Huntley Power Station, Huntley.

Submission | **Proposed changes to regulations for the New Zealand Emissions Trading Scheme 2022**

Introduction

The Emissions Trading Scheme (ETS) has been an area of interest at the Institute for some time. Previously the Institute had made a submission on the 2015/2016 review. 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.

The Institute hopes that an updated and fit-for-purpose ETS might be able to contribute to revenue concerns and drive Aotearoa New Zealand toward a net-zero economy. This consultation is particularly timely, given the discourse around the funding options required to pay for the social, economic and political transitions associated with the emissions reduction plan. This consultation is also timely given the recent auction of emissions trading units. While we appreciate that this consultation has a technical focus, the Institute still wishes to comment on the ETS system as a whole.

We wanted to note our appreciation that the EPA is now reporting on ETS participants.[1]

1.0 Key concerns

The Institute holds concerns about the status of the ETS as the primary mechanism for reducing Aotearoa New Zealand's GHG emissions. The Institute's 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, the Institute believes the purpose of the scheme must be sufficiently transparent and aligned with wider public policy in order for officials and citizens to have confidence that the ETS meets its legal purpose and delivers on a reduction in emissions.

(i) Focusing on coal power

Any focus on reducing emissions, we should focus on areas of scale, where real change can be made. One obvious area for policy work is the Huntly power station. If we are not able to create policy that ensures coal power is phased out in the very short term, we are failing to deal with the issue at hand. The fact that this remains an ongoing issue in 2022, does not reflect well on New Zealand.

> Shaw said on Sunday that the Government would spend $67 million helping the likes of schools and hospitals do away with coal boilers and leasing low emission vehicles to support the transition to a "carbon-neutral public service".
>
> But to put that in perspective, a back-of-the-envelope calculation suggests Genesis Energy is currently putting out more emissions than that every five days from burning coal at its Huntly Power Station.[2]

Figure 1: Electricity generation by fuel

Source: *New Zealand Energy Strategy 2011-2016, Developing our energy potential.* [3]

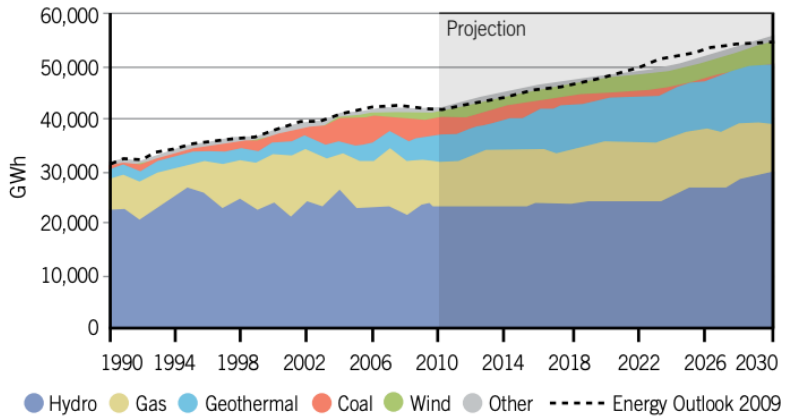

Figure 1 (above) illustrates the actual and projected make-up of energy sources in Aotearoa New Zealand. Interestingly, at the time this government department strategy was published (2011), coal was projected to be entirely phased out over the 2022-2026 period. Now, as we exist and operate in this time period, coal is still being burned. This example shows that there has been (and continues to be) a lack of ambition and action in response to strategic direction and guidance to phase out coal power.

