Working Paper 2021/10

Analysis of existing scenarios in Aotearoa New Zealand

This Working Paper includes scenarios published on or before 31 December 2021

MCGUINNESS INSTITUTE
TE HONONGA WAKA

Title

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This paper forms part of the Institute's ForesightNZ, ClimateChangeNZ and ScenariosNZ projects.

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1.0 Introduction

1.1 Purpose

In times of uncertainty it can be difficult to determine what might happen in the future. Scenario reporting can be used by organisations as a tool for visualising or simulating possible future outcomes.

The purpose of this working paper is to bring together a list of publications in the public arena that discuss scenarios focused on Aotearoa New Zealand, either as a whole (a national focus) or by sector. The list is then analysed in order to make observations about the current state of play.

The working paper aims to contribute to the Institute's understanding of the current state of scenario development in New Zealand. This information will help inform *Project ForesightNZ* and *Project ClimateChangeNZ*.

1.2 Background

This working paper forms part of a publication series focused on scenario development within Aotearoa New Zealand – the papers are intended to be read in conjunction with each other. The other two papers in this series so far are:

1. *Working Paper 2021/07: Scoping the use of the term 'climate scenarios' and other climate-related terms in Aotearoa New Zealand and international literature* (in progress)
2. *Discussion Paper 2022/01 – Establishing reference climate scenarios for Aotearoa New Zealand.*

Given the passing of the Financial Sector (Climate-related Disclosures and Other Matters) Amendment Bill (October 2021), it is hoped that this series will also be useful in informing the development of a climate-related disclosures framework, as the External Reporting Board (XRB) is now required to issue climate standards. More specifically, we hope that this research will be influential in the development of reference climate scenarios to satisfy the scenario component of the disclosure framework.

2.0 Methodology

This section explains the methodology used to undertake the research process associated with this paper.

2.1 Method

2.1.1 Dataset

The Institute identified and analysed 214 scenario documents from a range of organisations. The aggregate dataset was broken down into the following sub-datasets:

1. national scenarios (183 scenario documents)
2. national scenarios that mention climate change (81 of the 183 scenario documents)
3. local government scenarios (31 scenario documents)
4. local government scenarios that mention climate change (21 of the 31 scenario documents).

Cabinet papers, confidential publications, submissions/applications, surveys, annual reports and journal entries were excluded from this research.

Step 1: Search

Researchers searched Google for key terms related to scenario development within Aotearoa New Zealand. Searches included terms such as: 'economic scenarios nz', 'climate change scenarios nz', 'government scenario development', etc. (See Appendix 1 for full list of key terms searched.)

Step 2: Search

Researchers then searched the websites of public sector organisations for the term 'scenario/s'. They manually checked every search result to determine which documents were using the term 'scenario/s' as part of a scenario analysis (as opposed to calling something 'worst case scenario' for example). (See Appendix 2 for full list of entities searched.)

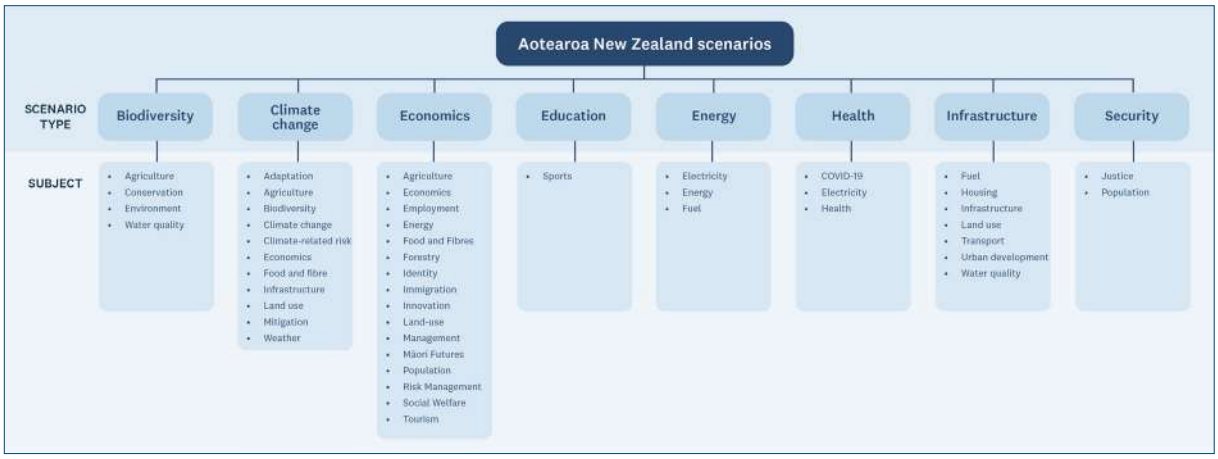
Step 3: Record

Researchers then added the selected documents to the dataset (mentioned above) to which they related. The entity's name, scenario title and publication date were recorded in this step.

Step 4: Analyse

Researchers then performed analysis on each scenario document. The characteristics used for analysis were: national scenarios and local government scenarios, scenario type and subject (see Figure 1 below), scope, time horizon, climate-related (if yes, explicitly or implicitly), data guidance provided. See Appendix 3 for definitions of characteristics used.

Figure 1: Scenario types and subjects included



Step 5: Upload

Once all of the above were completed, the tables were uploaded onto the McGuinness Institute's website.

2.2 Limitations

Due to this research being performed by searching Google or an organisation's website, there may be some documents that were either missed or not searchable. This research is not intended to be a complete collection of every past and present scenario paper, but instead to illustrate the current state of scenario papers in Aotearoa New Zealand. Please note that the research team was required to make decisions in regard to both types/subjects and quality of climate change mentions. While these decisions are based on the Institute's interpretation of reading the scenario documents, researchers strived to remain impartial and any decision made was discussed thoroughly. Please also note that due to rounding, some percentages may not add up to exactly 100%.

3.0 Results

This section contains results from analysis of the data collected. Results are presented to align with each dataset.

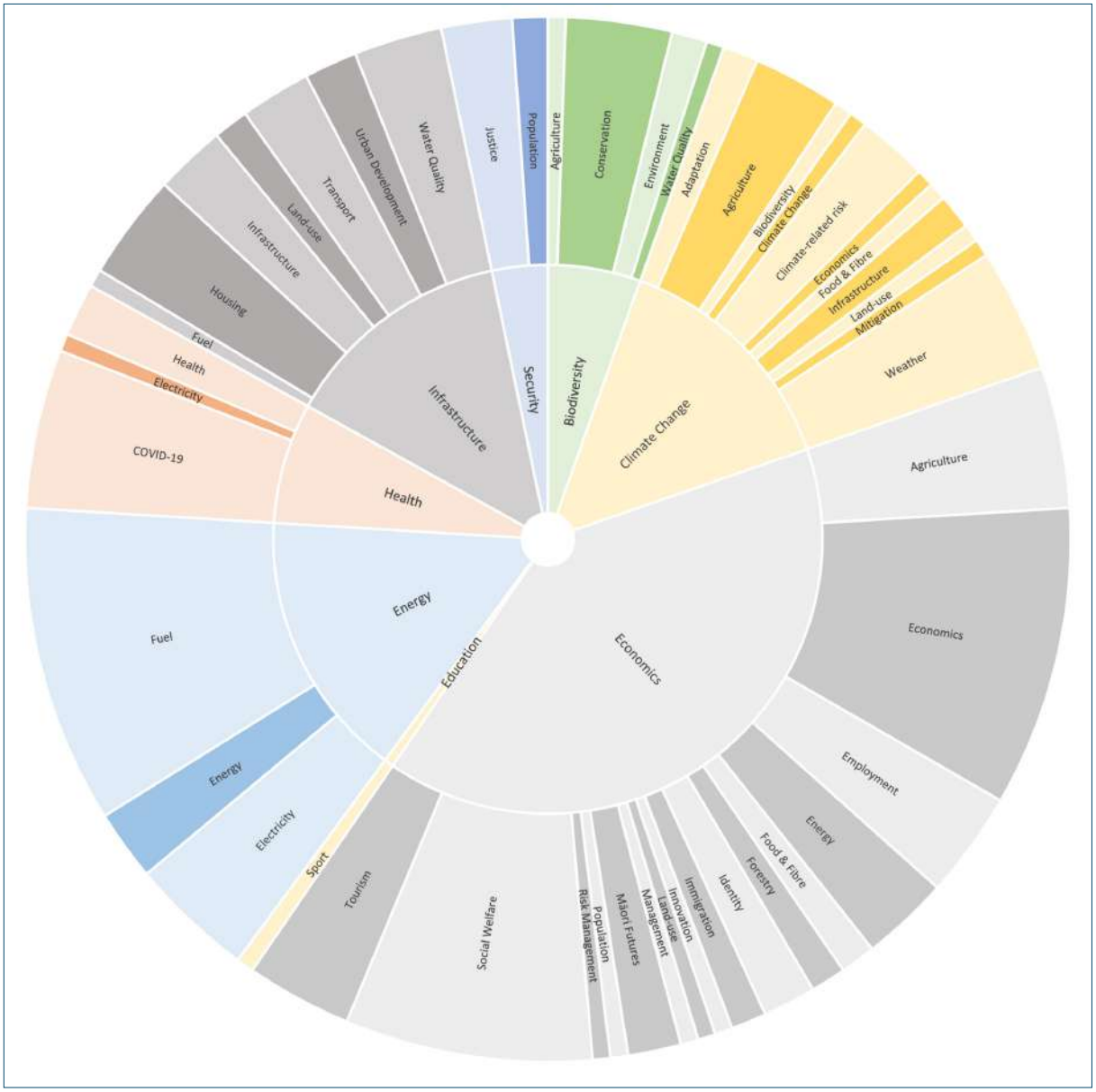
3.1 National scenarios (183 scenario documents)

The following analysis refers to Table 1 on our website (See Appendix 4).

3.1.1 Figure 2: National scenario types and subjects by proportion

Figure 2 illustrates the different types and subjects of nationally-based scenario work. The larger segments mean that there were more scenario documents on that specific subject.

Figure 2: National scenario types and subjects by proportion



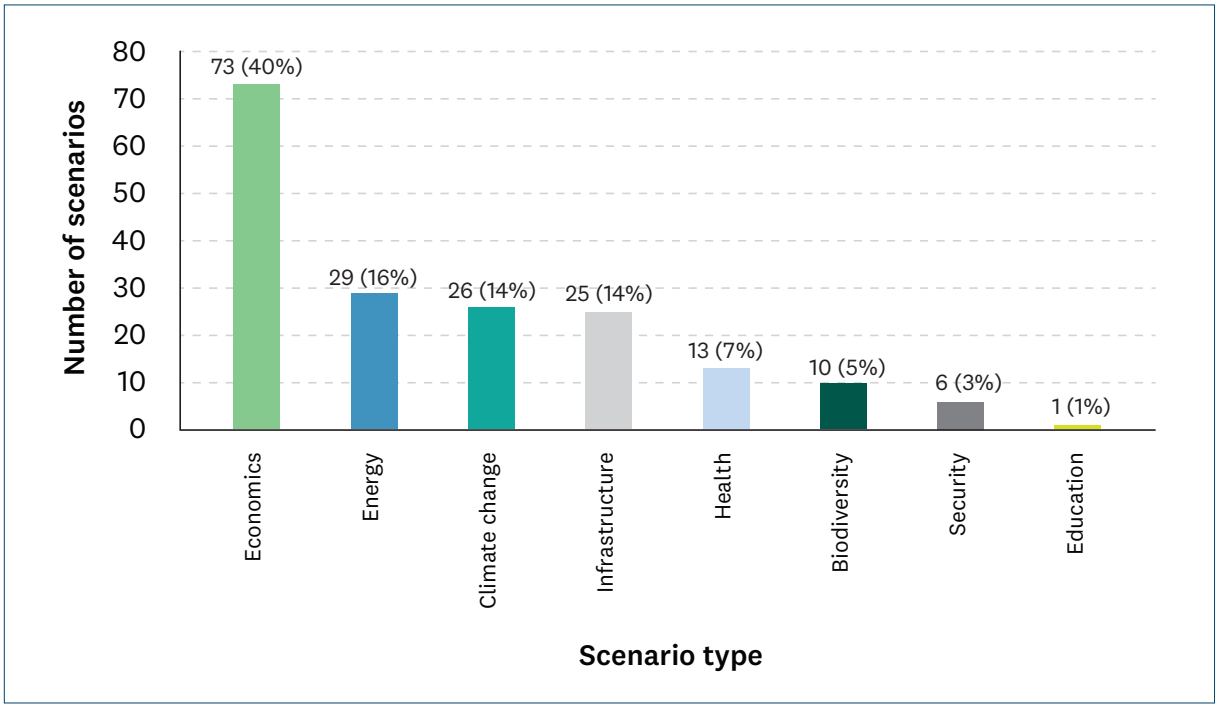
Below, organised by **scenario type**, we list the *subjects* that had the most and the fewest scenario documents for each scenario type.

- **Biodiversity:** '*Conservation*' was the subject that had the most scenario documents (6 out of 10). '*Agriculture*' and '*Water quality*' had the fewest (1 out of 10 each).
- **Climate Change:** '*Weather*' was the subject that had the most scenario documents (7 out of 26). '*Biodiversity*', '*Climate change*', '*Economics*', '*Food and fibre*', '*Land use*' and '*Mitigation*' had the fewest (1 out of 26 each).
- **Economics:** '*Economics*' was the subject that had the most scenario documents (17 out of 73). '*Innovation*', '*Land-use*', '*Management*', '*Population*' and '*Risk Management*' had the fewest (1 out of 73 each).
- **Education:** The only subject was '*Sport*' (1 out of 1).
- **Energy:** '*Fuel*' was the subject that had the most scenario documents (18 out of 29). '*Energy*' had the fewest (4 out of 29).
- **Health:** '*COVID-19*' was the subject that had the most scenario documents (9 out of 13). '*Electricity*' had the fewest (1 out of 13).
- **Infrastructure:** '*Housing*' was the subject that had the most scenario documents (6 out of 25). '*Fuel*' had the fewest (1 out of 25).
- **Security:** '*Justice*' was the subject that had the most scenario documents (4 out of 6). '*Population*' had the fewest (2 out of 6).

