisation's governance in relation to the risks of, and opportunities arising from, climate change;
 - (b) a description of the actual and potential effects of the risks and opportunities on the organisation's business, strategy, and financial planning;
 - (c) a description of the processes that the organisation uses to identify, assess, and manage the risks;
 - (d) a description of the metrics and targets used to assess and manage the risks and opportunities, including, if relevant, time frames and progress (including emissions); and
 - (e) any matters specified in the financial or non-financial reporting standards.
- [underlined new]

¹⁰ Paris Agreement

Article 13.7

Each Party shall regularly provide the following information:

- (a) A national inventory report of **anthropogenic emissions by sources and removals** by sinks of greenhouse gases, prepared using good practice methodologies accepted by the Intergovernmental Panel on Climate Change and agreed upon by the Conference of the Parties serving as the meeting of the Parties to this Agreement; and
- (b) Information necessary to track progress made in implementing and achieving its nationally determined contribution under Article 4. [Bold added]

(iv) Putting in place an incentive to manage and report on carbon released through wildfires and eruptions

Like most New Zealanders, we have watched the Australian bushfires with alarm and concern; not just in terms of the loss of life and diversity, but in terms of the release of carbon. It would be useful to have some clarity over how this is being treated in relation to accounting under the *Paris Agreement*. This point was raised by climate journalist Jean Chemnick, who noted ‘an open question [of] how the 350 million metric tons of CO₂ released during this year’s Australian bushfire season figures into any of this accounting’ against the *Paris Agreement* rulebook’s climate accounting provisions.¹¹

Article 5.1 of the *Paris Agreement* states that ‘Parties should take action to conserve and enhance, as appropriate, sinks and reservoirs of greenhouse gases as referred to in Article 4, paragraph 1 (d), of the Convention, including forests’.¹² We are somewhat concerned that Australia’s inaction on climate change generally, and insufficient wild fire management specifically, may constitute a violation of this Article.

We expect the Brazilian and Australian fires and the subsequent concerns raised over the respective governments’ failure to respond and manage these fires in a timely manner will be discussed in Glasgow later this year. The outcomes of these discussions may lead to more clarity over who is responsible and how the carbon release will be accounted for. Given the public policy aims to further increase forestry in New Zealand, how fires in New Zealand are to be managed and accounted for in emissions budgets should be discussed and considered under this Bill. It is a key concern that the Australian bushfires have been considered to be poorly managed,¹³ not just for Australia but the world. The world cannot afford to have such a significant amount of carbon emissions, more than double Australia’s annual emissions,¹⁴ and more than the annual emissions 100 countries.¹⁵ These natural events must also be accounted for – as addressed by the following quote:

National reports are seriously underestimating CO₂ emissions from fires, through a combination of ineffective monitoring and inaccurate reporting. They are ignoring black carbon emissions¹⁶ and they are not accounting for the

¹¹ *As Fires Rage, Australia Pushes to Emit More Carbon* (6 Jan 2020). See www.scientificamerican.com/article/as-fires-rage-australia-pushes-to-emit-more-carbon

¹² *Paris Agreement* (2015). See unfccc.int/files/essential_background/convention/application/pdf/english_paris_agreement.pdf

¹³ *Australia fires: PM admits mistakes in handling of crisis* (12 Jan 2020). See <https://www.bbc.com/news/world-australia-51080567>

¹⁴ *Wildfires more than double Australia’s annual carbon emissions*. See <https://www.deccanherald.com/science-and-environment/wildfires-more-than-double-australia-s-annual-carbon-emissions-796766.html>

¹⁵ *Australia’s fires have pumped out more emissions than 100 nations combined: Climate change is driving climate change*.

<https://www.technologyreview.com/s/615035/australias-fires-have-pumped-out-more-emissions-than-100-nations-combined/>

¹⁶ Black carbon ‘or soot generated by fires is a serious threat to the climate when it ends up landing on Arctic ice. This is particularly a concern from fires that happen in the Russian boreal forests close to the Arctic. Heat convection from fires draws black carbon high up into the atmosphere where it can be carried long distances. Black carbon on ice or snow prevents it reflecting back the sun’s heat as effectively as it otherwise would and speeds up melting. Science gives us a range for the impact of black carbon that makes it either the second or the third most important contributor to climate change.’ Page 8, *Lost in smoke: wildland fire climate impact* (Greenpeace, Dec 2018). See https://storage.googleapis.com/planet4-international-stateless/2018/12/22863407-greenpeace-report_lost-in-smoke_december-2018.pdf