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

The Institute considers a carbon tax to be a faster, fairer and more cost-effective mechanism to reduce emissions and pivot the economy in short to medium term. Specifically, a carbon tax would be; cheaper, simpler (easier for the public 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. This leads us to three important recommendations:

1. Require emissions to be disclosed in line with the three 'scopes' of the GHG Protocol.[4]

2. Require emissions data to be independently assured against best practice. The Institute notes that ISAE (NZ) 3410: Assurance Engagements on Greenhouse Gas Statements is part of the XRB's suite of assurance standards.[5]

3. Require emissions data to be disclosed in the annual report of organisations participating in the ETS. How this should be progressed has been explained in the Institute's Submission to MBIE and MfE on climate-related financial disclosures.[6] See also Appendix 2 of this submission for an example of emissions disclosure in Z Energy's 2019 annual report and Working Paper 2021/06 – *Reviewing TCFD information in 2017–2020 Annual Reports of NZSX-listed companies.*[7]

(iii) Align emission reduction strategy across all government departments

Government departments strategies could be recessed to see how they could be crafted to contribute to climate change (emissions reduction and adaptation). Appendix 3 contains a preview of our 2021 GDS Index, which reviews all GDSs in operation as at 31 December 2021.

(iv) Creating a fund to manage, incentivise and report on emissions released through wildfires and eruptions – accounting transparency.

Natural disasters, such as wildfires and volcanic eruptions, are extremely emissions intensive. With the increasing frequency of such events, it is critically important to establish how naturally occurring emissions are to be treated in relation to accounting under the Paris Agreement moving forward.

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.[8]

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'.[9] The Institute would argue that Australia's inaction on climate change generally, and insufficient wildfire management specifically constitutes a violation of Article 5.1. The observed failure of governments' to respond to and manage large wildfire events over the last few years

(Australia, Brazil, etc) highlights that effective risk management, accounting processes and accountability is not embedded in this regard.

Given the public policy aims to further increase forestry in Aotearoa New Zealand, wildfire management and how this risk is accounted for in emissions budgets should be discussed and considered regarding any changes to the ETS. It is a key concern that the Australian wildfires had been considered to be poorly managed,[10] not just for Australia but the world. The world cannot afford to have such a significant amount of carbon emissions, almost double Australia's emissions,[11] and more emissions than 100 countries.[12] These naturally emitting events must 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 emissions and they are not accounting for the 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°.[13]

This means land, wildfire and risk management needs to be prioritised when considering legislation on climate change; particularly where that legislation promotes forestry. To this end, the Institute makes 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). The Institute sees 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 wildfires were explicitly allowed to be excluded from accounting under the rules for the second commitment period of the Kyoto Protocol from 2013–2020.[14] The Institute would argue that this governance gap needs to be resolved, particularly given the increase in wildfires expected in the short to medium-term.

2. Legislation about promoting ways to improve the management and measurement of wildfires and eruptions should be considered.

(v) Funding large scale emissions reduction/transition to net-zero

The Institute strongly advocates the need for faster upfront investment to support the (urgently needed) development of large scale climate-related interventions. The investment mechanisms required to finance such developments (namely decarbonisation and long-term resilience) must be set up in the short-term.

The Institute holds concerns over the lack of certainty and clarity of when these funding decisions will be made. The budget cycle, with its emphasis on short-term expenditure and lengthy annual vetting process, is not well suited to delivering long-term investment certainty. The timely development of a mechanism to guarantee long-term funding certainty is crucial. Similar long-term fiscal challenges, such as infrastructure spending, have mechanisms to provide a clear pipeline of projects and funding, such as the National Land Transport Programme.

The Institute wishes to reiterate the concern that the continued reliance on carbon sinks to bring down net emissions does not address and/or drive structural and systematic changes that are required to deliver decarbonisation. Policymakers need to be pragmatic and understand that offsetting and carbon capture through forests is a short-term solution and simply passes on an even bigger problem to future generations. Priority of investment should be given to active system change and dynamic innovation. As at 16 March 2022, 10,518,300 units were sold at $70 each, aggregating $736,281,000 of revenue.[15] Hence, the commitment to recycle future Emissions Trading Scheme (ETS) revenue to achieve more emissions reductions from Budget 2022 is an encouraging step forward.

