

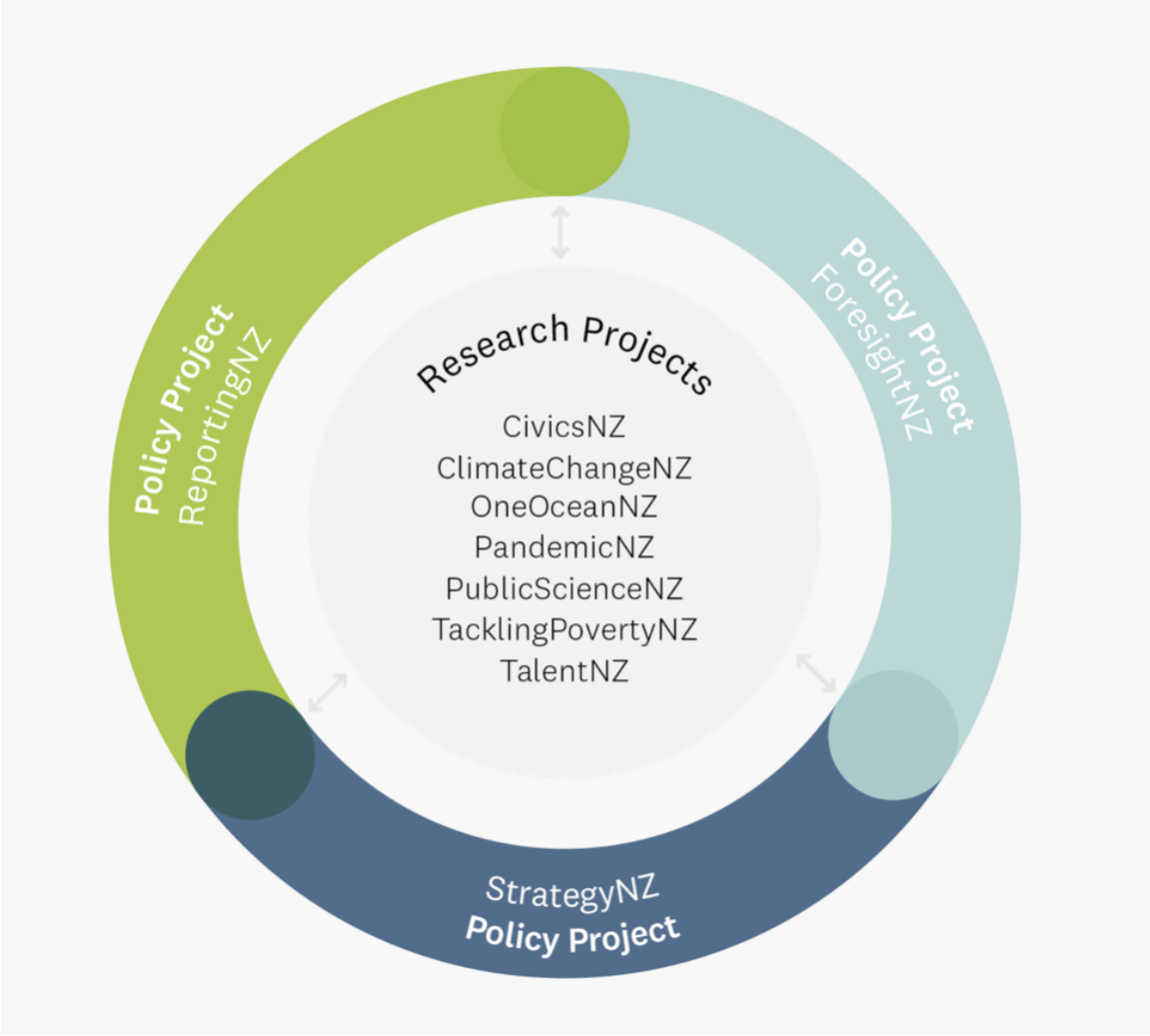
19 February 2021

Climate Change Reporting

How to prepare and report
climate scenarios

Presented by Wendy McGuinness
CEO of McGuinness Institute

A: The difference between Foresight, Strategy and Reporting



ForesightNZ playing cards

Futures thinking resource

(April 2016)



Learn more: <https://www.mcguinnessinstitute.org/events/workshops/foresightnz-workshop-2/>

Link to purchase: <https://mcguinnessinstitute.bigcartel.com/product/2016-foresightnz-playing-cards>

The Climate Reporting Emergency (Oct 2019) Discussion Paper 2019/01

Discussion Paper
2019/01 – The Climate
Reporting Emergency:
A New Zealand
case study

MCGUINNESS INSTITUTE
TE HONONGA WAKA

Link: <https://www.mcguinnessinstitute.org/wp-content/uploads/2019/11/20191114-Discussion-Paper-FINAL.pdf>

Building a Reporting Framework Fit for Purpose (June 2020) Project 2058 Report 17