Note: There is very little information yet on the extent the ash from the Australian fires extended to the Antarctica but there is already

impacts of the loss of carbon sink potential due to fire. This neglect to account for and act on the climate impacts of fires poses a critical threat to our chances of limiting global temperature increases to 1.5°.¹⁷

This means land and fire management needs to be considered when considering legislation on climate change; particularly where that legislation promotes forestry. To this end we make the following suggestions:

1. Government should be required to report on all natural (non-anthropogenic) emissions as part of our NDC (this could form an appendix). We see this as good practice and a good example to other countries. This information is important, particularly as we are starting to see evidence of climate change causing climate change. It is important to note that ‘emissions resulting from natural disturbances’ such as forest fires were explicitly allowed to be excluded from accounting under the rules for the second commitment period of the Kyoto Protocol from 2013–2020.¹⁸ We would argue that this will not be satisfactory going forward.
2. Legislation about promoting ways to improve the management and measurement of fires and volcanic eruptions should be considered.

Areas of support:

- We support updating the purpose of the Climate Change Response Act 2002 to aid in meeting New Zealand’s commitments under the *Paris Agreement* and other emission targets set under the Zero Carbon amendments. However, we suggest that the updated purpose should go further than simply adding mentions to the *Paris Agreement* (see discussion in ‘Areas of concern’ above).
- We support the introduction of an emissions cap covered by the ETS, as this will bring New Zealand in line with international best practice of an emissions ‘cap and trade’ scheme.
- We support the five-year rolling basis of unit supply decisions, acknowledging the need for participants in the scheme to have certainty in the short-term, while also allowing flexibility for regulations relating to climate change as such an uncertain and developing issue.
- We are supportive of the provisions for a compliance and penalty regime to be administered by the Environmental Protection Agency (EPA).
- We are strongly supportive of the intention to make data on the ETS activities of individual organisations available online. In conjunction to this, and as it relates to the Institute’s work in

evidence of ash melting glaciers in New Zealand. See for example <https://edition.cnn.com/2020/01/02/australia/new-zealand-glaciers-australia-bushfire-intl-scli/index.html> and <https://www.theaustralian.com.au/world/the-times/bushfires-ash-from-australia-threatens-nz-glaciers/news-story/cc78bf59db528b33865a7eea740a3541>

¹⁷ *Lost in smoke: wildland fire climate impact* (Greenpeace, 2018). See https://storage.googleapis.com/planet4-international-stateless/2018/12/22863407-greenpeace-report_lost-in-smoke_december-2018.pdf

¹⁸ Page 5, *Accounting of GHG emissions and removals from forest management: a long road from Kyoto to Paris* (2018). See https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5768587/pdf/13021_2017_Article_89.pdf

*Project Reporting*NZ, we recommend that such data be included as a disclosure requirement in entities' annual reports (see discussion above).

- We are broadly supportive of the amendments relating particularly to forestry. However, as noted above, we would like to see more comprehensive recognition of the risks of forestry as an offset method; for example, the risk of re-releasing sequestered carbon following a forest fire, especially as the effects of climate change are likely to increase fire risk in some regions. As part of this, we recommend that greater consideration be given to forest fire management in the development of rules relating to the accounting of the emissions released by such fires. This is likely to be an area that requires significant further research and policy development before it can be addressed in the *Paris Agreement*.
- Regarding the inclusion of the agriculture industry in the scheme, we are very interested in the detailed provisions that are not yet outlined in the Bill. We agree that the agricultural, livestock and fertiliser emissions should be included in the scheme. We look forward to doing more research on 'farm emissions reporting' as outlined in Schedule 5 of the SOP No. 413. We are aware that this is an important and complex debate that will require an understanding of *NZ IAS 41: Agriculture*.¹⁹ We look forward to undertaking further research into this area with a view to contributing to this discussion throughout the Select Committee hearing process and onwards in the lead-up to 2025.
- We are supportive of the removal of the fixed unit price of \$25 to better reflect market forces. In hindsight, this unit price was not sufficient to drive a reduction in emissions and did not contribute to the scheme as a meaningful policy mechanism. Generally speaking, we are of the view that a higher unit price will deliver better outcomes for the mitigation of climate change, but that a carbon tax (as discussed above) will deliver a faster and more just reduction in emissions.