> The Minister of Finance Grant Robertson has also stated his intention to hypothecate, or recycle the revenue from the Emissions Trading Scheme for the implementation of the forthcoming Emissions Reduction Plan, which must be published before the end of the year.

> "Such a change is only possible because of the changes this Government has made to the ETS – and it will be a game-changer that is forecast to provide approximately more than $3 billion of investment over the next five years to help meet our emissions reductions goals," James Shaw said. [16]

In our view the value creating a certain and reliable revenue stream for a specific purpose is likely to deliver faster and a more adaptive learning environment, however, in order to deliver real and timely change, a range of checks and balances will need to be incorporated into the decision making processes and the reporting system.

(vi) Regular independent reviews and reports on progress

Every system that we put in place needs to work quickly and effectively. A tried and true mechanism is to review progress regularly and employ independent parties to assess and learn lessons. For this reason we advocate that any changes are based on quality research of the current system. This is not to say that this is not the case here, but we need to work hard to design checks and balances into the system so that we can speed up and target our funds, resources and energies.

2.0 Answers to the consultation questions

2.1 Updating the Climate Change (Unit Register) Regulations 2008

Proposal: Repeal Regulation 11D to remove an accounting transaction which relates to voluntary emissions offsetting activity during the Kyoto Protocol commitment periods (2008–12 and 2013–20 inclusive).

Rationale: The use of Kyoto Protocol-era emission units is no longer consistent with our updated guidance on voluntary emissions offsetting. We have recently published new interim guidance on offsetting activities for post-2020 emissions and will further update this guidance over time. According to the most recent Environmental Protection Agency data, no participants are using this method anymore.

Option 1: Status quo - No update
Under this option there will be no change to the regulation, and people will continue to be able to apply to convert NZUs into AAUs and have these cancelled, for as long as the Government continues to hold AAUs.

Option 2: Update the Climate Change (Unit Register) Regulations 2008
Under this option, account holders will not be able to apply to the Registrar to convert any held NZUs into NZ AAUs for cancellation from 1 January 2023.

1. To what extent do you agree with the way we have described the issue? Please explain any additional aspects of the problem you think we should consider.
2. Do you agree that the option outlined in this consultation document is the correct one to consider? If not, why not?
3. Do you have views on the timing for implementing this update?
4. In your opinion, could the proposed change to regulations impact Māori negatively? If so, what are the impacts? Why might they occur?

Response: The proposed solution seems sensible.

2.2 Updating the Climate Change (Other Removal Activities) Regulations 2009

Proposal: Update to the regulations to remove the criteria for registering as a participant in relation to specific potent greenhouse gas removal activities.

Rationale: Updating these regulations may increase the number of people that register to participate in the New Zealand Emissions Trading Scheme for exporting or destroying specific potent greenhouse gases and increase the amount of gases that are exported or destroyed.

Option 1: Status quo — no update
Under this option there will be no change to the Climate Change (Other Removal Activities) Regulations 2009. Only persons that export or destroy HFCs or PFCs that are part of a product stewardship scheme, or remove those which were imported after 2013, can earn NZUs from this removal activity.

Option 2: Update the Climate Change (Other Removal Activities) regulations 2009
Under option 2, anyone can receive NZUs for exporting or destroying HFCs or PFCs, including those gases contained in goods. The import date of the HFCs or PFCs would not impact their eligibility to earn NZUs. There would also be no requirement to participate in a product stewardship scheme. This change would take effect in January 2023 and could not be applied retrospectively to pre-2013 HFCs and PFCs which were exported or destroyed by non-product stewardship scheme members between 2013 and the end of 2022. Such activity would have been against the regulations. Nonproduct stewardship scheme persons exporting HFCs and PFCs imported after the 2013 date would have already been covered by the current regulations to earn NZUs.