June 2020

Report 17

2058

ReportingNZ:
Building a Reporting
Framework
Fit for Purpose

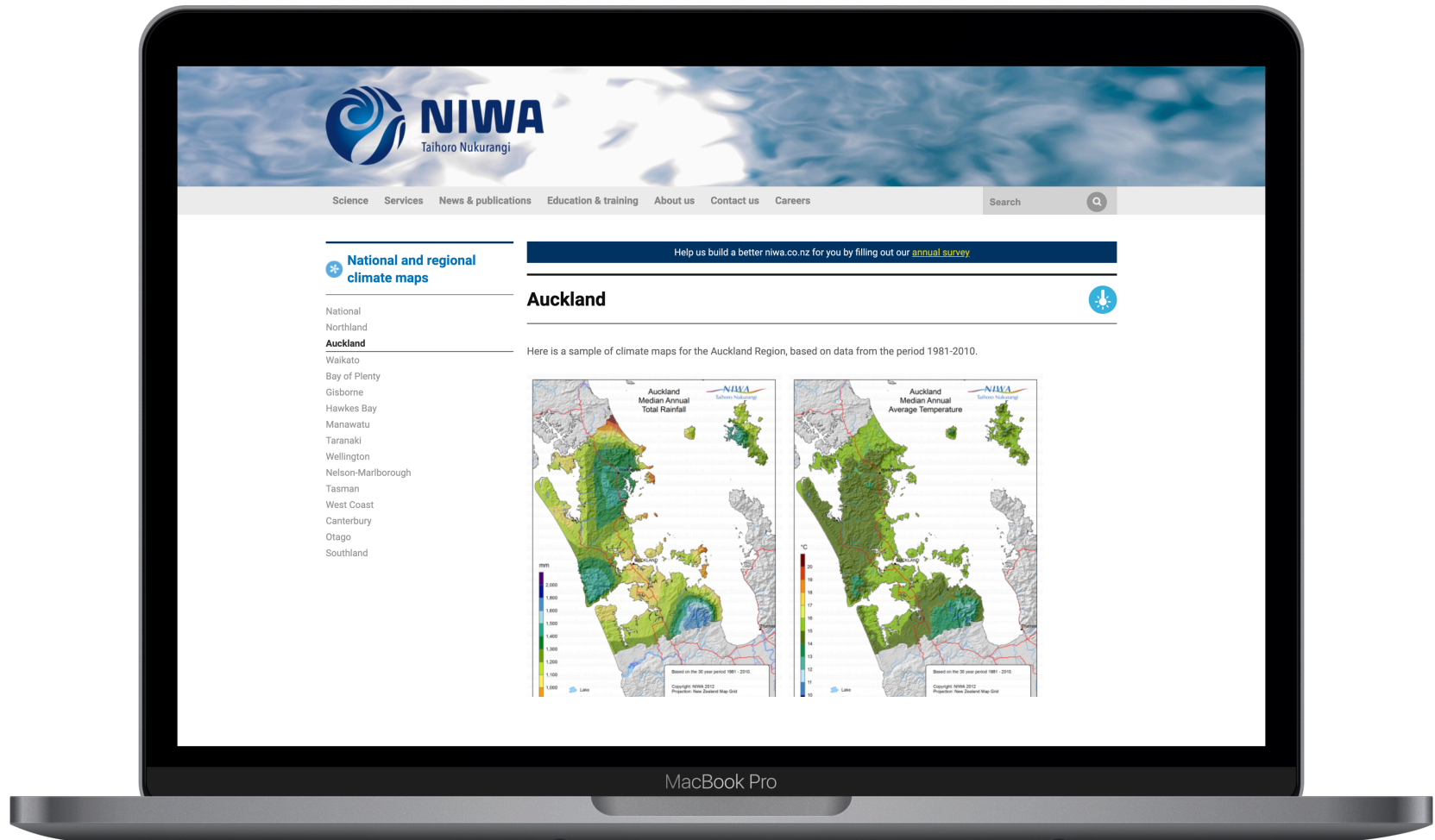
MCGUINNESS INSTITUTE
TE HONONGA WAKA

Link: <https://www.mcguinnessinstitute.org/publications/project-2058/>

B: PREPARE

Climate modelling and the NIWA website

Climate maps

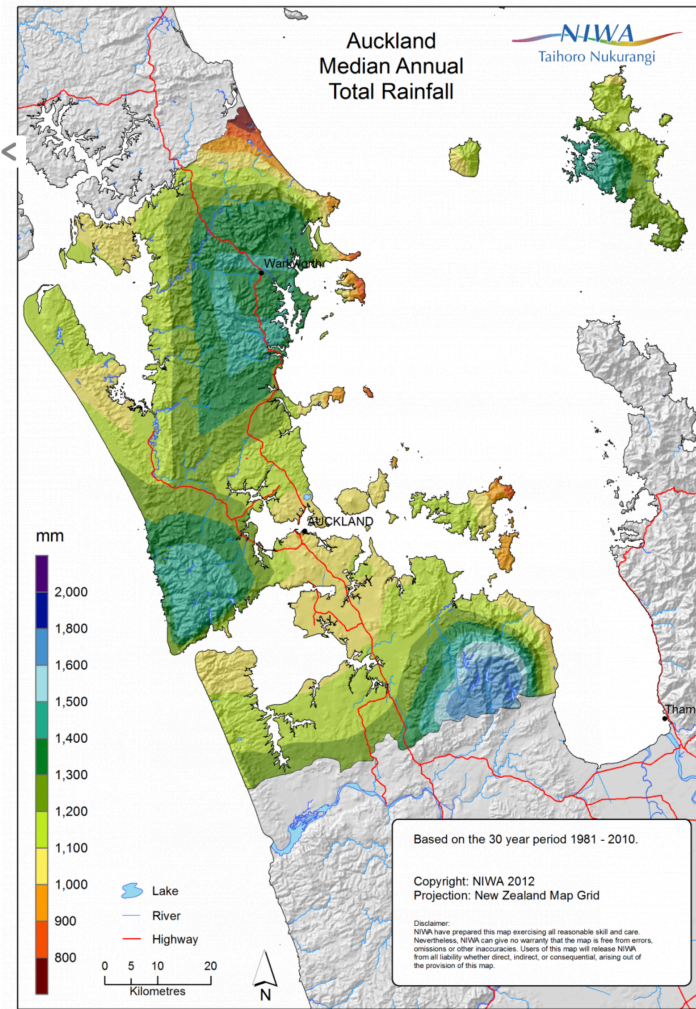


Link: <https://niwa.co.nz/climate/national-and-regional-climate-maps/auckland>

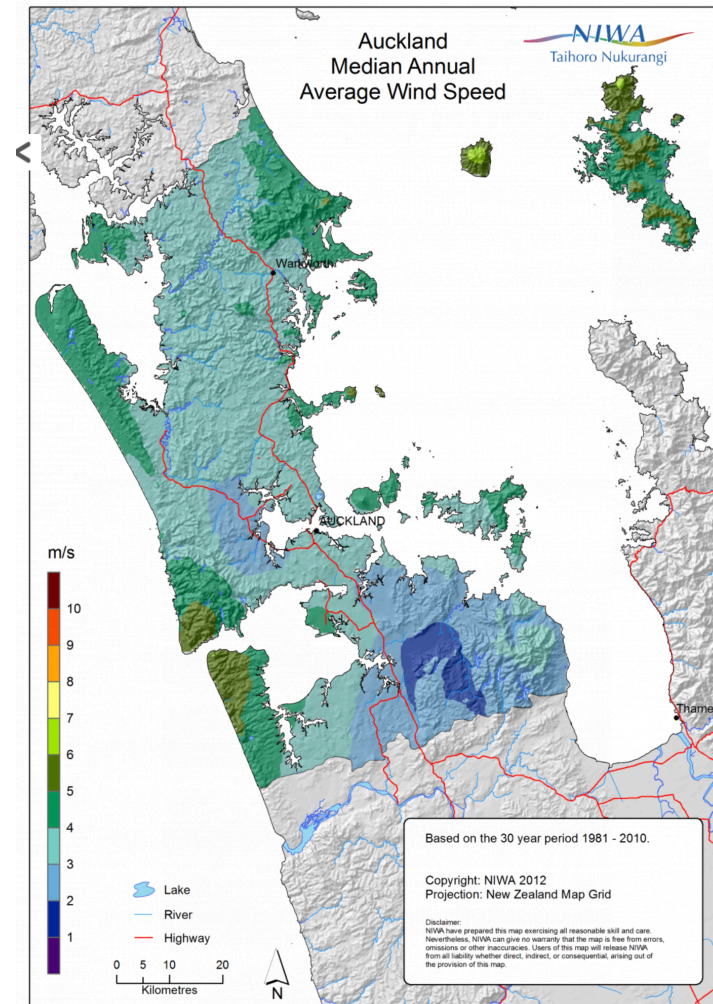
Auckland (past)

1981-2010 (30-year period)