3.1.2 Figure 3: National scenario types by number

Figure 3 shows the number of scenarios of each type published nationally. This is useful for identifying how the different subjects compare, and whether nationally-based scenario work has more of a role in certain areas of reporting.

Figure 3: National scenario types by number

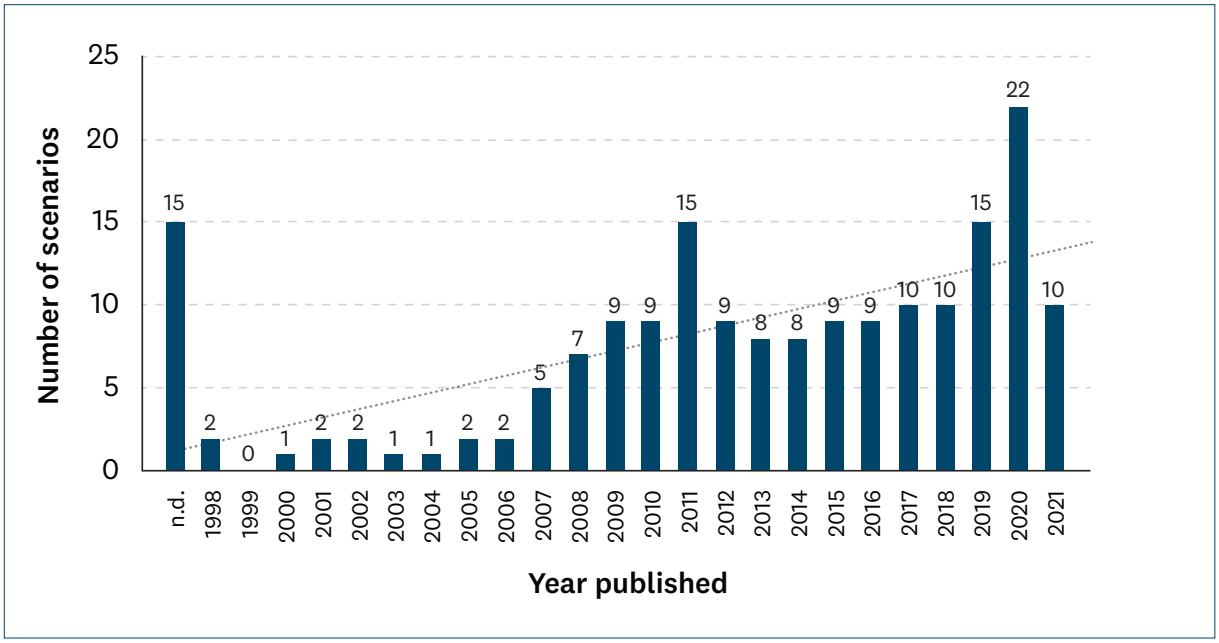


- As a scenario type, economics had the most scenario documents (73 out of 183 [40%]) and education had the fewest documents (1 out of 183 [1%]).

3.1.3 Figure 4: National scenarios published by year

Figure 4 illustrates the amount of national scenario documents published by year. As the trendline shows, the number of reports published each year seems to be increasing.

Figure 4: National scenarios published by year



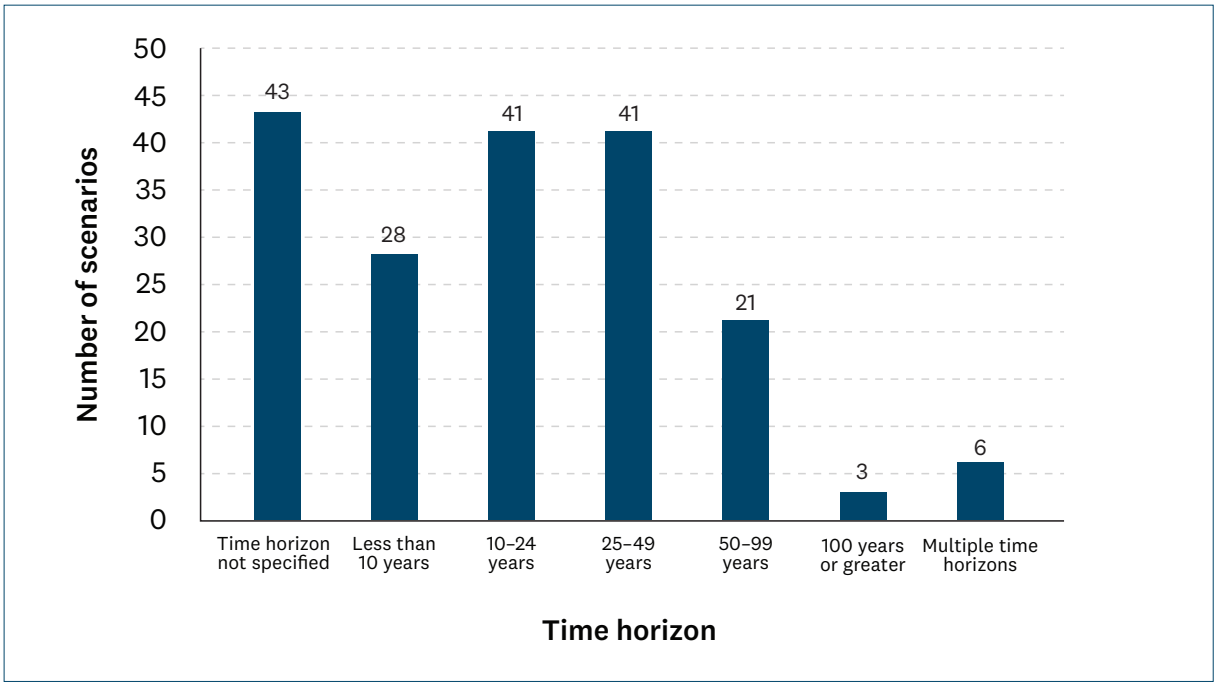
There was an overall increase in the number of scenario documents published each year.

- 15 out of the 183 documents did not have a clear publication date.
- The year in which the most scenario documents were published was 2020 (22 out of 183 [12%]).
- The year with the least scenario documents published was 1999 (0 out of 183 [0%]), followed by 2000, 2003 and 2004 (1 out of 183 [0.5%]).
- The spike in 2011 is likely due to the publication of 10-year reports.
- The spike in 2020 could be explained by the documents published around the topic of COVID-19.
- Due to this dataset being collected in November 2021, we may have missed scenario documents published in December.

3.1.4 Figure 5: National scenarios by time horizon

Time horizon is important because it represents how far ahead the scenario is projecting. Figure 5 illustrates the number of scenarios published for each time horizon.

Figure 5: National scenarios by time horizon



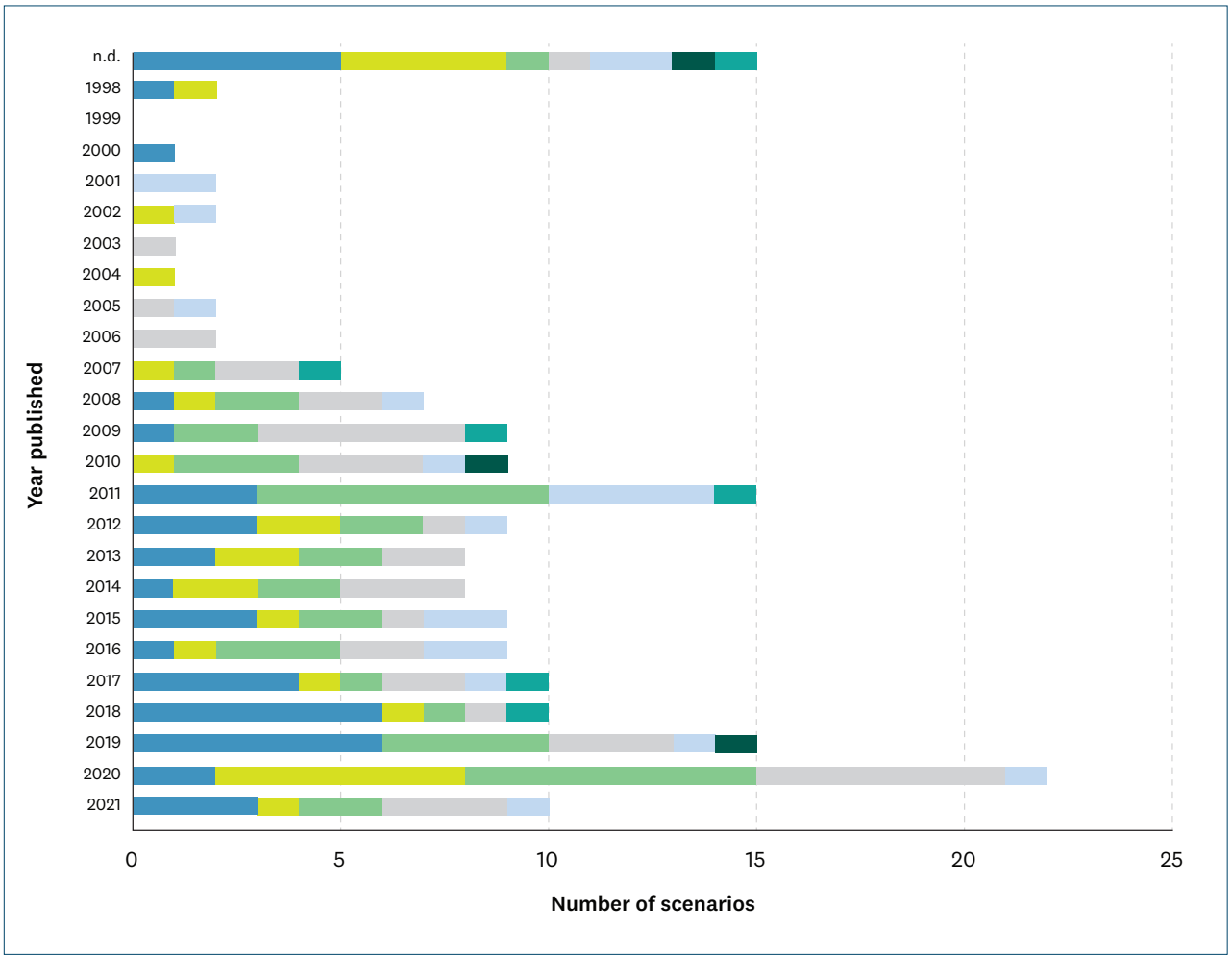
- 43 out of 183 scenario documents (23%) did not have a clear time horizon.
- Outside of papers where the time horizon was not known, the most common time horizon for the national scenarios was between 10 and 24 years (41) and 25 and 49 years (41).
- The least common time horizon was 100 years or greater (3).

3.1.5 Figure 6: National scenarios by time horizon and year published

Figure 6 contains the breakdown of time horizon in relation to year published. This type of analysis is useful as it illustrates any trends over time.

Note that 'multiple' refers to scenarios with multiple time horizons (e.g. *Scenarios of Storminess and Regional Wind Extremes Under Climate Change*, see p. 39).

Figure 6: National scenarios by time horizon and year published



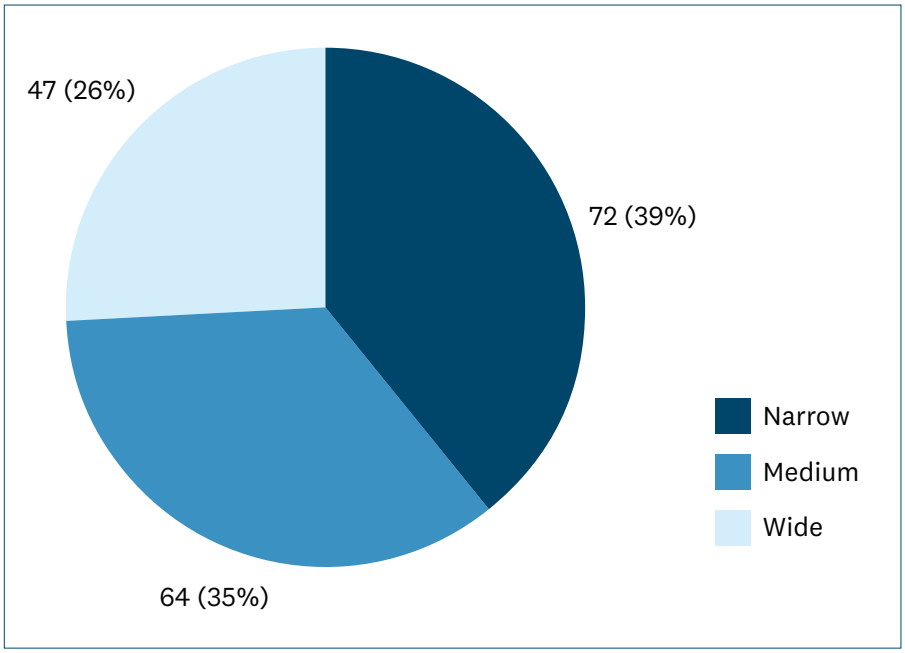
	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000	1999	1998	n.d.
Time horizon not specified	3	2	6	6	4	1	3	1	2	3	3	0	1	1	0	0	0	0	0	0	0	1	0	1	5
Less than 10 years	1	6	0	1	1	1	1	2	2	2	0	1	0	1	1	0	0	1	0	1	0	0	0	1	4
10–24 years	2	7	4	1	1	3	2	2	2	2	7	3	2	2	1	0	0	0	0	0	0	0	0	0	1
25–49 years	3	6	3	1	2	2	1	3	2	1	0	3	5	2	2	2	1	0	1	0	0	0	0	0	1
50–99 years	1	1	1	0	1	2	2	0	0	1	4	1	0	1	0	0	1	0	0	1	2	0	0	0	2
100 years or greater	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Multiple time horizons	0	0	0	1	1	0	0	0	0	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	1

- There were proportionately more documents published in 2020/2021 with a time horizon of 10–24 years and 25–49 years than there were between 1998 and 2002.
- This likely illustrates a more long-term approach and could represent an improvement in the quality of thinking behind scenario documents over the last 20 years.