5. To what extent do you agree with the way we have described the issue? Please explain any additional aspects of the problem you think we should consider.
6. Do you agree that the option outlined in this consultation document is the correct one to consider? If not, why not?

Response: Prefer Option 1.

The Institute believes that Option 2 sends the wrong signal to HFC/PFC importers. Under this option, the exporting of HFCs/PFCs for offshore processing becomes a more attractive alternative.

Option 2 does not provide exporters (or the general public) any confidence that their HFCs/PFCs are being processed correctly. Given this, it seems contrary and counterproductive to phase out the Product Stewardship Scheme (that incentivises transparent onshore processing). Our recommendation is Option 1, the status quo.

However, if the government decides to implement Option 2, we suggest a new and improved assurance or accreditation system needs to be developed as an integral part of the new system to ensure all processes and decision making remain transparent and regulated.

Given our concerns, we make the following two suggestions:

1. Develop a regulated stewardship scheme that assures the offshore processing of HFCs/PFCs. These processes must not pose any unnecessary risk to human health and safety or to the environment. An example of a similar regulation is 2009 Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships.[17]

2. Establish a regular reporting regime that tracks and traces all domestic emissions that have been sent offshore for processing. Ideally, this information would be reported on in real time and be publicly available.

7. In your opinion, could the proposed change to regulations impact Māori negatively? If so, what are the impacts? Why might they occur?

No comment.

2.3 Updating the schedule of default emissions factors for natural gas

Proposal: Update the schedule of emissions factors listed in regulations to reflect changes to the chemistry of mined natural gas.

Rationale: Emissions factors for sources of mined natural gas change over time. These regulations need to be updated periodically to reflect those changes so 24 natural gas mining participants can minimise their New Zealand Emissions Trading Scheme administration costs.

The options for maintaining the accuracy of the schedule of DEFs for natural gas are limited to updating it or not updating it. DEFs are calculated based on gas composition, so any change depends on robust and reliable data. The schedule can be updated for gas fields from emissions returns data. This increases the accuracy of the NZ ETS and potentially lowers administrative costs for participants.

8. To what extent do you agree with the way we have described the issue? Please explain any additional aspects of the problem you think we should consider.
9. Would you prefer the DEFs to be updated or for the current DEFs to remain unchanged?
10. In your opinion, could the proposed change to regulations impact Māori negatively? If so, what are the impacts? Why might they occur?

No comment.

2.4 Changing the Climate Change (Liquid Fossil Fuels) Regulations 2008

Proposal: Change the methodologies that opt-in participant and obligation fuel participants use to calculate emissions, so the full reduction in emissions caused by the opt-in participant's supply of biofuel is part of their emissions return.

Rationale: If opt-in participants can use the total volume of biofuel they supply to reduce their surrender obligations, instead of only the volume they use, this may reduce the cost of supplying biofuel which in turn could potentially increase its use.

Option 1: Status quo — no change to the Climate Change (Liquid Fossil Fuel) Regulations 2008
Under this option, there would be no change to the current list of obligations fuels or the prescribed methodology. The supply and use of biofuels depends largely on how cost competitive they are against other fuels, as well as any legal requirements. A biofuel supplier benefits from emissions pricing as the price of emission units increases the costs of using fossil fuel, making biofuels more cost competitive. Biofuel demand may increase over time and influence a wide range of supply- and demand-side changes. This impact on relative costs is a core feature of any emissions pricing regime.

Under the status quo, the opt-in participant should not include any biofuel they used in their emissions calculations and obligations. This begins with recording the fuel they have received from the obligation fuel supplier over the year and noting how much of this is biofuel. Similarly, the upstream obligation fuel supplier will record the fossil fuel supplied to market as well as any biofuels. This proposal examines the situation where if a biofuel supplier is also an opt-in participant, there might be changes to regulations that would further motivate the supply of biofuel.