TOTAL RAINFALL

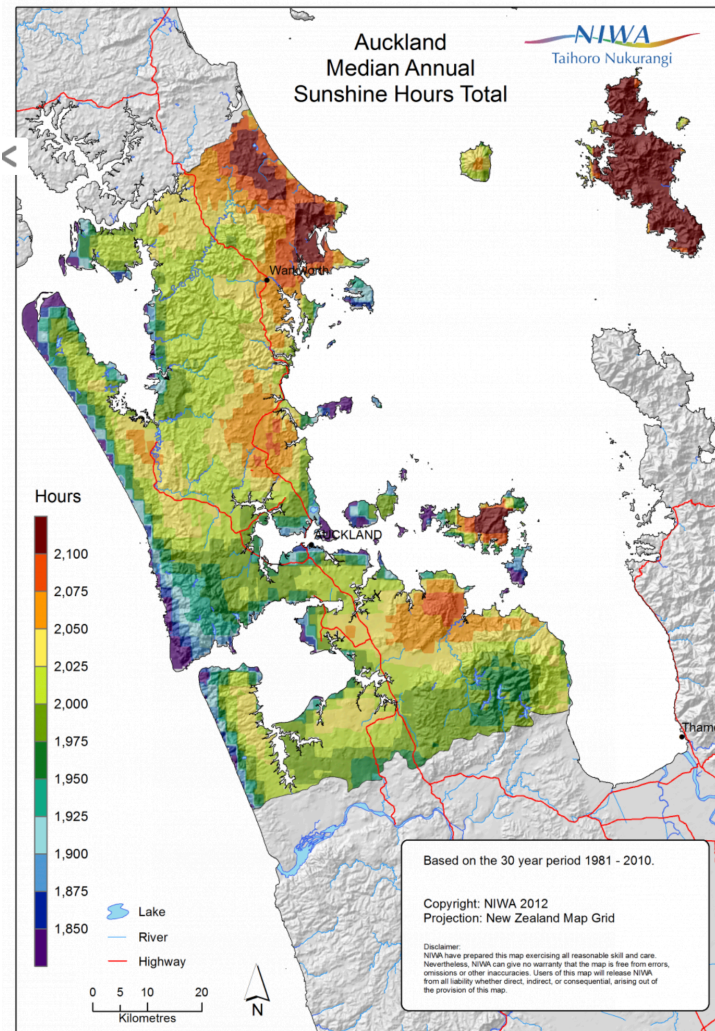


AVERAGE WIND SPEED

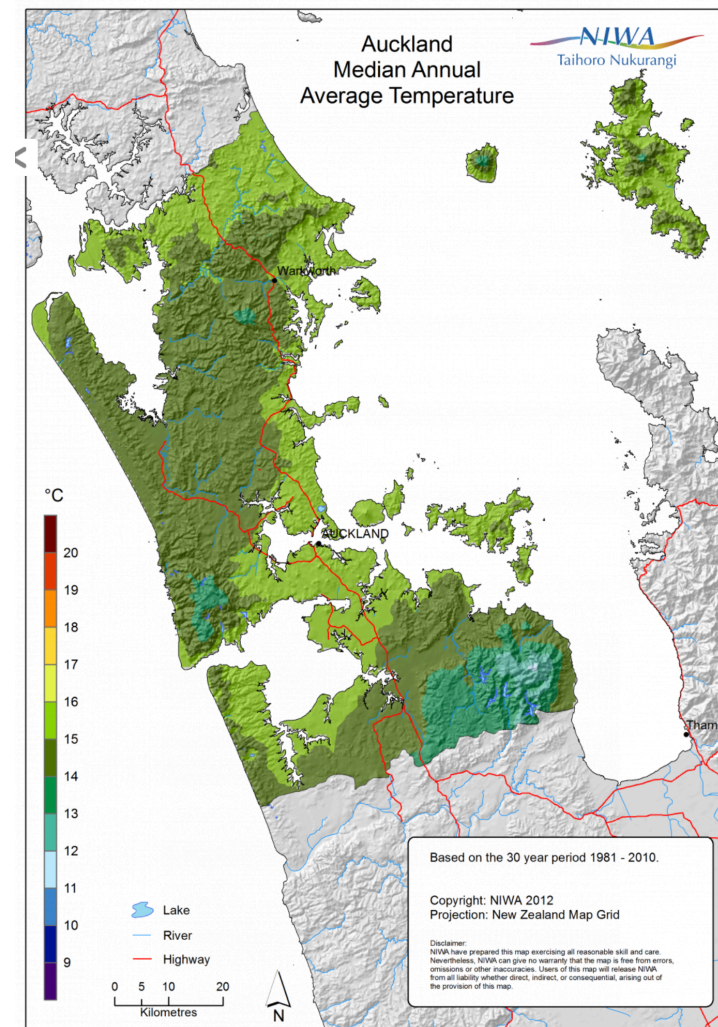


Auckland (past) 1981-2010 (30-year period)

SUNSHINE HOURS



AVERAGE TEMPERATURE



Source: <https://niwa.co.nz/climate/national-and-regional-climate-maps/auckland>

Trap 1: Models v Scenarios

“The creators of RCP8.5 had not intended it to represent the most likely “business as usual” outcome, emphasising that “no likelihood or preference is attached” to any of the specific scenarios. **Its subsequent use as such** represents something of a breakdown in communication between energy systems modellers and the climate modelling community.”

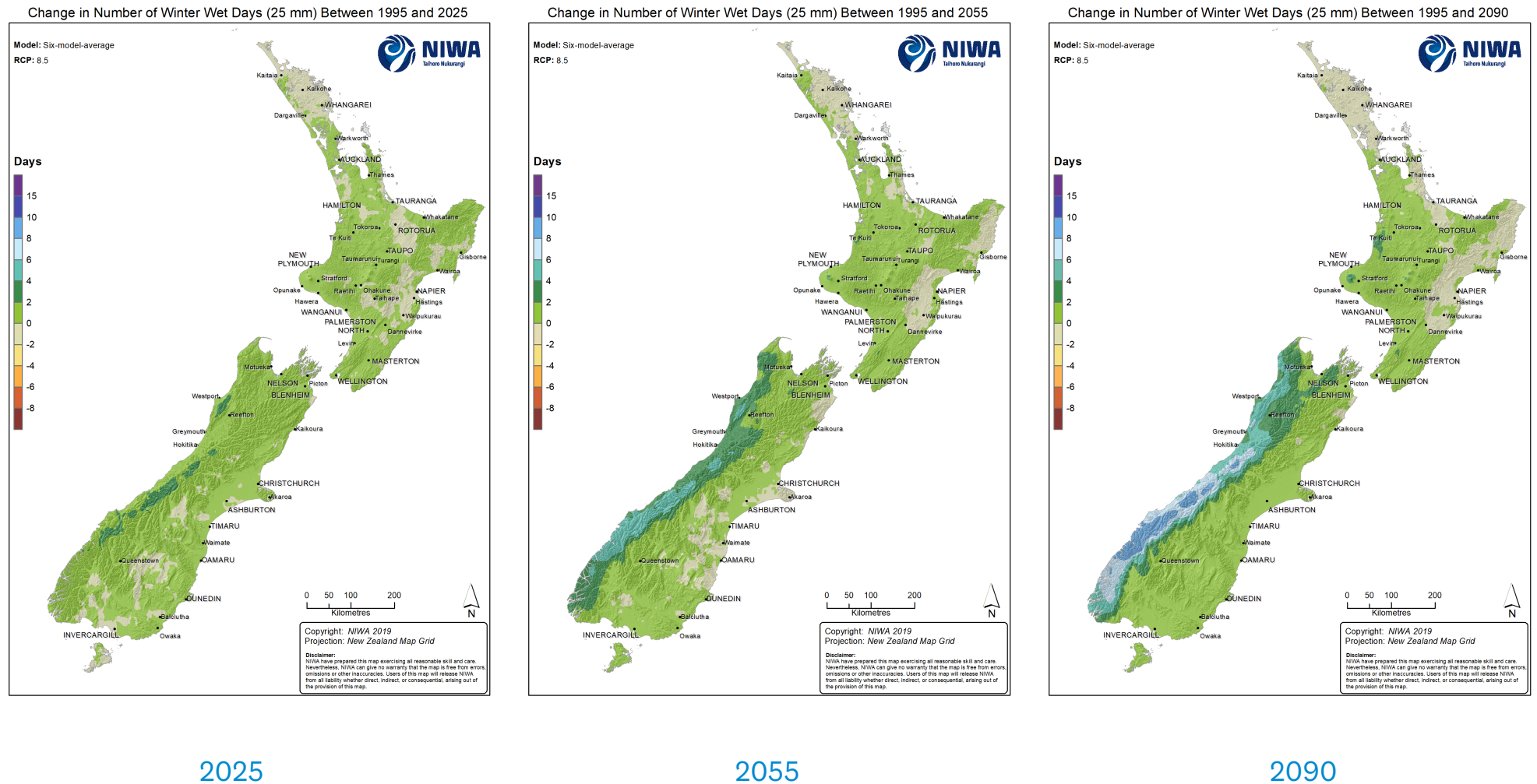
Projecting future climate change involves assessing a number of different uncertainties. Some of these relate to the climate system, such as how sensitive the climate might be to increased concentrations of greenhouse gas in the atmosphere. Others involve the quantity of gases emitted, using energy system models to simulate different scenarios of future emissions.

Many different scenarios have been developed over recent decades of climate research. However, the ones that have principally been used to drive climate model runs – and that have largely driven discussions by policymakers and the public – include:

- Six IPCC 1992 (IS92) scenarios used in the Intergovernmental Panel on Climate Change (IPCC) second assessment report (SAR)
- Six Special Report on Emission Scenarios (SRES) used in the IPCC third (TAR) and fourth (AR4) assessment reports
- Four RCP scenarios used in the IPCC fifth assessment report (AR5)
- Nine forcing scenarios being developed for the upcoming IPCC sixth assessment report (AR6) based on the Shared Socioeconomic Pathways (SSPs).”