3.1.6 Figure 7: National scenarios by scope

The scope of a document is important to identify as it indicates the level of detail that the report goes into. Figure 7 illustrates the proportion of the different scopes: wide, medium and narrow. For definitions of each scope see Appendix 3.

Figure 7: National scenarios by scope

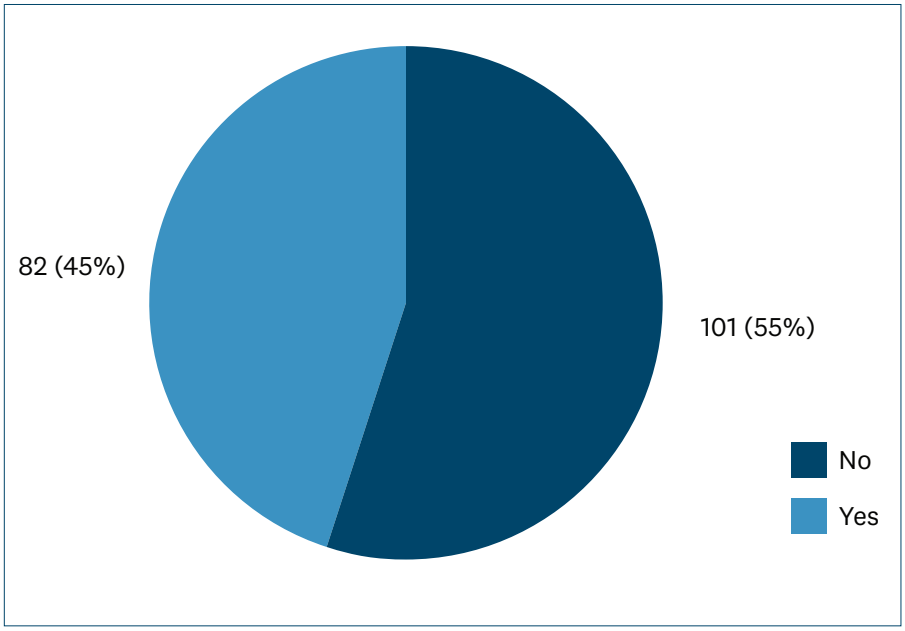


- The most common scope was narrow, with 72 out of 183 documents (39%).
- The least common scope was wide, with 47 out of 183 (26%).

3.1.7 Figure 8: National scenarios that had received outside data guidance

It is common for entities (such as NIWA) to assist other entities undertaking scenario analysis by providing either data or guidance. Figure 8 illustrates the number of scenario documents that received data guidance from outside sources.

Figure 8: National scenarios that had received outside data guidance

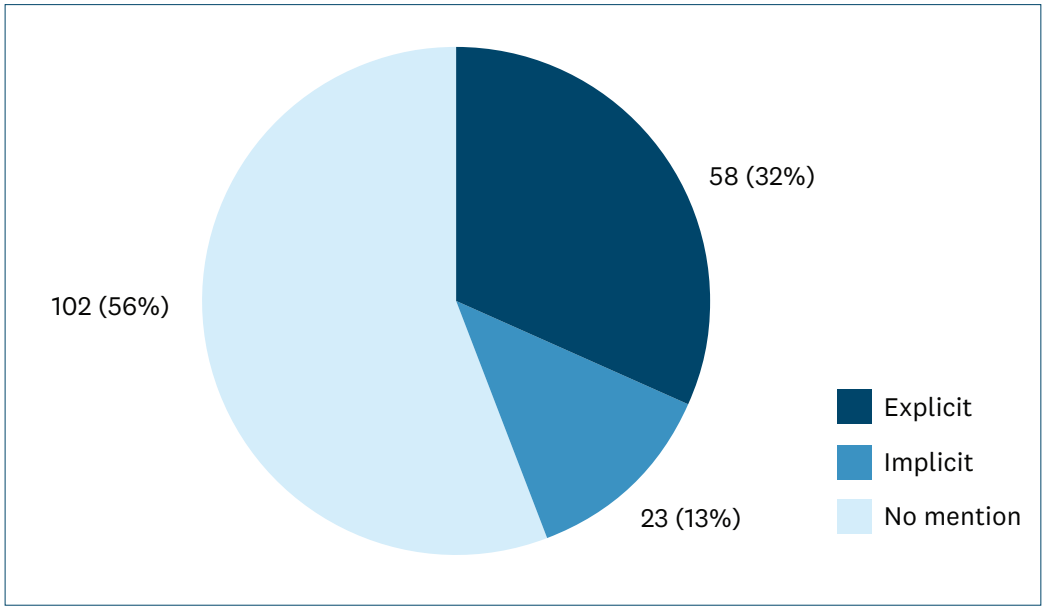


- 82 out of 183 documents (45%) used data guidance from outside sources.
- 101 out of 183 documents (55%) did not use data guidance from outside sources.

3.1.8 Figure 9: National scenarios that mentioned climate change

Climate change is becoming increasingly acknowledged as an issue. Figure 9 illustrates the extent to which climate change has been mentioned (implicitly or explicitly) in these scenario documents. See Appendix 3 for definitions of implicit and explicit.

Figure 9: National scenarios that mentioned climate change

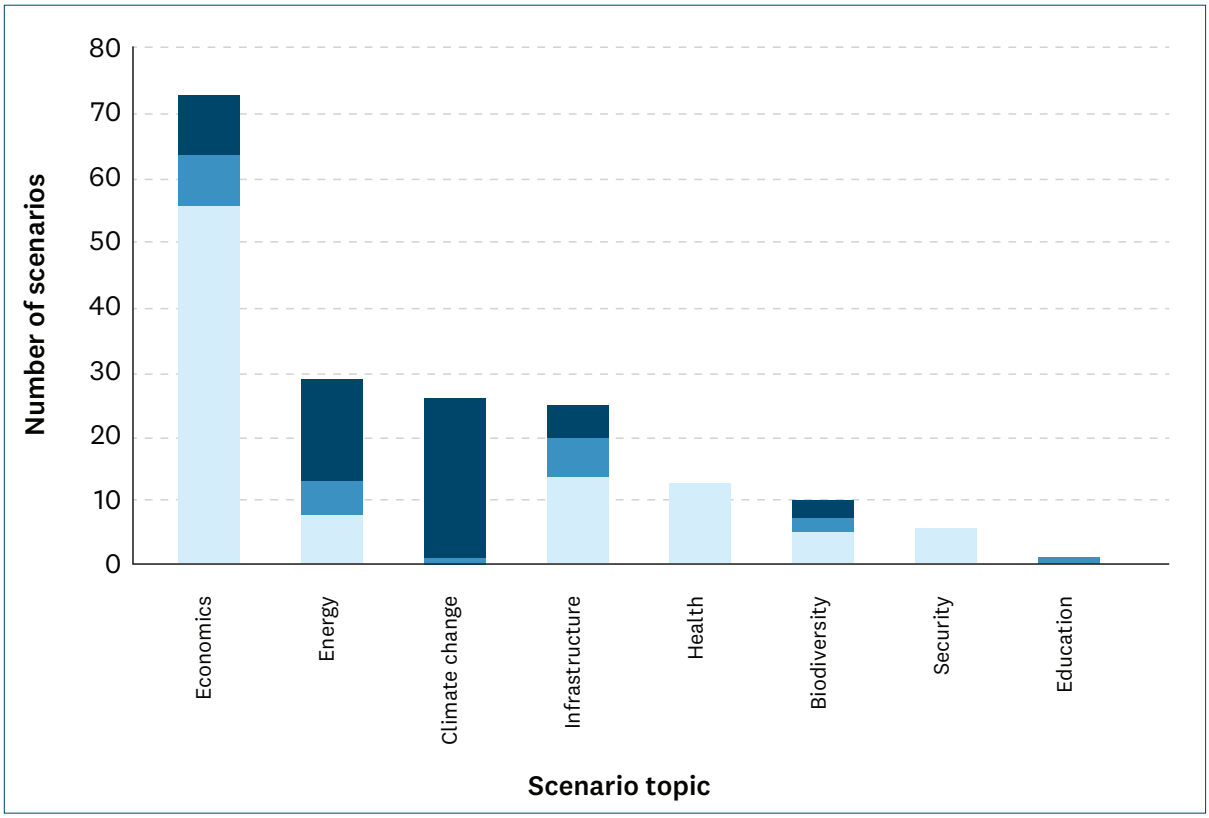


- 102 out of 183 national scenarios (56%) did not mention climate change.
- 23 out of 183 national scenarios (13%) implicitly mentioned climate change.
- 58 out of 183 national scenarios (32%) explicitly mentioned climate change.

3.1.9 Figure 10: National scenarios that mentioned climate change by topic

Figure 10 illustrates the explicit and implicit mentions of climate change with respect to the scenario type. This is useful because it shows what types of scenarios were most likely to consider climate change.

Figure 10: National scenarios that mentioned climate change by topic



	Economics	Energy	Climate change	Infrastructure	Health	Biodiversity	Security	Education
Explicit	9	16	25	5	0	3	0	0
Implicit	8	5	1	6	0	2	0	1
No mention	56	8	0	14	13	5	6	0

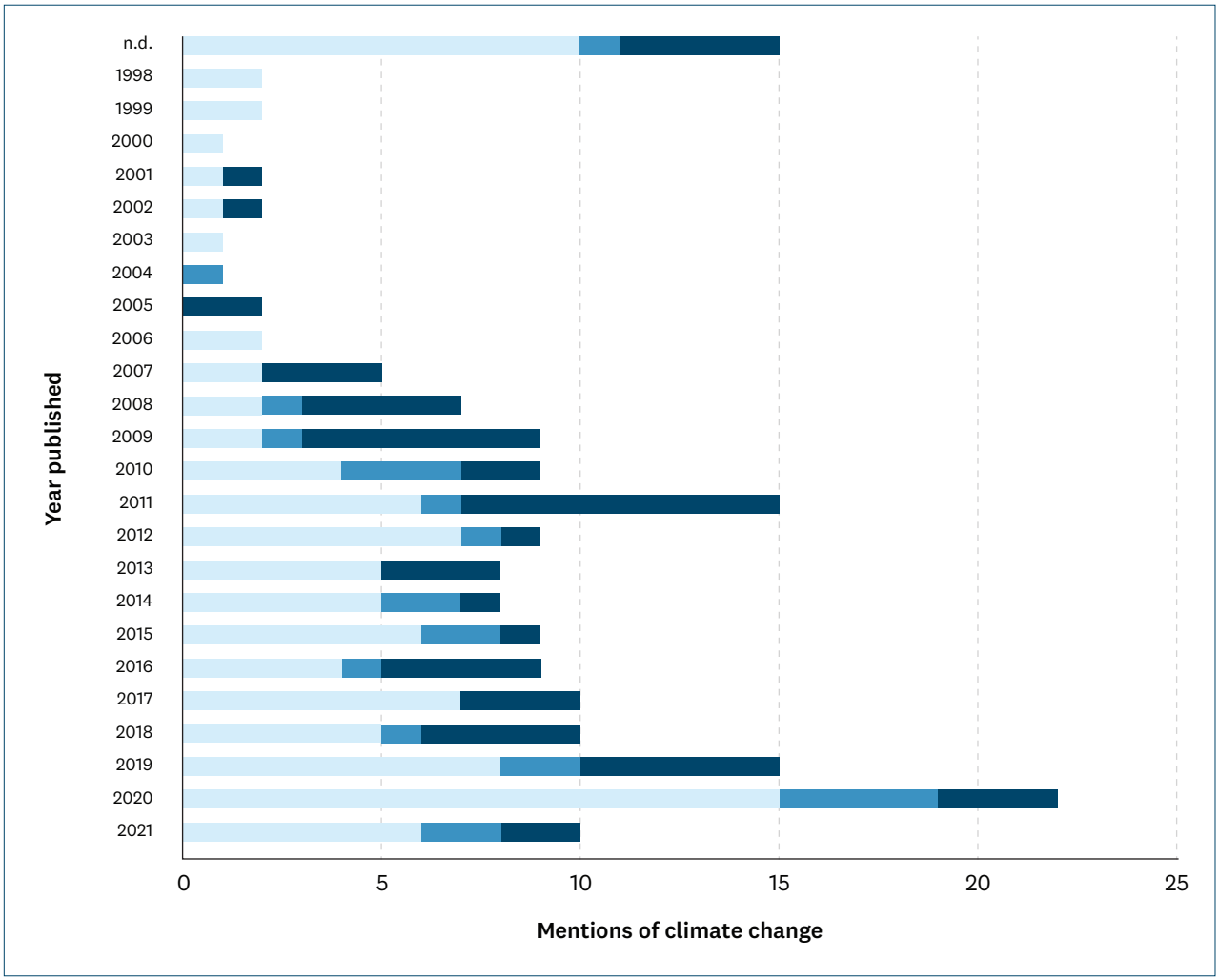
Below, we list the climate-related mentions associated with each **scenario type**.

- **Economics:** Explicit mentions: 9 out of 73 (12%), implicit mentions: 8 out of 73 (11%), and no mention: 56 out of 73 (77%).
- **Energy:** Explicit mentions: 16 out of 29 (55%), implicit mentions: 5 out of 29 (17%), and no mention: 8 out of 29 (28%).
- **Climate change:** Explicit mentions: 25 out of 26 (96%), and implicit mentions: 1 out of 26 (4%).
- **Infrastructure:** Explicit mentions: 5 out of 25 (20%), implicit mentions: 6 out of 25 (24%), and no mention: 14 out of 25 (56%).
- **Health:** No mention: 13 out of 13 (100%).
- **Biodiversity:** Explicit mentions: 3 out of 10 (30%), implicit mentions: 2 out of 10 (20%), and no mention: 5 out of 10 (50%).
- **Security:** No mention: 6 out of 6 (100%).
- **Education:** Implicit mention only: 1 out of 1 (100%).

3.1.10 Figure 11: National scenarios that mentioned climate change by year published

Figure 11 illustrates the number of mentions around climate change over the years.