Option 2: Change the Climate Change (Liquid Fossil Fuel) Regulations 2008
Under this option, the prescribed methodologies for how obligation fuel suppliers and opt-in participants calculate emissions would be changed in two ways:

• First, change the methodology for an opt-in participant to require them to collect the volume of biofuel they have supplied in the year to their airport fuel hydrant and used by other airlines. This figure is then deducted from their fuel consumption calculation.

• Secondly, change the methodology for obligation fuel suppliers so that the emissions from fuel that the biofuel has displaced for non-opt-in participants is added to their obligations. This would avoid double counting the emissions benefits of biofuel use.

11. To what extent do you agree with the way we have described the issue? Please explain any additional aspects of the problem you think we should consider.
12. Do you agree that the option outlined in this consultation document is the correct one to consider? If not, why not?
13. Do you have views on the timing for implementing this update?
14. Do you think there are any other options to consider for addressing this issue?
15. In your opinion, could the proposed change to regulations disproportionately impact Māori negatively? If so, what are the impacts? Why might they occur?

Appendix 1: Consultation questions

1. To what extent do you agree with the way we have described the issue? Please explain any additional aspects of the problem you think we should consider.
2. Do you agree that the option outlined in this consultation document is the correct one to consider? If not, why not?
3. Do you have views on the timing for implementing this update?
4. In your opinion, could the proposed change to regulations impact Māori negatively? If so, what are the impacts? Why might they occur?
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6. Do you agree that the option outlined in this consultation document is the correct one to consider? If not, why not?
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8. To what extent do you agree with the way we have described the issue? Please explain any additional aspects of the problem you think we should consider.
9. Would you prefer the DEFs to be updated or for the current DEFs to remain unchanged?
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15. In your opinion, could the proposed change to regulations disproportionately impact Māori negatively? If so, what are the impacts? Why might they occur?

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

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 58,000tCO2e 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%.	

"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
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 meet), 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

▼ 6%
2,523 tonnes
Recycling — cardboard and paper
FY18: 2,681 tonnes

▼ 27%
912 tonnes
Recycling — plastics, cans and glass
FY18: 1,250 tonnes

▼ 3%
6,343 tonnes
Total waste
FY18: 6,554 tonnes

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

▼ 18%
385 tonnes
Composting and organics
FY18: 471 tonnes

▲ 18%
2,523 tonnes
Waste to landfill
FY18: 2,142 tonnes

Endnotes

1. See https://www.epa.govt.nz/assets/Uploads/Documents/Emissions-Trading-Scheme/Reports/Emissions-returns/Participant-Emissions-Report.pdf

2. See https://www.stuff.co.nz/business/opinion-analysis/125151189/budgets-carbon-savings-equal-about-five-days-coal-use-at-huntly

3. Page 2, New Zealand Energy Strategy 2011-2016: Developing our energy potential. See https://www.mcguinnessinstitute.org/wp-content/uploads/2021/04/15d.-New-Zealand-Energy-Strategy-2011-2021-Developing-our-Energy-Potential.pdf

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

5. Page 58, Submission to MBIE and MfE on climate-related financial disclosures. See https://www.mcguinnessinstitute.org/publications/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 https://environment.govt.nz/publications/climate-related-financial-disclosures-discussion-document/

6. See https://www.mcguinnessinstitute.org/publications/submissions/.

7. See https://www.mcguinnessinstitute.org/publications/working-papers

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

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

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

11. 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

12. 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

13. 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 has been evidence of ash melting glaciers in Aotearoa 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-nzglaciers/news-story/cc78bf59db528b33865a7eea740a3541

14. 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

15. See https://www.etsauctions.govt.nz/public/auction_noticeboard/24

16. See https://www.beehive.govt.nz/release/foundations-laid-strong-climate-action

17. See https://www.imo.org/en/About/Conventions/Pages/The-Hong-Kong-International-Convention-for-the-Safe-and-Environmentally-Sound-Recycling-of-Ships.aspx