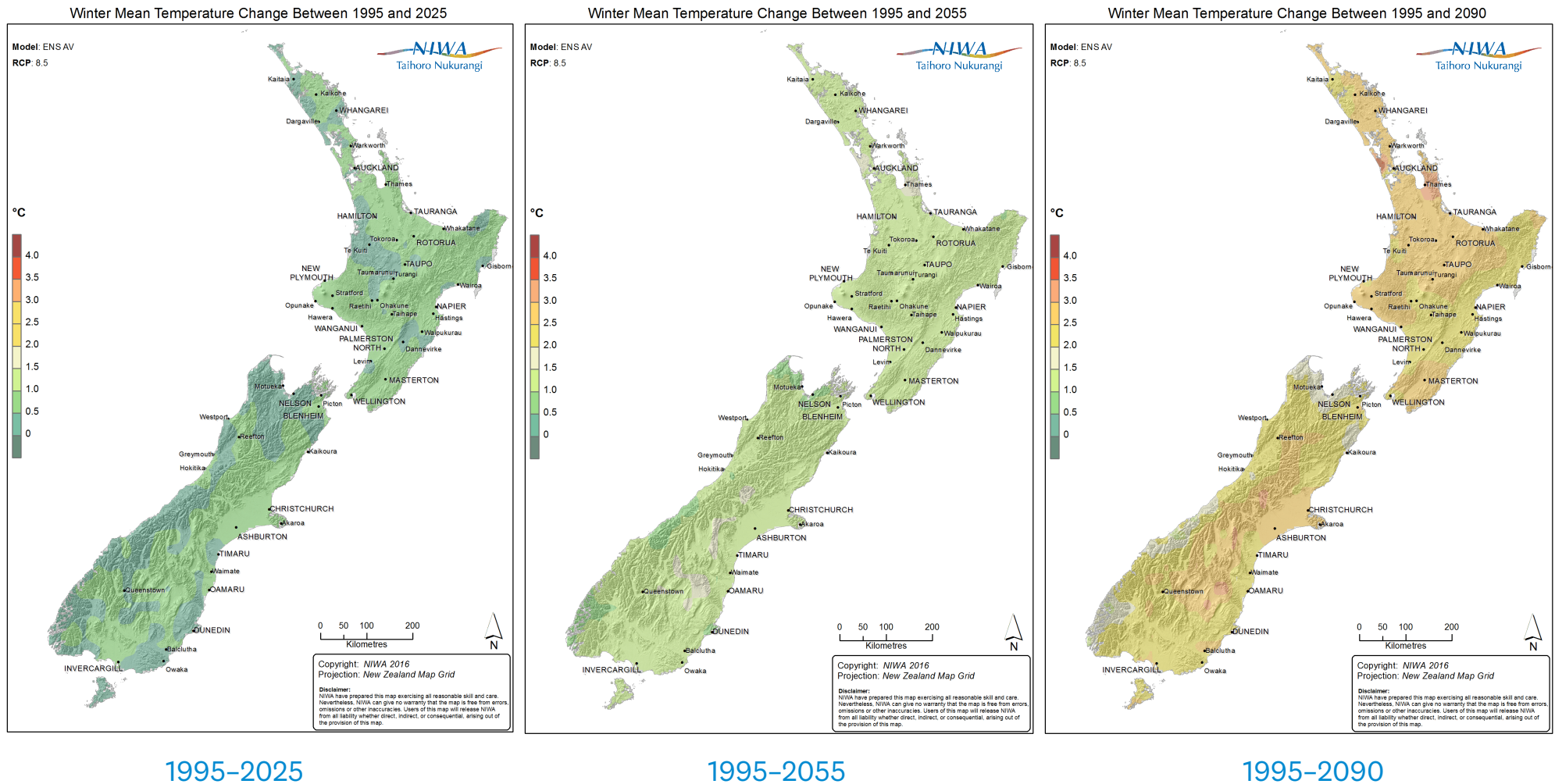
Trap 2: 'Change in' and 'Timeframes'

National (RCP: 8.5) Winter Wet Days over time



Trap 3: 'Year map created'

National RCP 8.5 Winter Temperature over time



Explore the data

- Look for the patterns
- Play with the data
- Understand the narrative
- Describe what is likely to happen

But these are not scenarios – they are models; they are inputs into your thinking.

- The challenge is to use the models – and the stories they tell – and then see how – if those models eventuated – they would impact on your actions/proposals. For example: what stresses and strains (and opportunities) might occur?

Source: <https://ofcnz.niwa.co.nz/#/nationalMaps>

NIWA Our Future Climate New Zealand
Home National maps Local charts Additional information Contact us

National Maps

Here you can explore temperature and rainfall projections for New Zealand. You can select from six Global Climate Models (GCMs), 1 century), and seasonal or annual values. Click on the maps to save them to your computer.

Climate Change Choices

Select the boxes below to be included in your map. Multiple boxes can be ticked for any selection.

Representative Concentration Pathways For Greenhouse Gases In The Atmosphere

- RCP2.6 (low)
- RCP4.5 (low-mid)
- RCP6.0 (mid-high)
- RCP8.5 (high)

Climate Variable

- Temperature
- Hot Days
- Frost Days
- Precipitation
- Wet Days
- Wet Days (25mm)
- Surface Radiation
- Relative Humidity

Year Ranges

Compare 1986-2005 with:

- 2016-2035 (near-future)
- 2046-2065 (mid-century)
- 2081-2100 (end-century)

Period

- Annual
- Spring
- Summer
- Autumn
- Winter

Climate Model

- Six-model-average
- BCC-CSM1.1 (China)
- CESM1-CAM5 (USA)
- GISS-EL-R (USA)
- GFDL-CM3 (USA)
- HadGEM2-ES (UK)
- NorESM1-M (Norway)

[Update Maps](#)

NZ Climate Change Maps

Winter Mean Temperature Change Between 1995 and 2055

Change in Number of Winter Wet Days (25 mm) Between 1995 and 2090

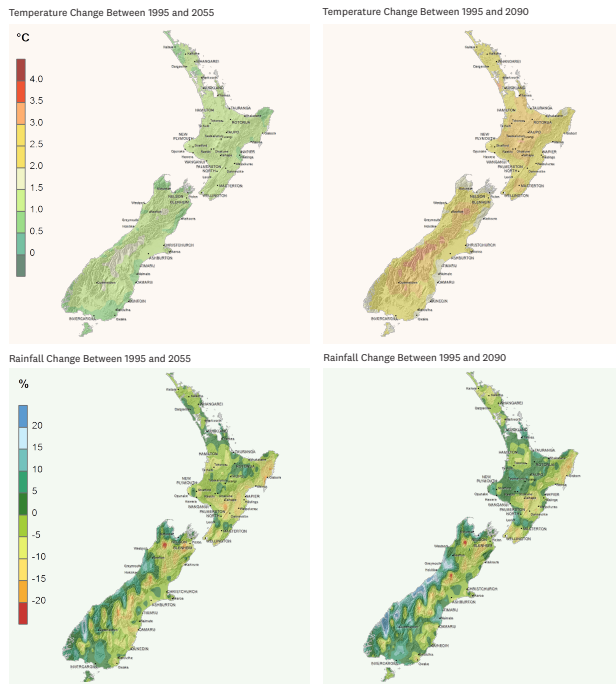
TCFD 'Strategy' Exercise

RCP outcomes on climate

RCP 8.5
2.6 oC–4.8 oC

RCP 6.0
1.4 oC–3.1 oC

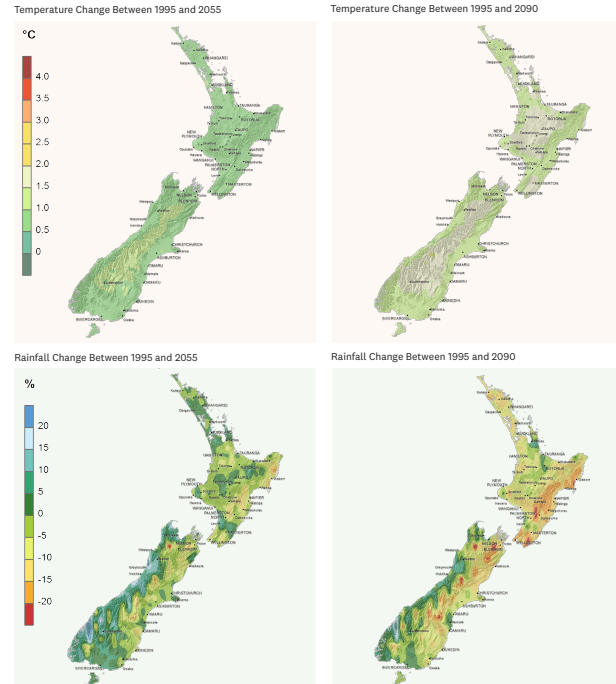
RCP 2.6
0.3 oC–1.7 oC



Note: The New Zealand maps (above) are from NIWA's NZ Climate Change Maps - which use data from the IPCC's Fifth Assessment Report (AR5) based on three representative concentration pathways (RCPs): RCP 2.6, RCP 6.0 and RCP 8.5. As explained in the additional information section of NIWA's Our Future Climate New Zealand website, RCPs provide an indication of the rate and amount of global greenhouse gas emissions over the coming decades. These projections use the climate model BCC-CSM1 and indicate the potential impacts of climate change in New Zealand. Our infographic has been inspired by CoastAdapt's Climate Change Infographic.