Figure 11: National scenarios that mentioned climate change by year published



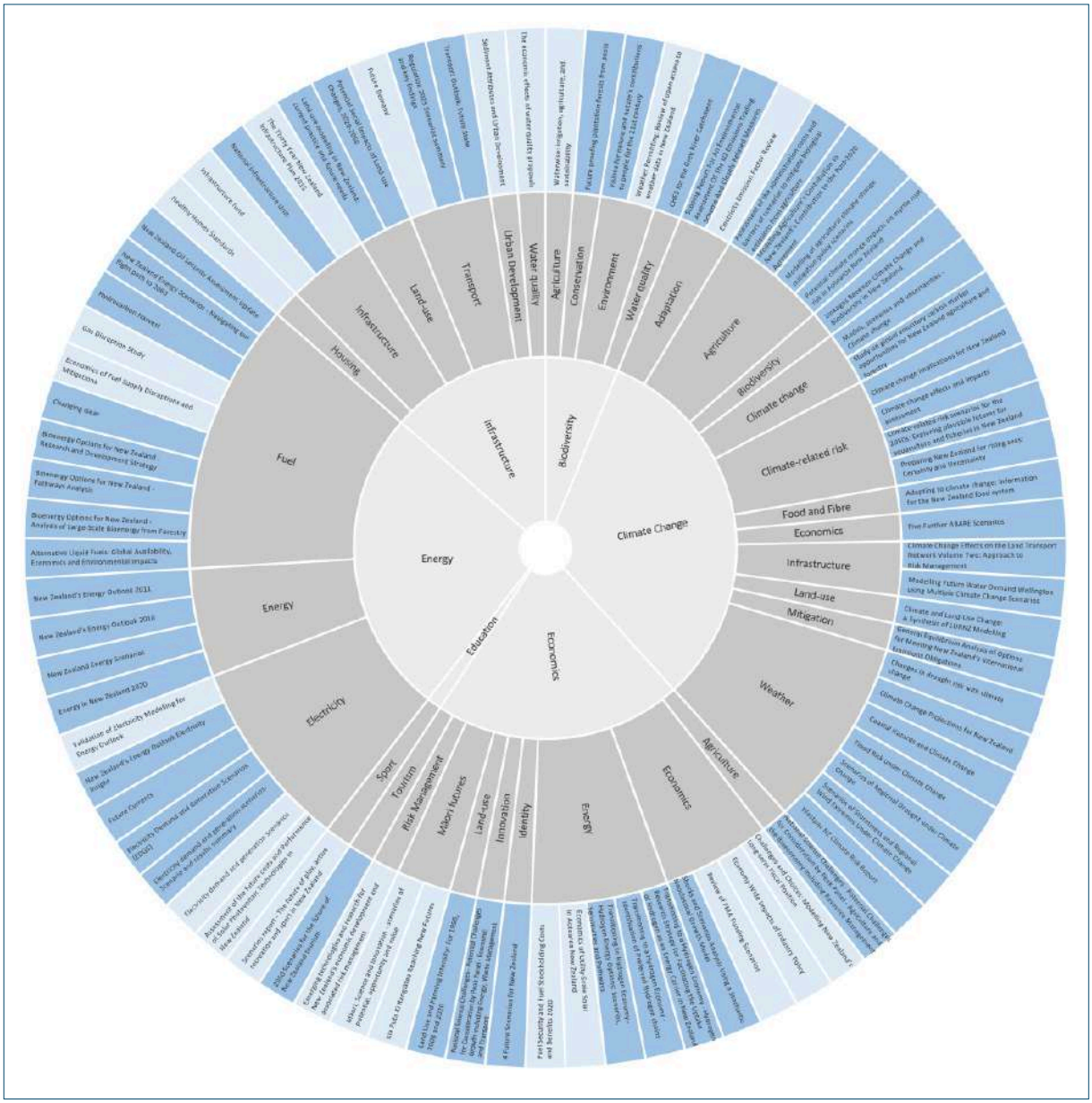
	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000	1999	1998	n.d.
Explicit	2	3	5	4	3	4	1	1	3	1	8	2	6	4	3	0	2	0	0	1	1	0	0	0	4
Implicit	2	4	2	1	0	1	2	2	0	1	1	3	1	1	0	0	0	1	0	0	0	0	0	0	1
No mention	6	15	8	5	7	4	6	5	5	7	6	4	2	2	2	2	0	0	1	1	1	1	0	2	10

- The proportion of 'no mention' of climate change seems to stay relatively similar, with a large increase in documents that do not mention climate change in the year 2020. This could be due to the large number of documents related to COVID-19.

3.1.11 Figure 12: National scenarios that mention climate change, by scenario type and subject

Figure 12 illustrates explicit and implicit mentions by scenario type and subject.

Figure 12: National scenarios that mention climate change, by scenario type and subject



Explicitly mention climate change (58 out of 81 [72%])

Implicitly mention climate change (23 out of 81 [28%])

3.2 Local government scenarios (31 scenario documents)

This analysis covers Table 2 on our website (See Appendix 5).

3.2.1 Figure 13: Local government scenario types and subjects by proportion

Figure 13 illustrates the different types and subjects of scenario work done by local government. The larger segments mean that there were more scenario documents on that specific subject.

Figure 13: Local government scenario types and subjects by proportion

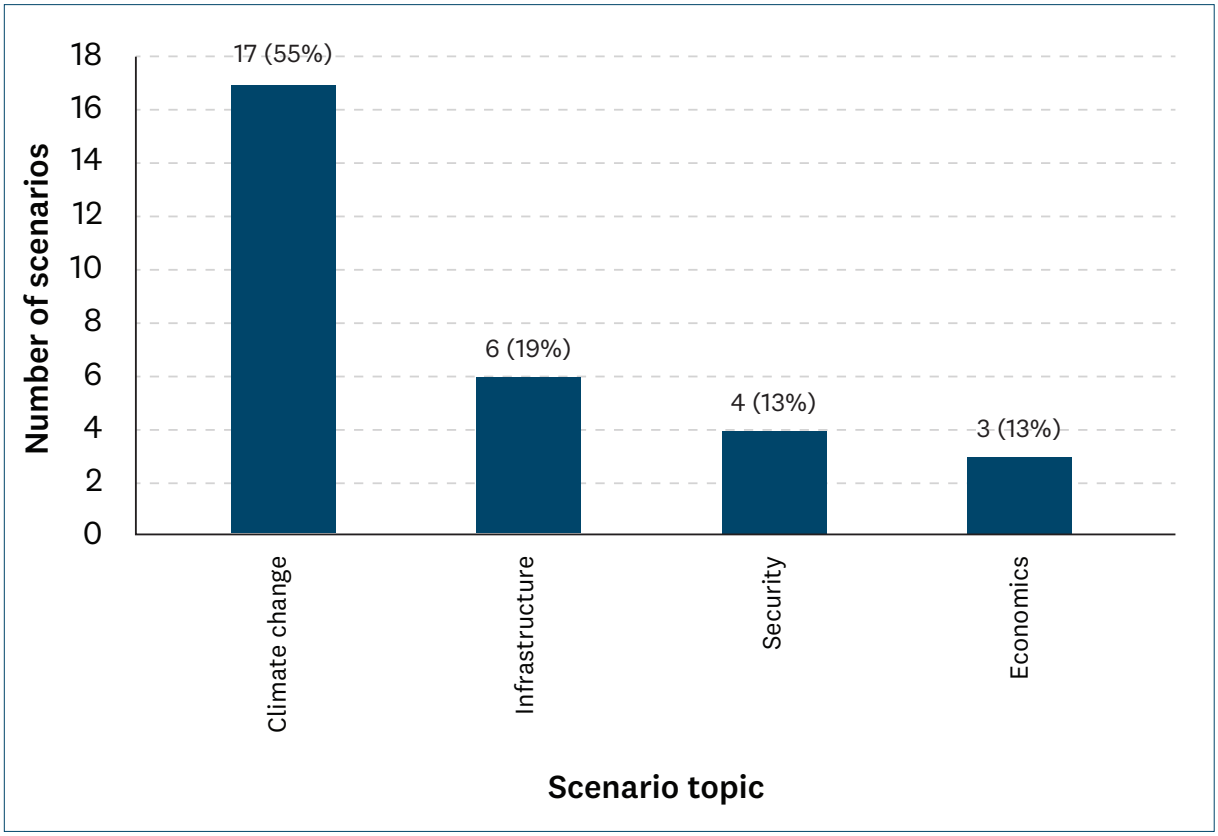
Below, organised by **scenario type**, we list the subjects that had the most and fewest scenario documents for each scenario type.

- **Climate change:** '*Adaptation*' was the subject that had the most scenario documents (15 out of 17 [88%]). '*Climate change*' and '*Climate-related risk*' had the fewest (1 out of 17 [6%] each).
- **Economics:** '*Economics*' was the subject that had the most scenario documents (2 out of 4 [50%]). '*Innovation*' and '*Land use*' had the fewest (1 out of 4 [25%] each).
- **Infrastructure:** '*Housing*' and '*Land use*' were the subjects that had the most scenario documents (2 out of 6 [33%] each). '*Transport*' and '*Water quality*' had the fewest (1 out of 6 [17%] each).
- **Security:** '*Population*' was the subject that had the most scenario documents (4 out of 4 [100%]).

3.2.2 Figure 14: Local government scenarios for each topic

Figure 14 shows the number of scenarios of each type published locally. This is useful for identifying how the different subjects compare, and whether local government-based scenario work has more of a role in certain areas of reporting.

Figure 14: Local government scenarios for each topic

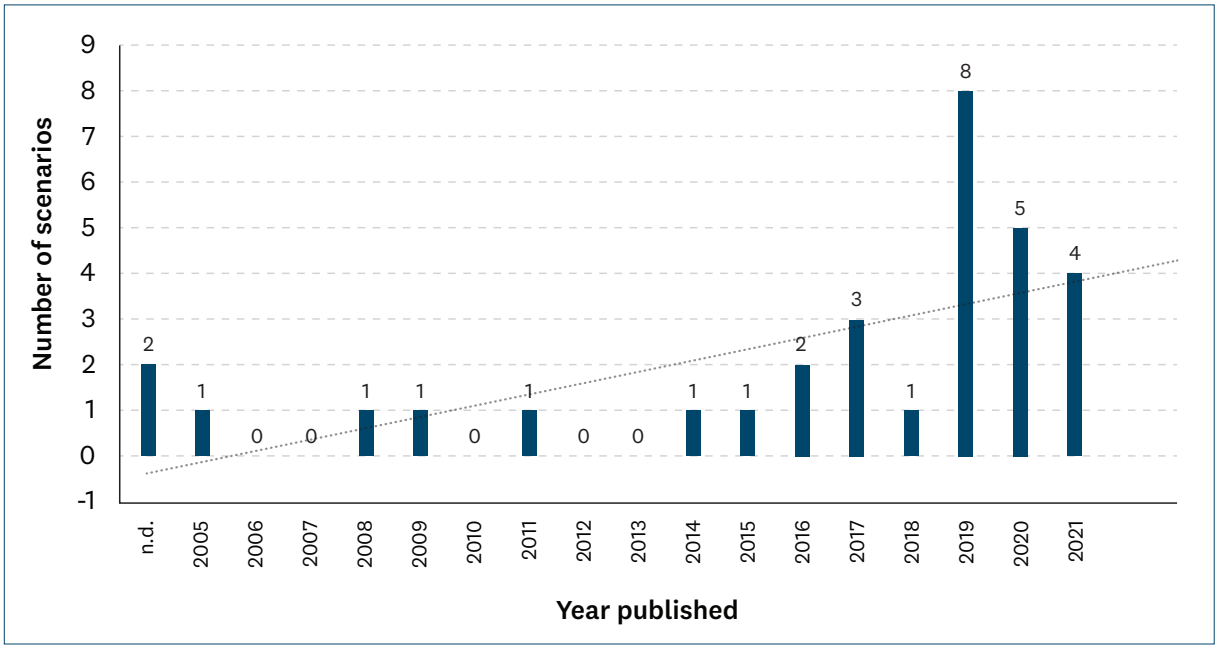


- As a scenario type, '*Climate change*' had the most scenario documents (17 out of 31 [55%]); '*Economics*' and '*Security*' had the fewest scenario documents (4 out of 31 [13%]).

3.2.3 Figure 15: Local government scenarios published by year

Figure 15 illustrates the number of local government scenarios published by year. As the trendline shows, the number of documents published each year seems to be increasing.

Figure 15: Local government scenarios published by year

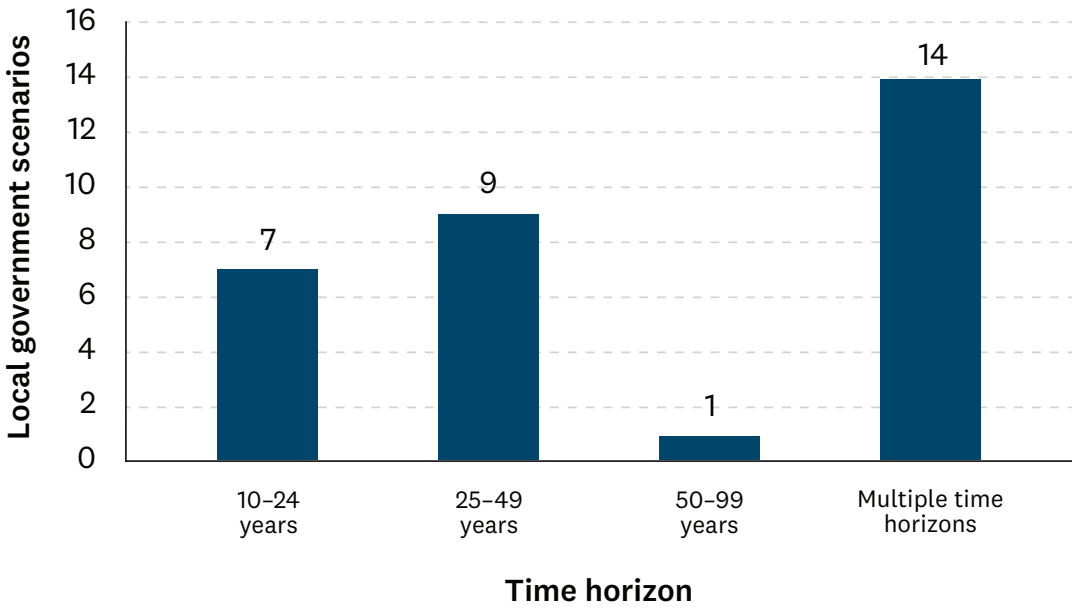


- There has been an overall increase in the number of scenario documents published each year.
- 2 out of 31 scenario documents (7%) did not have a clear publication date.
- The year in which the most scenario documents were published was 2019 (8 out of 31 [26%]).
- No scenario documents were published in 2006, 2007, 2010, 2012 or 2013.