Conclusion:

To conclude, we note a few more aspects of our 2016 submission. Due to the technical nature of this amendment bill and ETS scheme more generally, throughout this consultation process, it is important to make an effort to be as accessible as possible to the public. The more that can be done to improve the accessibility and understandability of the scheme to a layperson, the more robust the consultation, public discourse, and by extension the democratic process will be. Ultimately, climate change is an issue that will affect New Zealand across intergenerational and economic divisions and, as such, being equitable should be noted throughout the process. As a mechanism, the ETS has the capacity to contribute to better outcomes in this area.

¹⁹ *New Zealand Equivalent to International Accounting Standard 41 Agriculture (NZ IAS 41)*. See www.xrb.govt.nz/dmsdocument/2825

Supporting McGuinness Institute publications

Discussion Paper²⁰

1. *Discussion Paper 2019/01 – The Climate Reporting Emergency: A New Zealand case study* (October 2019)

Submissions²¹

1. *Submission to MBIE and MfE on climate-related financial disclosures* (December 2019)
2. *Oral Submission to Select Committee on the Climate Change Response (Zero Carbon) Amendment Bill* (August 2019)
3. *Submission to Ministry for the Environment on the Climate Change Response (Zero Carbon) Amendment Bill* (July 2019)
4. *Submission to Ministry for the Environment on the Zero Carbon Bill* (July 2018)
5. *Submission to Productivity Commission on a Low-emissions Economy* (July 2018)
6. *Submission on the consultation for the New Zealand emissions trading scheme review 2015/16* (May 2016)

²⁰ See www.mcguinnessinstitute.org/discussion-papers

²¹ See www.mcguinnessinstitute.org/submissions

Appendix 1: Climate Change Statement – Z Energy Annual Report 2019

Environmental Sustainability

Our Climate Change Statement

Our Environmental Sustainability stand commits us to three outcomes with targets to achieve by 2020. We are making good progress against many of the targets, although some are proving more challenging than others. A summary is set out at right. Full details on our targets are available at z.co.nz.

Key

- We are on track and doing well
- We've made some good progress, but we need to do more
- We are not on track and need to do more

“ We stand for an environmentally sustainable New Zealand that is an example to the rest of the world and an inspiration to Kiwis. Z will move from being a part of the climate change problem to the heart of the solution.

We will be bold and provide leadership and a range of solutions to enable our customers, stakeholders and communities to join us on the journey to a lower carbon future. ”

Key

- We are on track and doing well
- We've made some good progress, but we need to do more
- We are not on track and need to do more

Outcome	Actions	Status
Use less and waste less in our operations		
Reduce carbon emissions	Operational and New Zealand supply chain emissions decreased due to lower emissions in Supply, for example in coastal shipping and ground freight of fuel to our sites. We voluntarily offset 58,000tCO ₂ e this year to cover our operational emissions, including those from corporate travel, retail electricity, coastal shipping and hauliers.	●
Reduce waste to landfill	We measure and manage our waste. As a proportion of waste, landfill volumes increased this year.	●
Reduce electricity use	Electricity consumption is measured across our offices and retail network. This year electricity consumption decreased at our retail sites.	●
Making purchasing decisions that support sustainability		
Supply chain	Our supplier Code of Conduct is being used for procurement decisions and contracts for major suppliers, including for ground fleet distribution of fuel and refined imported products. Our minimum energy standard for shipping was implemented, increasing the use of the most energy efficient ships.	●
Customers reduce fossil fuel use	Biodiesel production is underway (500,000+ litres B100 in FY19) and we are focusing on ramping up production and rolling out delivery to our customers.	●
Lower-carbon products and services	Our investment in climate-positive car sharing company Mevo is consistent with a pathway to the future of mobility we foresee. The Mevo team have established a strong presence in the Wellington market and are well positioned to grow the unique free-floating car sharing product with both consumers and businesses, with its registered members up by more than 340% and monthly trips up by more than 270%.	●