M MCGUINNESS INSTITUTE
TE HONGINGA WAKA

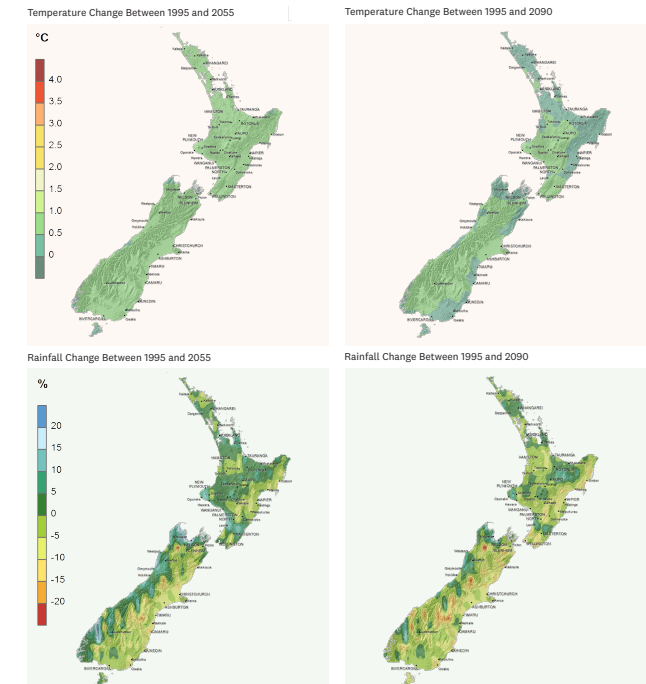
3



Note: The New Zealand maps (above) are from NIWA's NZ Climate Change Maps - which use data from the IPCC's Fifth Assessment Report (AR5) based on three representative concentration pathways (RCPs): RCP 2.6, RCP 6.0 and RCP 8.5. As explained in the additional information section of NIWA's Our Future Climate New Zealand website, RCPs provide an indication of the rate and amount of global greenhouse gas emissions over the coming decades. These projections use the climate model BCC-CSM1 and indicate the potential impacts of climate change in New Zealand. Our infographic has been inspired by CoastAdapt's Climate Change Infographic.

M MCGUINNESS INSTITUTE
TE HONGINGA WAKA

4



Note: The New Zealand maps (above) are from NIWA's NZ Climate Change Maps - which use data from the IPCC's Fifth Assessment Report (AR5) based on three representative concentration pathways (RCPs): RCP 2.6, RCP 6.0 and RCP 8.5. As explained in the additional information section of NIWA's Our Future Climate New Zealand website, RCPs provide an indication of the rate and amount of global greenhouse gas emissions over the coming decades. These projections use the climate model BCC-CSM1 and indicate the potential impacts of climate change in New Zealand. Our infographic has been inspired by CoastAdapt's Climate Change Infographic.

M MCGUINNESS INSTITUTE
TE HONGINGA WAKA

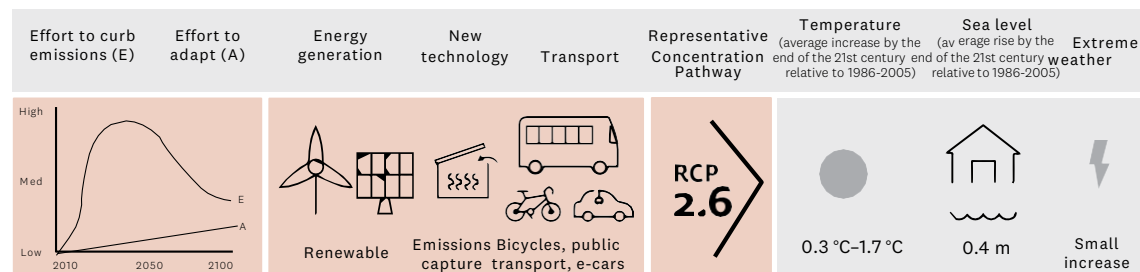
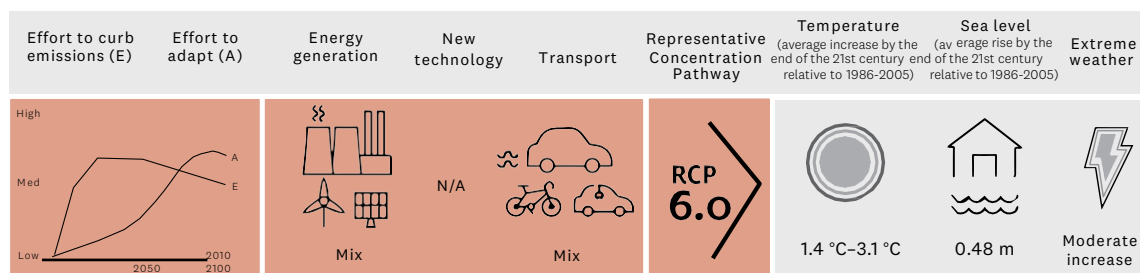
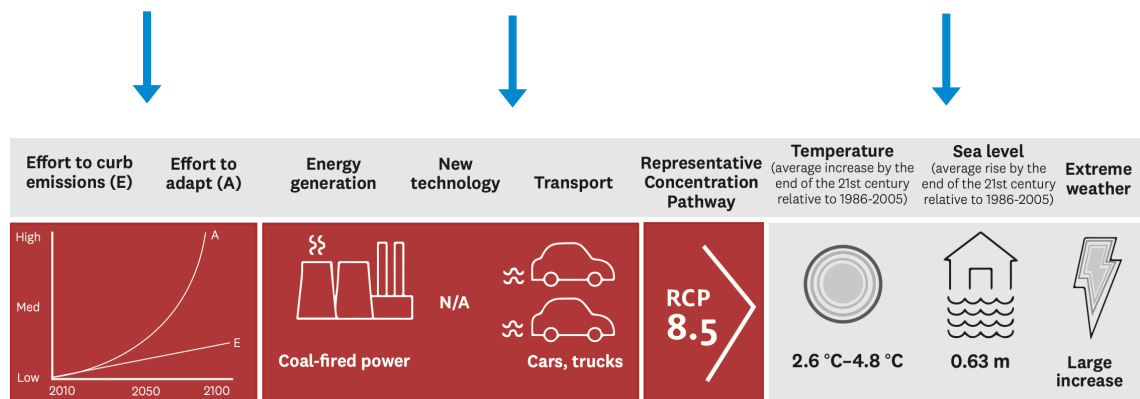
5

| What the models tell us?

Strategy:
If we focus on:

Input:
We will do this

Output:
... and we will get this



C: REPORT

Who is required to report climate change information

(a) Power to request information under the CCRA

There are currently over 600 organisations in New Zealand that could be asked to respond to requests for information. As listed in Section 5ZW of the CCRA they include:

- lifeline utilities, which are public and private-sector entities providing fuel, electricity, water, transport, and telecommunications infrastructure
- local authorities
- central government, crown entities, and state-owned enterprises
- the Police and New Zealand Defence Force.

The Ministry for the Environment can request information on behalf of the Minister for Climate Change. Reporting organisations should expect to receive an initial information request from us in August 2020.”

Both (a) the power to request information under the CCRA and (b) the mandatory climate-related financial disclosures are aligned with the Taskforce on Climate-Related Financial Disclosures (TCFD).

(b) Mandatory climate-related financial disclosures

The new climate reporting requirements will apply to:

- All registered banks, credit unions, and building societies with total assets of more than \$1 billion
- All managers of registered investment schemes with greater than \$1 billion in total assets under management
- All licensed insurers with greater than \$1 billion in total assets under management or annual premium income greater than \$250 million
- All equity and debt issuers listed on the NZX
- Crown financial institutions with greater than \$1 billion in total assets under management, such as ACC and the NZ Super Fund

Overseas incorporated organisations would also be required to disclose in their New Zealand annual reporting.