3.2.4 Figure 16: Local government scenarios by time horizon

Time horizon is important because it represents how far ahead local government scenario documents are projecting. Figure 16 illustrates the number of scenarios published for each time horizon.

Figure 16: Local government scenarios by time horizon

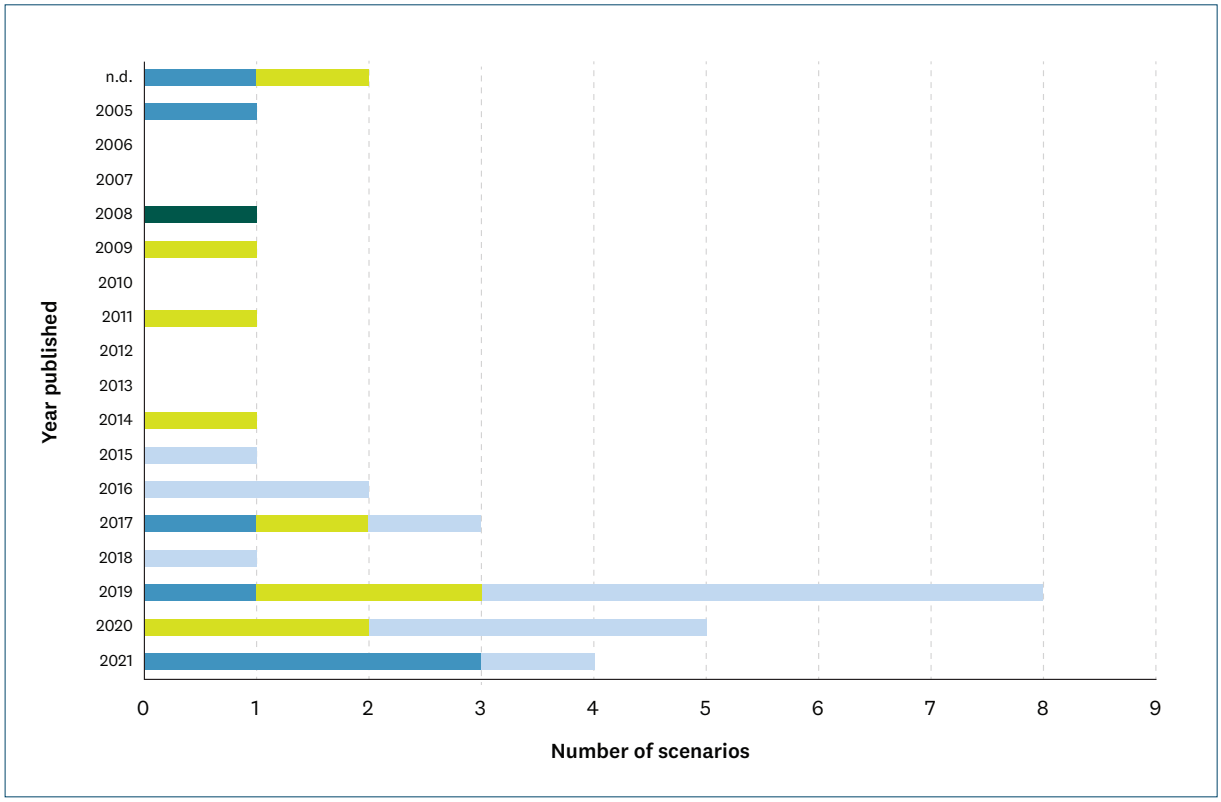


- The most common time horizon for local government scenarios was multiple time horizons, which featured in 14 out of 31 scenarios (45%). Please see Appendix 3 for clarification on multiple time horizons.
- The least common time horizon was 50–99 years with 1 out of 31 (3%).

3.2.5 Figure 17: Local government scenarios by time horizon and year published

Figure 17 contains the breakdown of time horizons in relation to year published. This analysis is useful as it illustrates trends over time.

Figure 17: Local government scenarios by time horizon and year published



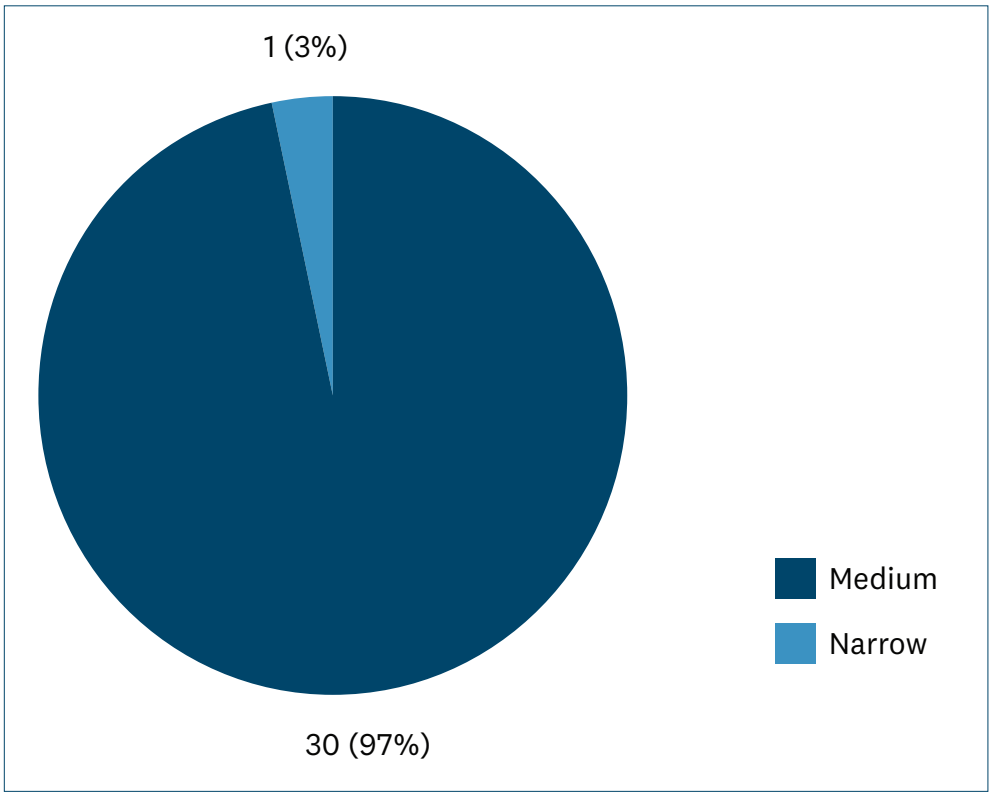
	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007	2006	2005	n.d.
10–24 years	3	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1
25–49 years	0	2	2	0	1	0	0	1	0	0	1	0	1	0	0	0	0	1
50–99 years	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
Multiple time horizons	1	3	5	1	1	2	1	0	0	0	0	0	0	0	0	0	0	0

- Note that 'multiple' refers to scenarios with multiple time horizons (see Appendix 3).
- Since 2015 there has been a large increase in scenarios with multiple time horizons. This could correlate with a series of NIWA-guided reports on climate adaptation done by specific councils.

3.2.6 Figure 18: Local government scenarios by scope

The scope of a document is important to identify as it indicates the level of detail that the report goes into. Figure 18 illustrates the proportion of the different scopes: wide, medium and narrow. For definitions of each scope see Appendix 3.

Figure 18: Local government scenarios by scope

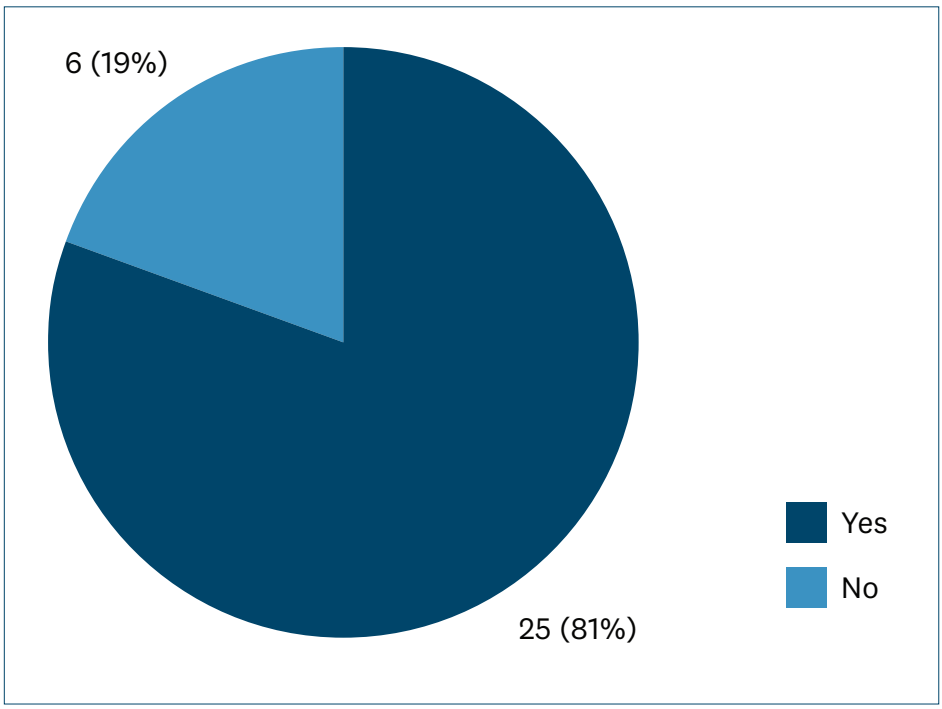


- The most common scope was medium, with 30 out of 31 documents (97%).
- The least common scope was narrow, with 1 out of 31 documents (3%).

3.2.7 Figure 19: Local government scenarios that had received outside data guidance

It is common for entities (such as NIWA) to assist entities undertaking scenario analysis by providing either data or guidance. Figure 19 illustrates the number of scenario documents that received data guidance from outside sources.

Figure 19: Local government scenarios that had received outside data guidance

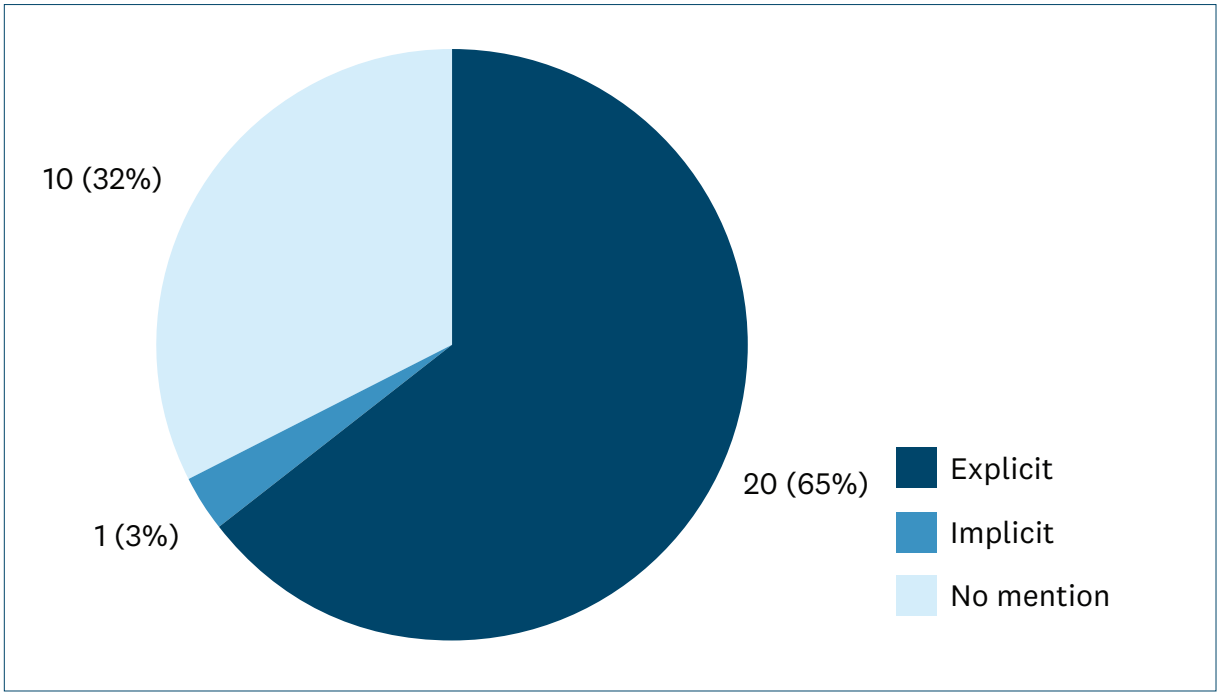


- 25 out of 31 documents (81%) used data guidance from outside sources.
- 6 out of 31 documents (19%) did not use data guidance from outside sources.

3.2.8 Figure 20: Local government scenarios that mentioned climate change

Climate change is becoming increasingly acknowledged as an issue. Figure 20 illustrates the extent to which climate change has been mentioned (implicitly or explicitly) in these scenario documents. See Appendix 3 for definitions of implicit and explicit.