Outcome	Actions	Status
Enable others to reduce their impact		
Customers experience emerging transport technologies	A social media campaign allowed customers to try EVs in Wellington. The Z network contains eight EV charging sites, providing around 12,000 charges in the past year. Our Z Vivian Street site is one of the most used EV charging points in New Zealand.	●
Carbon offsets	We are actively looking at ways to enable customers to purchase carbon offsets online and we continue to look actively at ways to make this service available to all customers.	●
Partnerships for low-emission economy	We continued to develop our association with Trees That Count. In this year's season, Z supported 30 planters establishing more than 20,000 trees. Z also joined forces with Air New Zealand, Contact Energy and Genesis Energy to form Dryland Carbon to accelerate afforestation and planting in New Zealand for carbon sequestration. See the next page for more details on Dryland Carbon.	●
Local permanent forest providers	We are the largest single purchaser of voluntary carbon credits in New Zealand, partnering with Permanent Forests NZ. At an average cost of around \$25 per tonne, this comes to an annual cost of about \$1.5 million per year. The credits are created through the protection and covenanting of domestic forestry projects — these are a mixture of exotics (blackwoods, eucalypts and pine) and native trees (mānuka, kānuka and tōtara).	●
Policy	We were a founder and convener of the Climate Leaders Coalition, a collaboration of major businesses in New Zealand with 86 signatories representing over 50 percent of this country's emissions. The coalition was described as "globally significant" by Chris Stark, CEO, United Kingdom Committee on Climate Change. No other country has managed to do this. The initiative is in alignment with the thinking of global investors like BlackRock and is a key part of using our leadership position and those of others to influence New Zealand business overall.	●

Measuring our emissions

We have been measuring our emissions since 2012, but reset our base year to FY17 following the acquisition of Caltex. We follow the principles of the Greenhouse Gas Protocol to measure our greenhouse gas emissions. We measure direct emissions, such as those from the vehicles we own, and indirect emissions, such as the electricity we consume, travel and waste, our Z retail sites and Caltex operations. We include emissions across the entire supply chain and from the products we sell. Emissions from Flick are not included. Information on the greenhouse gas emissions profile of Flick is available at FlickElectric.co.nz.

While Z continues to focus on lowering operational emissions we are also committed to reducing indirect emissions from our customers through greater production of biodiesel and supporting the growth of EV use in New Zealand.

Greenhouse gas emissions

	FY19	Calendar year 2017 (base year)
Scope 1 — Z offices and retail sites	3,837	3,907
Scope 2 — Z offices and retail sites	4,195	4,045
Scope 3 — Z offices and retail sites	4,495	3,339
Scope 3 — New Zealand supply chain	37,910	40,031
Scope 3 — Share of refinery	555,892	634,848
Scope 3 — Rest of supply	902,215	807,542
Scope 3 — Z product emissions from our customers	11,640,509	9,488,277
Total emissions	13,149,051	10,981,989

We also have a liability under Liquid Fossil Fuels in the New Zealand Emissions Trading Scheme (ETS). We surrendered five million units for obligations in the 2018 calendar year. See [note 13](#) in the financial statements.

Z invested in a long-term carbon farming and afforestation partnership to produce a stable supply of forestry-generated New Zealand Unit (NZU) carbon credits to help Z meet a portion of its ETS surrender obligation. Z will participate as a limited partner, contributing capital in an initial five-year period (subject to certain pre-agreed investment criteria/hurdles being met), but we will not be involved in the day-to-day operations of Dryland Carbon.

Climate change risks

Forecasting future demand for fossil fuels becomes more complex when considering technology developments that may emerge over time. We use the BusinessNZ Energy Council scenarios as outlined on page 46 of this report.

As a company selling around 45 percent of New Zealand's total transport fuel; or put another way, primarily through the products we sell, nine percent of New Zealand's total emissions, Z is at risk from both the transition to a low-carbon economy and the

physical impacts of climate change. However, as a downstream energy company, with no exposure to upstream drilling and extraction operations, we are well-placed to manage the change to a low-carbon economy.

There are also valuable opportunities to transition the company from fossil fuels to a low-carbon future and to do it in a way that's good for all our stakeholders.

We've been more deliberate in linking our overall risk profile to our direct and indirect exposure to climate change risks. With climate change

being one of the material issues we focus on, we are working on the impact of, and adaptation to, climate change risks for Z. Our Sustainability team recently merged with the Strategy and Risk team in order to respond to these risks more deliberately.

Close to half the material topics we've reported on this year relate to management of our climate change risks. These topics are: Flick purchase, renewable energy, VUCA future, responsible consumption and production, climate action, increased regulation, supply chain resilience, ethical procurement and brand value. These topics are interrelated.

We manage risks associated with these topics to reduce the negative impacts on our capitals (our assets, our finances, our capability, our people and culture, our environment, and our place in New Zealand).

Waste measures



These waste figures are estimated based on actual volumes from 70% of retail sites.