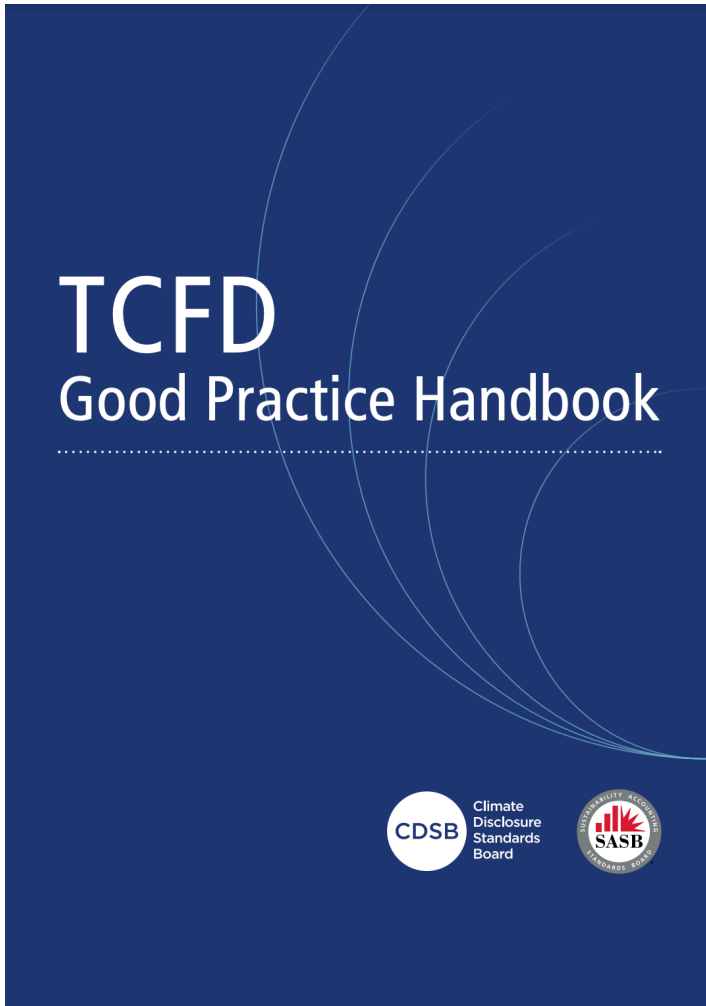
The \$1 billion threshold will make sure about 90 per cent of assets under management in New Zealand are included within the disclosure system.

The External Reporting Board (XRB) will develop one or more reporting standards, which entities may either comply with, or if they do not comply, explain why not.

The Financial Markets Authority will be responsible for independent monitoring, reporting and enforcement.

If approved by Parliament, financial entities could be required to make disclosures in 2023 at the earliest.

C: TCFD (June 2017)
Good Practice Handbook



Governance	Strategy	Risk Management	Metrics & Targets
Disclose the organisation's governance around climate-related risks and opportunities.	Disclose the actual and potential impacts of climate-related risks and opportunities on the organisation's businesses, strategy, and financial planning where such information is material.	Disclose how the organisation identifies, assesses, and manages climate-related risks.	Disclose the metrics and targets used to assess and manage relevant climate-related risks and opportunities where such information is material.
a) Describe the board's oversight of climate-related risks and opportunities.	a) Describe the climate-related risks and opportunities the organisation has identified over the short, medium, and long term.	a) Describe the organisation's processes for identifying and assessing climate-related risks.	a) Disclose the metrics used by the organisation to assess climate-related risks and opportunities in line with its strategy and risk management process.
b) Describe management's role in assessing and managing climate-related risks and opportunities.	b) Describe the impact of climate-related risks and opportunities on the organisation's businesses, strategy, and financial planning.	b) Describe the organisation's processes for managing climate-related risks.	b) Disclose Scope 1, Scope 2, and if appropriate Scope 3 greenhouse gas (GHG) emissions, and the related risks.
	c) Describe the resilience of the organisation's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario.	c) Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organisation's overall risk management.	c) Describe the targets used by the organisation to manage climate-related risks and opportunities and performance against targets.

Link: https://www.cdsb.net/sites/default/files/tcfid_good_practice_handbook_web_a4.pdf

TCFD 'Strategy' Exercise

Climate scenarios (Oct 2019)



TCFD 'Strategy' Exercise

MCGUINNESS INSTITUTE
T HONGONONCA WAKA

Prepared for the TCFD October workshops.

- Resources required:**
 - A brief overview of each of the three climate scenarios that we will be using for this exercise, based on three IPCC representative concentration pathway (RCP) trajectories: RCP 2.6, RCP 6.0 and RCP 8.5.*
 - Copies of New Zealand business strategies and annual reports from relevant industries published in the public arena.
- Method:**

Task 1: Exploring worlds
On an A2 sheet, redraw Figure 2 below with a larger centre circle. In each band of the circle, starting with the middle and working your way out, list the opportunities (left) and risks (right) that arise under each of the scenarios. Use the scenario overviews provided as Resource 1 to familiarise yourself with the characteristics of each scenario. [15 minutes]

Task 2: Disclosures
Choose an industry from the ones provided in Resource 2. Familiarise yourself with the industry using the examples provided and then prepare a material disclosure that addresses points (a), (b) and (c). [15 minutes]

Task 3:
Discuss and share observations with the rest of the group and then report back to the workshop. [30 minutes]

Figure 1: Climate Trajectories in the Cone of Plausibility

Scenario	RCP 8.5 (2.6°C – 4.8°C)
Scenario	RCP 6.0 (1.4°C – 3.1°C)
Scenario	RCP 2.6 (below 2.0°C)

Figure 2: Cone of Plausibility as at 2100

The white arrow indicates the general direction of transition from the status quo to the Paris Agreement.

Scientists use the RCPs to model climate change and build scenarios about the impacts. You can use these scenarios to plan for the future.

If we follow the RCP 8.5 pathway, **more adaptation** will be needed.

If we follow the RCP 2.6 pathway, **less adaptation** is needed.

RCP 8.5 leads to much greater temperature increases, and this means greater impacts and greater costs. To adapt to these changes will also cost more. A balance must be struck between the cost of impacts and the cost of adaptation.

(CoastAdapt, n.d.)

* The name "representative concentration pathways" was chosen to emphasize the rationale behind their use. RCPs are referred to as pathways in order to emphasize that their primary purpose is to provide time-dependent projections of atmospheric greenhouse gas (GHG) concentrations (not emissions). (IPCC, 2007)

The goal of working with scenarios is not to predict the future but to better understand uncertainties and alternative futures, in order to consider how robust different decisions or options may be under a wide range of possible futures. (IPCC, 2019)

Link: <https://www.mcguinnessinstitute.org/wp-content/uploads/2019/11/20191128-TCFD-Worksheets.pdf>

Link: <https://www.cdsb.net/>

TCFD 'Strategy' Exercise

Disclosures

Risks and opportunities
Short, medium & long term

Impacts
Businesses, strategy
& financial planning

Resilience
Climate-related scenarios

Link: <https://www.mcguinnessinstitute.org/wp-content/uploads/2019/11/20191128-TCFD-Worksheets.pdf>