Figure 20: Local government scenarios that mentioned climate change

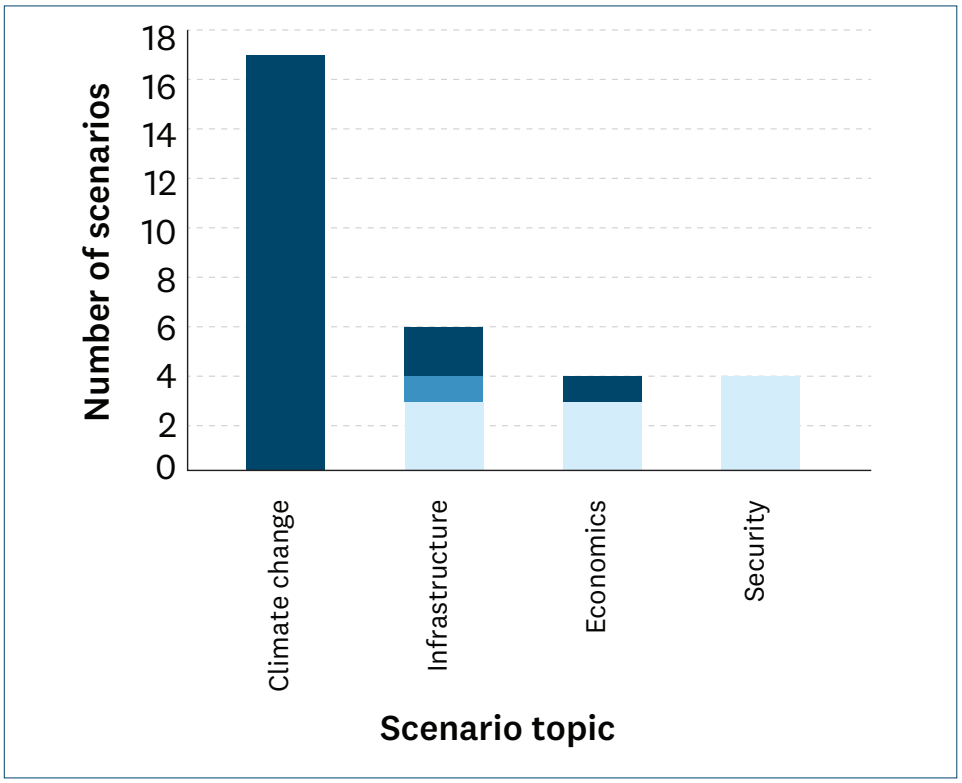


- 10 out of 31 local government scenario documents (32%) did not mention climate change.
- 1 out of 31 local government scenario documents (3%) implicitly mentioned climate change.
- 20 out of 31 local government scenario documents (65%) explicitly mentioned climate change.

3.2.9 Figure 21: Local government scenarios that mentioned climate change by topic

Figure 21 illustrates the explicit and implicit mentions of climate change with respect to the scenario type. This is useful because it shows what types of scenarios were most likely to consider climate change.

Figure 21: Local government scenarios that mentioned climate change by topic



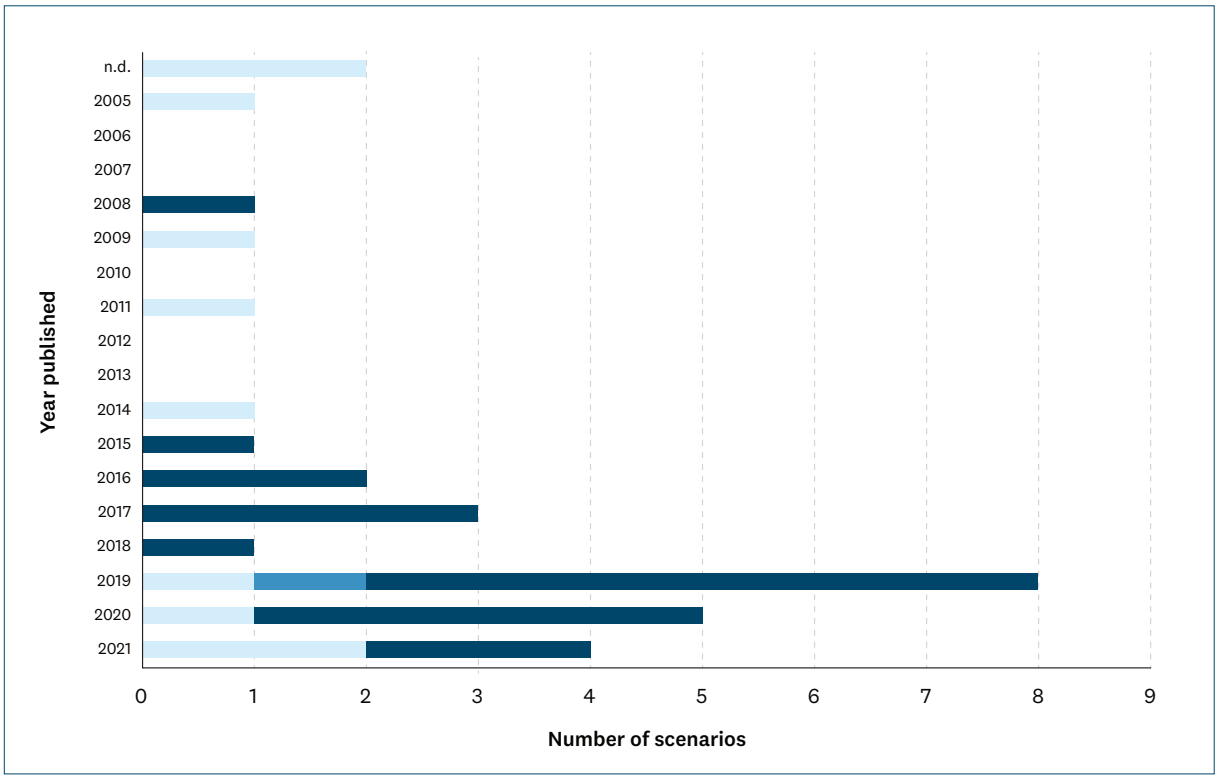
	Climate change	Infrastructure	Economics	Security
Explicit	17	2	1	0
Implicit	0	1	0	0
No mention	0	3	3	4

- **Climate change:** All scenario documents explicitly mentioned climate change 17 out of 17 (100%).
- **Infrastructure:** Explicit mentions: 2 out of 6 (33%), implicit mentions: 1 out of 6 (17%), and no mention: 3 out of 6 (50%).
- **Economics:** Explicit mentions: 1 out of 4 (25%), and no mention: 3 out of 4 (75%).
- **Security:** No mention: 4 out of 4 (100%).

3.2.10 Figure 22: Local government scenarios that mentioned climate change by year published

Figure 22 illustrates the number of mentions of climate change throughout the years.

Figure 22: Local government scenarios that mentioned climate change by year published



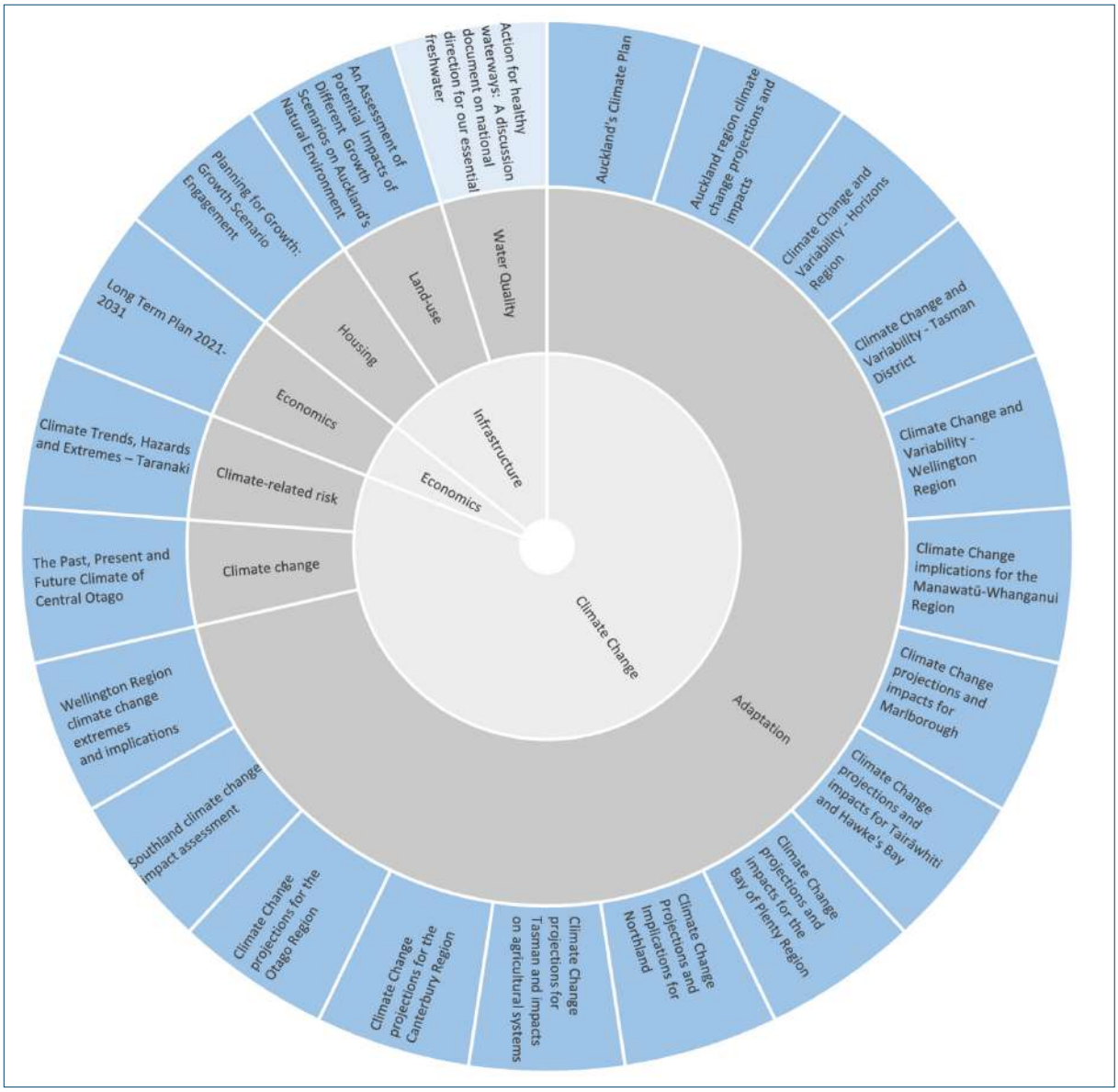
	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007	2006	2005	n.d.
Explicit	2	4	6	1	3	2	1	0	0	0	0	0	0	1	0	0	0	0
Implicit	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No mention	2	1	1	0	0	0	0	1	0	0	1	0	1	0	0	0	1	2

- Local government scenario documents have an increasing proportion of explicit mentions of climate change throughout the years, likely due to the series of climate change adaptation documents done with NIWA.

3.2.11 Figure 23: Local government scenarios that mentioned climate change by scenario type and subject

Figure 23 illustrates explicit and implicit mentions of climate change by scenario type and subject.

Figure 23: Local government scenarios that mentioned climate change by scenario type and subject



Explicitly mention climate change (20 out of 21 [95%])

Implicitly mention climate change (1 out of 21 [5%])

4.0 Observations

This section contains observations made across both datasets, as well as each individual dataset. At an aggregate level (across all data), the following observations indicate that the scenario landscape in Aotearoa New Zealand is fragmented, complex and inconsistent. The lack of an integrated approach to developing and implementing scenarios limits their effectiveness as tools.

4.1 National scenarios

- 'Economic' scenarios were the most common scenario type. Approximately 40% (73 out of 183) of scenarios were economic scenarios. 'Energy' at 16% (29 out of 183) and 'climate change' at 14% (26 out of 183) were the next most common scenario types. (See Figure 2.)
- On average, the number of scenario documents published each year is increasing. The highest number published annually was in 2020 with 22 out of 183 (12%). (See Figure 4.)
- 43 out of 183 scenario documents did not have a clear time horizon. The most common time horizon was 10–24 years and 25–49 years (41 out of 183 or 22% each). (See Figure 5.)
- An increasing proportion of published scenario documents had time horizons of 10–24 and 25–50 years, and a decreasing proportion did not specify time horizons. This suggests that there has been some improvement. (See Figure 6.)
- There was a lack of scenario documents that were 'wide' in scope (only 26%). Approximately 39% of scenarios were 'narrow' and 35% were 'medium' in scope. (See Figure 7.)
- Most scenario documents had not been informed by outside data guidance. Data guidance was provided for approximately 45% of scenario documents (82 out of 183). Across those scenarios that were informed by data guidance, a range of entities provided the guidance. (See Figure 8.)
- 44% (81 out of 183) of scenario documents mention climate change. Of these 81, 58 scenario documents (72%) explicitly mentioned climate change, whereas 23 scenario documents (28%) implicitly mentioned climate change (See Figure 9). This shows that, overall, despite the low number of mentions, a high proportion of documents that do mention climate change do so explicitly.
- Of the 81 scenario documents that mentioned climate change, 'fuel' was the most common subject (10 out of 81 [12%]). (See Figure 12.)

4.2 Local government scenarios

- 'Climate change' scenario documents were the most common scenario type. Approximately 55% (17 out of 31) of scenario documents were climate change scenario types. 'Infrastructure' (6 out of 31 [19%]) was the next most common scenario type. (See Figure 13.)
- On average, the number of scenario documents published each year is increasing. The highest number of scenario documents published annually occurred in 2019 (8 out of 31 [26%]). (See Figure 15.)
- The most common time horizon was multiple time horizons (14 out of 31 [45%]). (See Figure 16.)
- There has been an increasing proportion of scenario documents with multiple time horizons. (See Figure 17.)
- No scenarios were 'wide' in scope. 97% of scenario documents were 'medium' in scope, and 3% were 'narrow'. (See Figure 18.)
- There were more scenario documents that had been informed by outside data guidance than those that had not. Data guidance was provided for approximately 81% of scenario documents (25 out of 31). (See Figure 19.)

- 68% (21 out of 31) of scenario documents mentioned climate change. Of these 21, 20 scenario documents (95%) explicitly mentioned climate change, whereas 1 scenario document (5%) implicitly mentioned climate change. (See Figure 20.) As with the mentions of climate change in national scenario documents, this shows that where climate change is mentioned, it is usually done explicitly.
- Of the 21 scenario documents that mentioned climate change, 'adaptation' was the most common subject. 15 out of 21 (71%) of climate related scenario documents focused on adaptation. (See Figure 22.)

Appendix 1: List of key terms searched

- Climate Change
- Economic
- Financial
- Energy
- Electricity
- Adapting Systems
- Infrastructure
- Transport
- Economics
- Identity
- Māori futures
- Tourism
- Health
- Education
- Finance
- Agriculture
- Land-use
- Biodiversity
- Policy

Appendix 2: List of entities' websites searched

1(a): National

- Crown Law Office
- Department of Conservation
- Department of Corrections
- Department of Internal Affairs
- Department of the Prime Minister and Cabinet
- Education Review Office
- Government Communications Security Bureau
- Inland Revenue Department
- Land Information New Zealand
- Manaaki Whenua Landcare Research
- Ministry for Children
- Ministry for Cultural Heritage
- Ministry for Pacific Peoples
- Ministry for Primary Industries
- Ministry for the Environment
- Ministry for Women
- Ministry of Business, Innovation and Employment
- Ministry of Defence
- Ministry of Education
- Ministry of Foreign Affairs and Trade
- Ministry of Health
- Ministry of Housing and Urban Development
- Ministry of Justice
- Ministry of Social Development
- Ministry of Transport
- NIWA
- NZ Customs
- NZSIS
- Public Service Commission
- Serious Fraud Office
- Stats NZ
- Te Puni Kōkiri
- Treasury

1(b): Local Government

North Island:

- Auckland Council
- Bay of Plenty Regional Council
- Carterton District Council
- Central Hawke's Bay District Council
- Far North District Council
- Gisborne District Council
- Greater Wellington Regional Council
- Hamilton City Council
- Hastings District Council
- Hauraki District Council
- Hawke's Bay Regional Council
- Horizons Regional Council
- Horowhenua District Council
- Hutt City Council
- Kaipara District Council
- Kāpiti Coast District Council
- Kawerau District Council
- Manawatū District Council
- Masterton District Council
- Matamata-Piako District Council
- Napier City Council
- New Plymouth District Council
- Northland Regional Council
- Ōpōtiki District Council
- Ōtorohanga District Council
- Palmerston North City Council
- Porirua City Council
- Rangitīkei District Council
- Rotorua Lakes Council
- Ruapehu District Council
- South Taranaki District Council
- South Waikato District Council

- South Wairarapa District Council
- Stratford District Council
- Taranaki Regional Council
- Tararua District Council
- Taupō District Council
- Tauranga City Council
- Thames-Coromandel District Council
- Upper Hutt City Council
- Waikato District Council
- Waikato Regional Council
- Waipā District Council
- Wairoa District Council
- Waitomo District Council
- Whanganui District Council
- Wellington City Council
- Western Bay of Plenty District Council
- Whakatāne District Council
- Whangarei District Council

South Island:

- Ashburton District Council
- Buller District Council
- Central Otago District Council
- Chatham Islands Council
- Christchurch City Council
- Clutha District Council
- Dunedin City Council
- Environment Canterbury
- Environment Southland
- Gore District Council
- Grey District Council
- Hurunui District Council
- Invercargill City Council
- Kaikōura District Council
- Mackenzie District Council

- Marlborough District Council
- Nelson City Council
- Otago Regional Council
- Queenstown Lakes District Council
- Selwyn District Council
- Southland District Council
- Tasman District Council
- Timaru District Council
- Waimakariri District Council
- Waimate District Council
- Waitaki District Council
- West Coast Regional Council
- Westland District Council

Appendix 3: Definitions of analysis characteristics

Scenario: A process for identifying and assessing possible outcomes of future events under conditions of uncertainty. For example, a climate change scenario allows an entity to explore and develop an understanding of how the physical and transition risks of climate change may impact its businesses, strategies and financial performance over time.

National scenario: A scenario produced by a public or private entity, designed to explore possible outcomes and impacts at a nationwide level.

Local government scenario: A scenario produced by a local authority, designed to explore possible outcomes for only a specific part of New Zealand.

Scenario type: The overall theme of the scenario.

Scenario subject: The more in-depth topic that the scenario covers.

For example, the scenario type of the Ministry for Primary Industries' *Scenarios of Storminess and Regional Wind Extremes Under Climate Change* is climate change, while the scenario subject is weather.

The Institute has identified eight scenario types and 47 scenario subjects (see Figure 1 for all types and subjects included). Please note that some subjects (such as agriculture) can fall under multiple types of scenarios. These were categorised based on the Institute's interpretation of the scenario.

Scope:

- 'Wide' means the scenario held a national focus (e.g. Ministry for the Environment's *Climate Change Projections for New Zealand*).
- 'Medium' means the scenario held a regional, sectoral or industrial focus (e.g. Marlborough District Council's *Climate change projections and impacts for Marlborough*).
- 'Narrow' means the scenario held a focus on specific subject or issue (e.g. Ministry for Primary Industries' *Foot-and-Mouth Disease Economic Impact Assessment*).

Time horizon: The length of time that the scenario is expected to explore. For example, the Ministry for the Environment's *Changes in drought risk with climate change* has a time horizon of 75 years (2005–2080).

Multiple time horizons: An instance where a scenario document contains multiple time horizons, often where projections and analysis are done to see both short-term and long-term outcomes.

For example, the Bay of Plenty Regional Council's *Climate change projections and impacts for the Bay of Plenty Region* has projections to 2040, 2090 and 2100.

Climate-related: Refers to scenario documents that mention climate change. These mentions have been divided into explicit and implicit mentions based on the quality of discussion of climate change within the scenario document. See below for definitions of explicit and implicit.

Explicit or implicit:

- 'Explicit' refers to a detailed mention of climate change with substantial discussion of possible impacts on the entity's approach.
- 'Implicit' refers to a minimal mention of climate change with little discussion of possible impacts on the entity's approach.

Data guidance provided: Refers to an instance where an entity has sourced data for and/or assistance with modelling and forecasting from an outside source.

For example, NIWA will often work with other entities to assist with preparing scenario work.

Appendix 4: List of Aotearoa New Zealand national scenarios (as at 4 November 2021)

Table 1: List of Aotearoa New Zealand national scenarios (as at 4 November 2021)

For a searchable version of these tables, please see here.

Entity	Scenario title #	Date published	Type*	Subject*	Breadth*	Time horizon	Climate-related*	Explicit/ implicit climate	Data/guidance (entity)*
BusinessNZ Energy Council	New Zealand Energy Scenarios	May 2021	Energy	Energy	Wide	42 years (2018–2060) (p. 17)	Yes	Explicit	Yes (EECA, BEC and Paul Scherrer Institute)
BusinessNZ Energy Council	New Zealand Energy Scenarios – Navigating our flight path to 2060	n.d.	Energy	Fuel	Wide	45 years (2015 –2060) (p. 6)	Yes	Explicit	No
Deloitte	COVID-19 scenario analysis – Auckland	Jun 2020	Health	COVID-19	Narrow	10 years (2020–2030) (p. 5)	No	No	No
Deloitte	COVID-19 scenario analysis – Waikato	Jun 2020	Health	COVID-19	Narrow	10 years (2020–2030) (p. 5)	No	No	No
Deloitte	COVID-19 scenario analysis – Bay of Plenty	Jun 2020	Health	COVID-19	Narrow	10 years (2020–2030) (p. 5)	No	No	No
Deloitte	COVID-19 scenario analysis – Wellington	Jun 2020	Health	COVID-19	Narrow	10 years (2020–2030) (p. 5)	No	No	No
Deloitte	COVID-19 scenario analysis – Canterbury	Jun 2020	Health	COVID-19	Narrow	10 years (2020–2030) (p. 5)	No	No	No
Deloitte	COVID-19 scenario analysis – Otago	Jun 2020	Health	COVID-19	Narrow	10 years (2020–2030) (p. 5)	No	No	No
Department of Conservation	Integrated population model of Antipodean albatross for simulating management scenarios	Jun 2021	Biodiversity	Conservation	Narrow	30 Years (2021–2051) (p. 16)	No	No	Yes (Dragonfly)
Department of Internal Affairs	Gaming machine mystery shopper exercise results	Jun 2017	Economics	Social welfare	Narrow	n.k.	No	No	No
Department of Internal Affairs	Government Inquiry into The Auckland Fuel Supply Disruption	Aug 2019	Infrastructure	Fuel	Narrow	21 years (2019–2040) (p. 19)	No	No	No
Department of Labour	Economic Impacts of Immigration: Scenarios Using a Computable General Equilibrium Model of the New Zealand Economy	2009	Economics	Immigration	Medium	10 years (2011–2021) (p. 25)	No	No	Yes (International Migration, Settlement and Employment Dynamics)
Inland Revenue Department	Accounting for the wage subsidy	Sep 2021	Health	COVID-19	Medium	n.k.	No	No	No
Manaaki Whenua Landcare Research New Zealand	4 Future Scenarios for New Zealand	2007	Economics	Identity	Wide	48 years (2055) (p. 17)	Yes	Explicit	No

Entity	Scenario title #	Date published	Type*	Subject*	Breadth*	Time horizon	Climate-related*	Explicit/ implicit climate	Data/guidance (entity)*
Manaaki Whenua Landcare Research New Zealand	Evaluating the (non-market) impacts of wilding conifers on cultural values	Oct 2015	Biodiversity	Conservation	Narrow	20 years (2015–2035)	No	No	Yes (Landcare Manaaki Whenua and Scion)
Māori Futures Collective	Kia Puta Ki Rangiātea Reaching New Futures	n.d.	Economics	Māori futures	Medium	n.k.	Yes	Implicit	No
Ministry for Children	Engaging all New Zealanders Survey Report****	2019	Economics	Social welfare	Narrow	n.k.	No	No	Yes (Nielsen)
Ministry for Children	Evening The Odds – Modelling Wellbeing To Drive Better Outcomes****	Nov 2017	Economics	Social welfare	Narrow	10 years (2016–2026) (p. 12)	No	No	No
Ministry for Children	Evaluation of the family violence Integrated Safety Response pilot	Sep 2019	Economics	Social welfare	Narrow	10 years (2019–2029) (p. 87)	No	No	No
Ministry for Children	Information sharing scenarios****	n.d.	Economics	Social welfare	Narrow	n.k.	No	No	No
Ministry for Children	Lifetime Wellbeing Model For New Zealand Children****	n.d.	Economics	Social welfare	Narrow	10 years (2021–2031) (p. 8)	No	No	No
Ministry for Children	Babies Entering Oranga Tamariki Care****	n.d.	Economics	Social welfare	Narrow	n.k.	No	No	No
Ministry for Primary Industries	Nelson/Marlborough Forest Industry and Wood Availability Forecasts	2006	Economics	Forestry	Narrow	35 years (2005–2040) (p. 19)	No	No	Yes (NEFD)
Ministry for Primary Industries	Effectiveness of stream fencing to reduce E. coli inputs to streams from pastoral land use	2016	Infrastructure	Water quality	Medium	9 years (2016–2025) (p. 10)	No	No	Yes (NIWA)
Ministry for Primary Industries	Flood Risk under Climate Change	Mar 2010	Climate Change	Weather	Medium	500 years (2010–2510) (p. 44)	Yes	Explicit	Yes (NIWA)
Ministry for Primary Industries	Study on global voluntary carbon market opportunities for New Zealand agriculture and forestry	Apr 2011	Climate Change	Climate Change	Medium	n.k.	Yes	Explicit	Yes (The Karo Group)

Entity	Scenario title #	Date published	Type*	Subject*	Breadth*	Time horizon	Climate-related*	Explicit/ implicit climate	Data/guidance (entity)*
Ministry for Primary Industries	Future proofing plantation forests from pests	Apr 2011	Biodiversity	Conservation	Wide	69 years (2011–2080) (p. 15)	Yes	Explicit	Yes (Scion)
Ministry for Primary Industries	Scenarios of Regional Drought under Climate Change	Jun 2011	Climate Change	Weather	Wide	79 years (2011–2090) (p. 15)	Yes	Explicit	Yes (NIWA)
Ministry for Primary Industries	Foot-and-Mouth Disease Economic Impact Assessment	Aug 2014	Economics	Agriculture	Narrow	8 years (2012–2020) (p. 27)	No	No	No
Ministry for Primary Industries	Sale of Raw Milk to Consumers	Jun 2015	Economics	Agriculture	Narrow	n.k.	No	No	No
Ministry for Primary Industries	Modelling Agriculture's Contribution to New Zealand's Contribution to the Post-2020 Agreement	Feb 2016	Climate Change	Agriculture	Medium	14 years (2016 – 2030) (p. 14)	Yes	Explicit	Yes (New Zealand Agricultural Greenhouse Gas Research Centre)
Ministry for Primary Industries	Urban Development and the NPS-FM: Lucas Creek Catchment Case Study	Oct 2016	Infrastructure	Water quality	Narrow	50 years (2010–2060) (p. 7)	No	No	Yes (NIWA)
Ministry for Primary Industries	Assessment of the administration costs and barriers of scenarios to mitigate biological emissions from agriculture	May 2018	Climate Change	Agriculture	Medium	5 years (2018–2023) (p. 22)	Yes	Explicit	Yes (Beca Limited)
Ministry for Primary Industries	Population dynamic modelling of the Māui dolphin based on genotype capture-recapture with projections involving bycatch and disease risk	Jun 2019	Biodiversity	Conservation	Narrow	100 years (2019–2119) (p. 16)	No	No	No
Ministry for Primary Industries	Population effects of New Zealand sea lion mortality scenarios relating to the southern arrow squid fishery at the Auckland Islands	Jun 2019	Biodiversity	Conservation	Narrow	20 years (2020–2040) (p. 18)	No	No	No
Ministry for Primary Industries	Modelling of agricultural climate change mitigation policy scenarios	Aug 2019	Climate Change	Agriculture	Medium	n.k.	Yes	Explicit	Yes (Manaaki Whenua – Landcare Research)