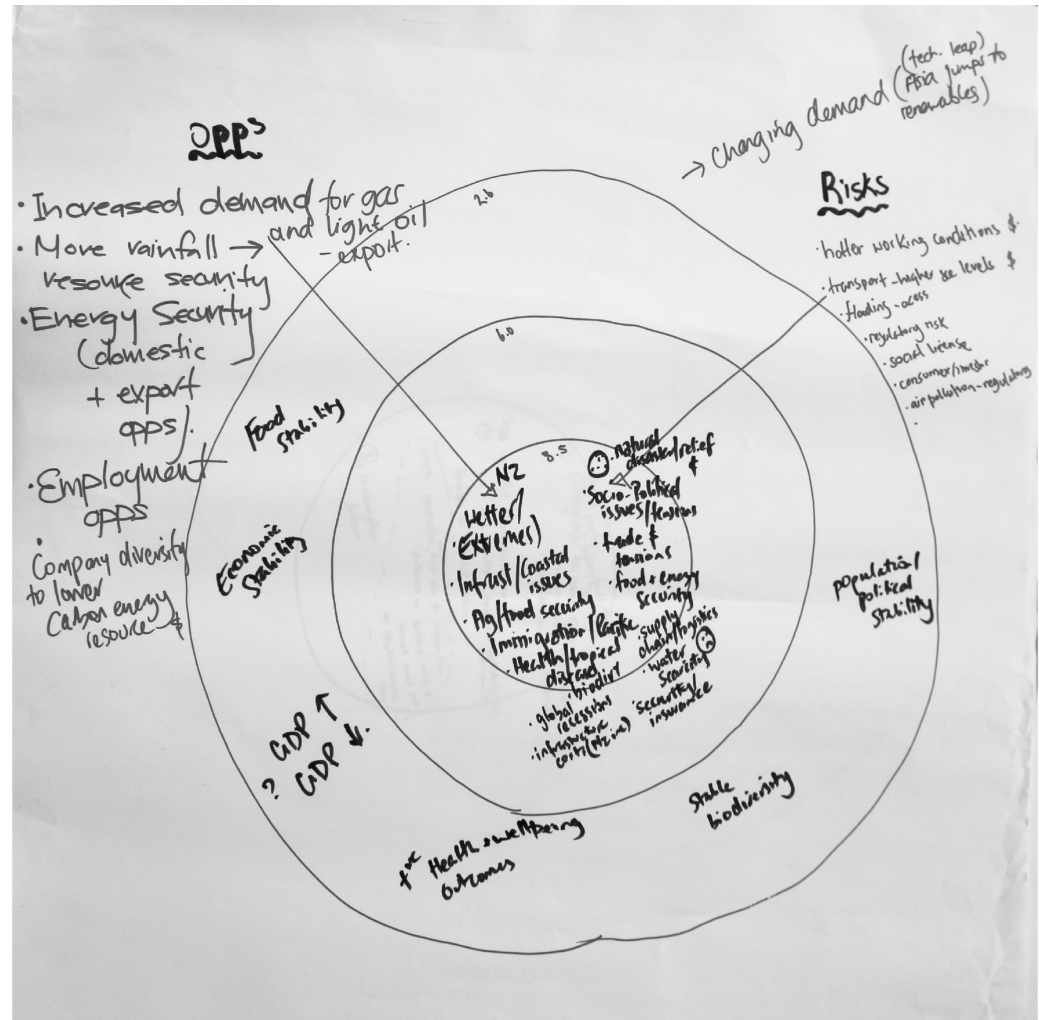
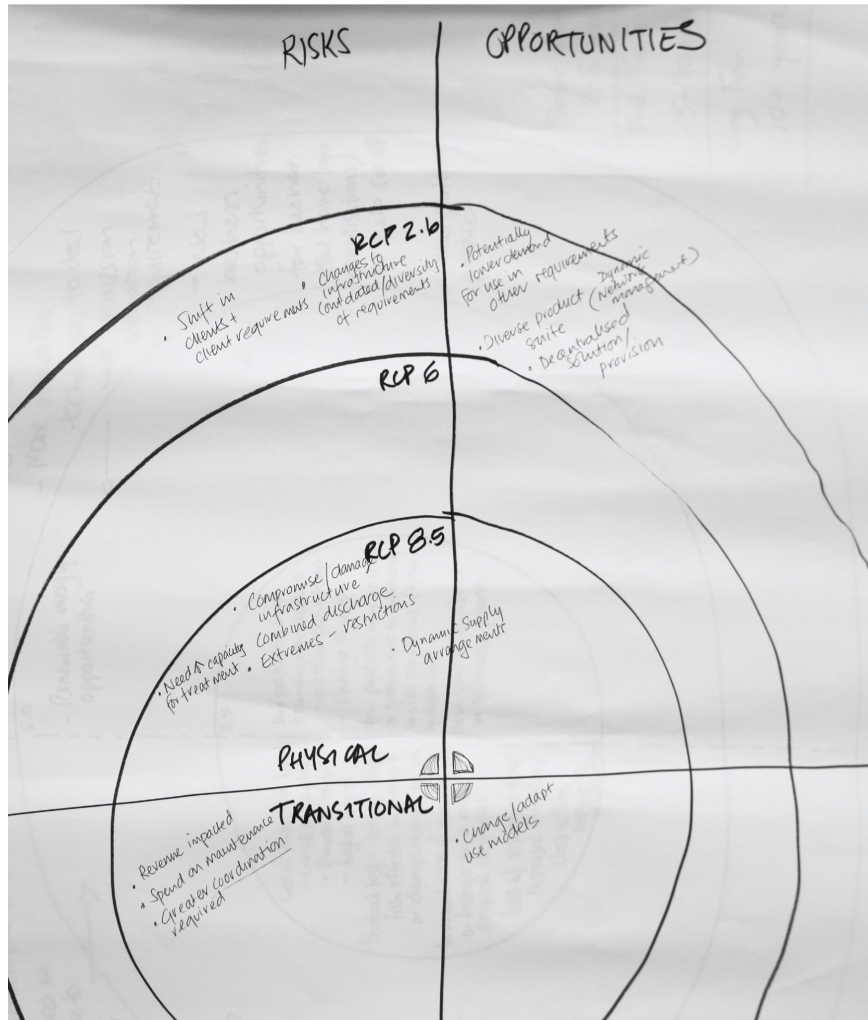
Task 2: Disclosures

Complete a), b) and c) for your chosen organisation: _____

TCFD Core Element: Strategy	Disclose the actual and potential impacts of climate-related risks and opportunities on the organisation's businesses, strategy and financial planning, where such information is 'material'.
a) Describe the climate-related risks and opportunities the organisation has identified over the <ul style="list-style-type: none"> • short, • medium, and • long term. 	
b) Describe the impact of climate-related risks and opportunities on the organisation's <ul style="list-style-type: none"> • businesses, • strategy, and • financial planning. 	
c) Describe the resilience of the organisation's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario.	

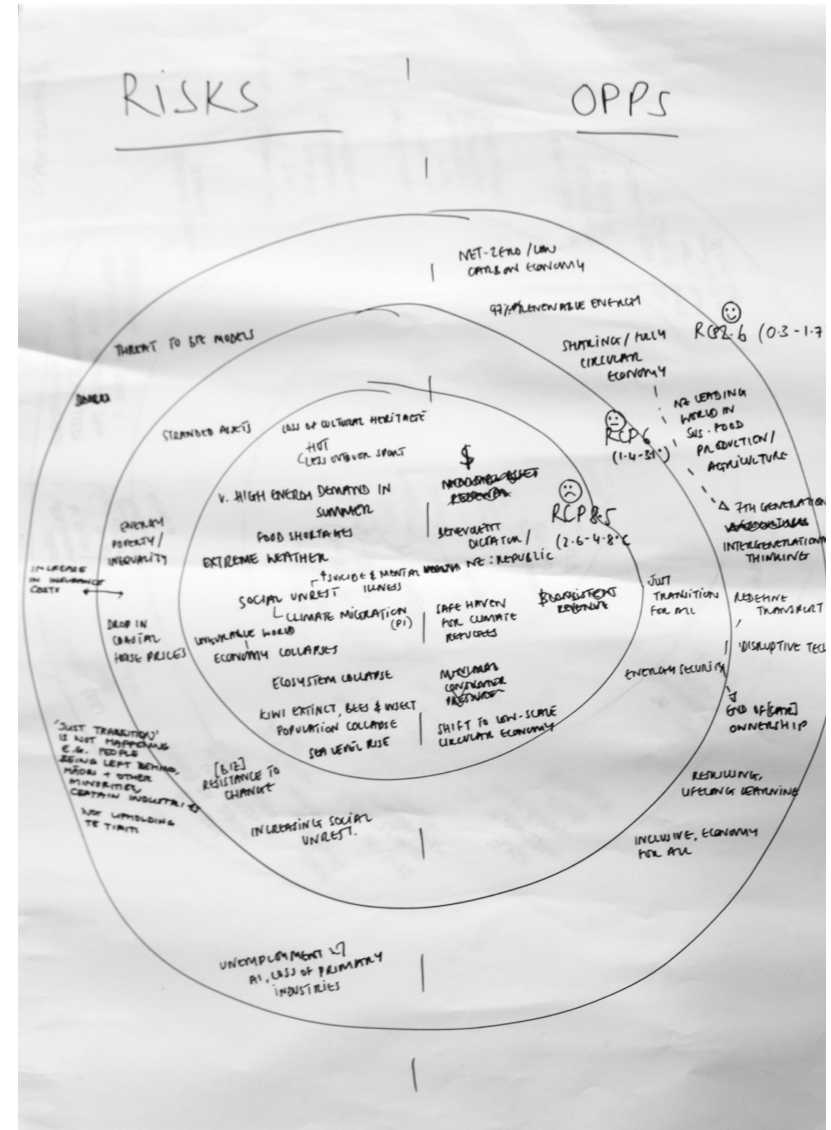
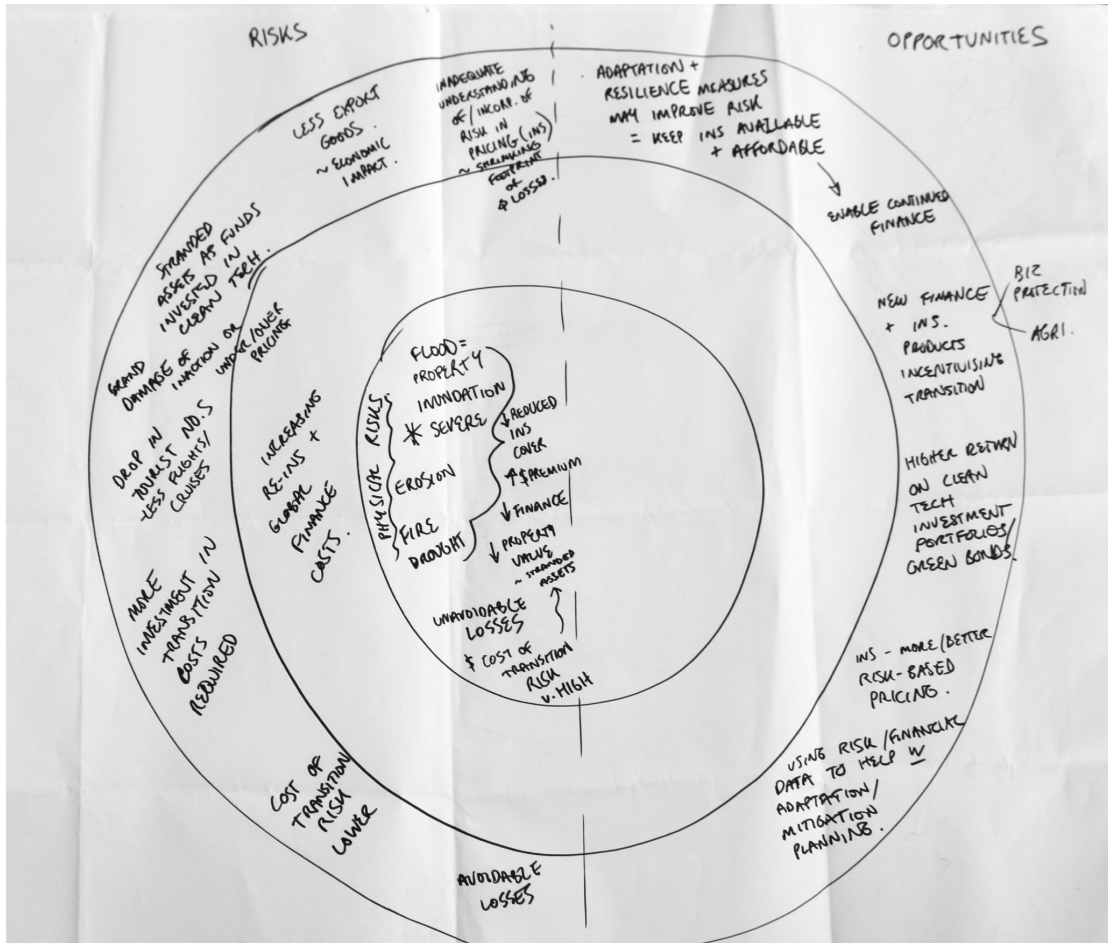
TCFD 'Strategy' Exercise

Exercise in use



TCFD 'Strategy' Exercise

Exercise in use



TCFD: Industry examples

Resource 2: Examples of Business Strategies and Annual Reports from Relevant Industries

Agriculture, Forestry and Fishing

- Beef + Lamb New Zealand. (May 2018). *Environment Strategy and Implementation Plan 2018-22*. <https://beeflambnz.com/sites/default/files/levies/files/Env-strategy-imp-plan.pdf>.

Construction

- Fletcher Building. (2019). *Annual Report 2019*. <https://fletcherbuilding.com/assets/4-investor-centre/annual-reports/2019-annual-report.pdf>.

Electricity, Gas, Water and Waste Services

- Watercare. (January 2019). *Watercare's Climate Change Strategy: Mitigation and adaptation*. https://wslpwstoreprd.blob.core.windows.net/kentico-media-libraries-prod/watercarepublicweb/media/watercare-media-library/sustainability/climate_change_strategy.pdf.

Financial and Insurance Services

- NZ Super Fund. (March 2019). *"How We Invest" White Paper: Climate Change Investment Strategy*. <https://nzsuperfund.nz/sites/default/files/documents-sys/Guardians of NZ Super - Climate Change White Paper March 2019.pdf>.
- Reserve Bank of New Zealand. (December 2018). Reserve Bank Climate Change Strategy. <https://www.rbnz.govt.nz/financial-stability/climate-change/strategy>.
- Westpac NZ (prepared by EY). (April 2018). *Climate Change Impact Report*. <https://www.westpac.co.nz/assets/Sustainability/Westpac-NZ-Climate-Change-Impact-Report.pdf>.

Mining

- New Zealand Oil & Gas. (2019). *Annual Report 2019*. <https://www.nzog.com/dmsdocument/430-nzog-2019-annual-report>.

Public Administration and Safety

- Ministry of Defence and NZDF. (November 2018). *The Climate Crisis: Defence readiness and responsibilities*. <https://www.defence.govt.nz/assets/Uploads/66cfc96a20/Climate-Change-and-Security-2018.pdf>.
- Committee on Climate Change (UK). (May 2019). *Net zero domestic emissions infographic*. <https://www.theccc.org.uk/wp-content/uploads/2019/05/CCC-Net-Zero-Infographic.pdf>.
- Venture Taranaki | Te Puna Umanga. (July 2019). *Taranaki 2050 Roadmap*. [http://about.taranaki.info/Taranaki2050/Taranaki-2050-Roadmap-\(1\).pdf](http://about.taranaki.info/Taranaki2050/Taranaki-2050-Roadmap-(1).pdf).
- Greater Wellington Regional Council. (October 2015). *Climate Change Strategy: A strategy to guide the Wellington Regional Council's climate change response*. http://www.gw.govt.nz/assets/council-reports/Report_PDFs/2015.470a2.pdf.
- Auckland Council. (July 2014). *Low Carbon Strategic Action Plan: The aim of the plan* [download all]. <https://www.aucklandcouncil.govt.nz/plans-projects-policies-reports-bylaws/our-plans-strategies/topic-based-plans-strategies/environmental-plans-strategies/docslowcarboncopy/low-carbon-strategic-action-plan-full.pdf>.

Transport, Postal and Warehousing

- Air New Zealand. (2019). *Annual Shareholder Review 2019*. <https://indd.adobe.com/view/fa56c6c2-d4cd-4101-b2e8-600cdd75535d>.

Link: <https://www.mcguinnessinstitute.org/wp-content/uploads/2019/11/20191128-TCFD-Worksheets.pdf>

Advice & Evidence Reports

He Pou a Rangi - Climate Change Commission

31 January 2021 Draft Advice for Consultation

Enabling recommendation 2

Coordinate efforts to address climate change across Government

We recommend that the Government:

- a. In each emissions reduction plan, include policies and strategies for meeting both the next and future emissions budgets (as recommended but not required under the Climate Change Response Act).**
- b. In each emissions reduction plan, nominate specific Ministers and agencies with accountability for implementing policies and strategies in line with emissions budgets.**
- c. Assess and meet funding requirements for implementing each emissions reduction plan in line with emissions budgets.**
- d. Establish Vote Climate Change as a specific multi-agency appropriation which consolidates existing and future government funding for core climate change mitigation and adaptation activities.**



Link: <https://www.climatecommission.govt.nz/get-involved/our-advice-and-evidence/>

Link: <https://www.climatecommission.govt.nz/get-involved/our-advice-and-evidence/>

Thank you
Ngā mihi nui

Learn more
www.mcguinnessinstitute.org

 MCGUINNESS INSTITUTE
TE HONONGA WAKA