Entity	Scenario title #	Date published	Type*	Subject*	Breadth*	Time horizon	Climate-related*	Explicit/ implicit climate	Data/guidance (entity)*
Ministry for Primary Industries	Growth of microorganisms in raw milk: Evaluating the effect of chiller failure	Feb 2020	Economics	Food and Fibre	Narrow	n.k.	No	No	Yes (ESR)
Ministry for Primary Industries	Sheep and Beef Scenario map*****	n.d.	Economics	Agriculture	Narrow	12 months (p. 1)	No	No	No
Ministry for Primary Industries	Deer finishing scenario map*****	n.d.	Economics	Agriculture	Narrow	12 months (p. 1)	No	No	No
Ministry for Primary Industries	Dairy – on farm scenario map*****	n.d.	Economics	Agriculture	Narrow	12 months (p. 1)	No	No	No
Ministry for Primary Industries	Dairy – off farm scenario map*****	n.d.	Economics	Agriculture	Narrow	12 months (p. 1)	No	No	No
Ministry for Primary Industries	Models, scenarios and uncertainties – Climate change****	n.d.	Climate Change	Climate Change	Wide	100 years (2000–2100) (p. 2)	Yes	Explicit	No
Ministry for Primary Industries**	Scenarios of Storminess and Regional Wind Extremes Under Climate Change	2011	Climate Change	Weather	Medium	2046–2065, 2081–2100 (p. 9)	Yes	Explicit	Yes (NIWA)
Ministry for Primary Industries**	Adapting to climate change: Information for the New Zealand food system	n.d.	Climate Change	Food and Fibre	Medium	50, 100 years (p. 11)	Yes	Explicit	Yes (ESR, Massey University, NIWA, AgResearch)
Ministry for the Environment	Linkages Between Climate Change and Biodiversity in New Zealand	Sep 2001	Climate Change	Biodiversity	Medium	99 years (2001–2100) (p. 9)	Yes	Explicit	Yes (Manaaki Whenua – Landcare Research)
Ministry for the Environment	Five Further ABARE Scenarios	Feb 2002	Climate Change	Economics	Narrow	8 years (2002–2010) (p. 3)	Yes	Explicit	Yes (ABARE)
Ministry for the Environment	Electricity Emission Factor Review	Aug 2004	Climate Change	Adaptation	Medium	8 years (2004–2012) (p. 2)	Yes	Implicit	Yes (Concept Consulting group)
Ministry for the Environment	Changes in drought risk with climate change	May 2005	Climate Change	Weather	Wide	75 years (2005–2080) (p. 7)	Yes	Explicit	Yes (NIWA)
Ministry for the Environment	Scoping Report For An Environmental Assessment Of The NZ Emissions Trading Scheme And Closely Related Measures	Apr 2008	Climate Change	Adaptation	Medium	17 years (2008–2025) (p. 26)	Yes	Explicit	Yes (Cawthron)

Entity	Scenario title #	Date published	Type*	Subject*	Breadth*	Time horizon	Climate-related*	Explicit/ implicit climate	Data/guidance (entity)*
Ministry for the Environment	Climate change effects and impacts assessment	May 2008	Climate Change	Climate-related risk	Wide	91 years (2008–2099) (p. 11)	Yes	Explicit	Yes (NIWA, MWH NZ and Earthwise consulting Ltd)
Ministry for the Environment	Emerging technologies and research for New Zealand's economic development and associated risk management	Jun 2011	Economics	Risk Management	Wide	10 years (2011–2021) (p. 23)	Yes	Implicit	Yes (CIE)
Ministry for the Environment	General Equilibrium Analysis of Options for Meeting New Zealand's International Emissions Obligations	Oct 2011	Climate Change	Mitigation	Wide	14 years (2011–2025) (p. 2)	Yes	Explicit	Yes (Infometrics)
Ministry for the Environment	Potential climate change impacts on myrtle rust risk in Aotearoa New Zealand	Nov 2011	Climate Change	Agriculture	Narrow	99 years (2011–2110) (pp. 8–9)	Yes	Explicit	Yes (The New Zealand Institute for Plant and Food Research)
Ministry for the Environment	Environmental Assessment of Farm Mitigation Scenarios in Southland	Jun 2013	Economics	Agriculture	Narrow	25 years (2012–2037) (p. 7)	No	No	Yes (Aqualinc Research Ltd)
Ministry for the Environment	Overview of studies assessing the potential impacts of scenarios for setting water quality objectives	Oct 2013	Infrastructure	Water quality	Narrow	24 years (2013–2037) (p. 11)	No	No	No
Ministry for the Environment	Modelling the impact of freshwater mitigation scenarios: results for the Ruamāhanga Catchment	Jun 2019	Infrastructure	Water quality	Narrow	n.k.	No	No	Yes (Manaaki Whenua - Landcare Research)
Ministry for the Environment	Sediment Attributes and Urban Development	Sep 2019	Infrastructure	Urban Development	Medium	n.k.	Yes	Implicit	Yes (Morphum Environmental Ltd)
Ministry for the Environment	The economic effects of water quality proposals	May 2020	Infrastructure	Water quality	Wide	30 years (2020–2050) (p. 4)	Yes	Implicit	Yes (NZIER)
Ministry for the Environment	Coastal Hazards and Climate Change	Dec 2017	Climate Change	Weather	Medium	100, 130 years (2117, 2147) (p. 97)	Yes	Explicit	Yes (NIWA)
Ministry for the Environment	Climate Change Projections for New Zealand	Sep 2018	Climate Change	Weather	Wide	34, 74, 84 years (2040, 2090, 2100) (p. 13)	Yes	Explicit	Yes (NIWA)

Entity	Scenario title #	Date published	Type*	Subject*	Breadth*	Time horizon	Climate-related*	Explicit/ implicit climate	Data/guidance (entity)*
Ministry of Business, Innovation and Employment	Changing Gear	2009	Energy	Fuel	Wide	31 years (2009–2040) (p. 1)	Yes	Explicit	No
Ministry of Business, Innovation and Employment	Hydrocarbon Harvest	2009	Energy	Fuel	Medium	11 years (2009–2020) (p. 1)	Yes	Explicit	No
Ministry of Business, Innovation and Employment	New Zealand's Energy Outlook 2010	2010	Energy	Energy	Wide	20 years (2010–2030) (p. 1)	Yes	Explicit	No
Ministry of Business, Innovation and Employment	New Zealand Research On The Economic Impacts Of Immigration 2005–2010: Synthesis And Research Agenda	2010	Economics	Immigration	Medium	6 years (2010–2016) (p. 32)	No	No	Yes (International Migration, Settlement and Employment Dynamics)
Ministry of Business, Innovation and Employment	New Zealand's Energy Outlook 2011	2011	Energy	Energy	Wide	20 years (2010–2030) (p. 1)	Yes	Explicit	No
Ministry of Business, Innovation and Employment	Electricity Demand and Generation Scenarios (EDGS)	2019	Energy	Electricity	Narrow	31 years (2050) (p. 3)	Yes	Explicit	No
Ministry of Business, Innovation and Employment	Alternative Liquid Fuels: Global Availability, Economics and Environmental Impacts	Mar 2007	Energy	Fuel	Wide	3, 23, 43 years (2007–2010, 2030, 2050) (p. 30)	Yes	Explicit	No
Ministry of Business, Innovation and Employment	The Economic Impact of Immigration on Housing in New Zealand 1991–2016	Mar 2008	Infrastructure	Housing	Wide	10 years (2006–2016) (p. 17)	No	No	Yes (Berl economics)
Ministry of Business, Innovation and Employment	Assessment of the future costs and Performance of Solar Photovoltaic Technologies in New Zealand	Apr 2009	Energy	Electricity	Narrow	40 years (2000–2040) (p. 10)	Yes	Implicit	Yes (IT Power Australia)
Ministry of Business, Innovation and Employment	The Impact of Immigration on the Labour Market Outcomes of New Zealanders	Apr 2009	Economics	Employment	Narrow	n.k.	No	No	Yes (International Migration, Settlement and Employment Dynamics)
Ministry of Business, Innovation and Employment	Validation of Electricity Modelling for Energy Outlook	Jul 2010	Energy	Electricity	Medium	25 years (2010–2035) (p. 6)	Yes	Implicit	Yes (Energy Link Ltd)

Entity	Scenario title #	Date published	Type*	Subject*	Breadth*	Time horizon	Climate-related*	Explicit/ implicit climate	Data/guidance (entity)*
Ministry of Business, Innovation and Employment	Auckland's Competitive Advantage And Distinctiveness	Apr 2011	Economics	Identity	Narrow	24 years (2007–2031) (p. 138)	No	No	Yes (M.E Ltd)
Ministry of Business, Innovation and Employment	RAP Contingency Options	Oct 2011	Energy	Fuel	Narrow	n.k.	No	No	Yes (Hale and Twomey Ltd)
Ministry of Business, Innovation and Employment	Regional Impacts Of A New Oil Or Gas Field	Mar 2012	Energy	Fuel	Medium	24 years (2012–2046) (p. 7)	No	No	Yes (Berl economics)
Ministry of Business, Innovation and Employment	Information for NZIER Report on Oil Security	May 2012	Energy	Fuel	Narrow	n.k.	No	No	Yes (Hale and Twomey Ltd)
Ministry of Business, Innovation and Employment	New Zealand Oil Security Assessment Update	Jun 2012	Energy	Fuel	Medium	n.k.	Yes	Explicit	Yes (NZIER)
Ministry of Business, Innovation and Employment	Economic contribution and potential of New Zealand's oil and gas industry	Aug 2012	Energy	Fuel	Medium	37 years (2013–2050) (p. 11)	No	No	No
Ministry of Business, Innovation and Employment	Oil Resource Play – Development Scenario Models	Oct 2012	Energy	Fuel	Medium	8 years (2012–2020) (p. 10)	No	No	Yes (Michael Adams Reservoir Engineering)
Ministry of Business, Innovation and Employment	East Coast oil and gas development study	Nov 2012	Energy	Fuel	Narrow	61 years (2012–2073) (p. 9)	No	No	Yes (NZIER)
Ministry of Business, Innovation and Employment	New Zealand's Tourism Sector Outlook Forecasts For 2012 – 2018	Nov 2012	Economics	Tourism	Medium	6 years (2012–2018) (p. 1)	No	No	No
Ministry of Business, Innovation and Employment	National Science Challenges – Potential Challenges for Consideration by Peak Panel – Agriculture and the Bioeconomy Including Resource Management	Feb 2013	Economics	Agriculture	Medium	n.k.	Yes	Explicit	No
Ministry of Business, Innovation and Employment	National Science Challenges – Potential Challenges for Consideration by Peak Panel – Economic Growth including Energy, Waste Management and Transport	Feb 2013	Economics	Innovation	Medium	n.k.	Yes	Explicit	No

Entity	Scenario title #	Date published	Type*	Subject*	Breadth*	Time horizon	Climate-related*	Explicit/ implicit climate	Data/guidance (entity)*
Ministry of Business, Innovation and Employment	New Zealand tourism sector outlook	Aug 2013	Economics	Tourism	Wide	6 years (2013–2019) (p. 1)	No	No	No
Ministry of Business, Innovation and Employment	Gas Disruption Study	Jan 2014	Energy	Fuel	Narrow	n.k.	Yes	Implicit	Yes (Worley Parsons)
Ministry of Business, Innovation and Employment	Coal Prices in New Zealand Markets: 2013 Update	Jan 2014	Energy	Fuel	Medium	23 years (2012–2035) (p. 5)	No	No	Yes (Covec)
Ministry of Business, Innovation and Employment	What Does Asia Want For Dinner?	Jul 2014	Economics	Food and Fibre	Narrow	28 years (1997–2025) (p. 8)	No	No	Yes (Coriolis)
Ministry of Business, Innovation and Employment	New Zealand Tourism Sector Outlook Forecasts For 2014 – 2020	Sep 2014	Economics	Tourism	Medium	6 years (2014–2020) (p. 1)	No	No	No
Ministry of Business, Innovation and Employment	New Zealand Tourism Forecasts 2015 – 2021	May 2015	Economics	Tourism	Wide	6 years (2015–2021) (p. 9)	No	No	No
Ministry of Business, Innovation and Employment	Weather Permitting: Review of open access to weather data in New Zealand	Dec 2015	Biodiversity	Environment	Wide	n.k.	Yes	Implicit	Yes (PwC and Experian)
Ministry of Business, Innovation and Employment	Electricity demand and generation scenarios	Aug 2016	Energy	Electricity	Wide	34 years (2016–2050) (p. 4)	Yes	Implicit	No
Ministry of Business, Innovation and Employment	New Zealand Petroleum Supply Security 2017 Update	Sep 2017	Energy	Fuel	Medium	n.k.	No	No	Yes (Hale and Twomey Ltd)
Ministry of Business, Innovation and Employment	Economic Evaluation of Disclosure of Origin Requirements	Apr 2018	Economics	Identity	Narrow	30 years (2018–2048) (p. 29)	No	No	Yes (Castalia strategic advisors)
Ministry of Business, Innovation and Employment	Minimum Wage Review 2018	Nov 2018	Economics	Employment	Narrow	n.k.	No	No	No
Ministry of Business, Innovation and Employment	Economics of Fuel Supply Disruptions and Mitigations	May 2019	Energy	Fuel	Narrow	n.k.	Yes	Implicit	Yes (M.E Ltd)

Entity	Scenario title #	Date published	Type*	Subject*	Breadth*	Time horizon	Climate-related*	Explicit/ implicit climate	Data/guidance (entity)*
Ministry of Business, Innovation and Employment	Electricity demand and generation scenarios: Scenario and results summary	Jul 2019	Energy	Electricity	Wide	32 years (2018–2050) (p. 8)	Yes	Explicit	No
Ministry of Business, Innovation and Employment	Medium to long-term employment projections: Looking ahead to 2028	Aug 2019	Economics	Employment	Medium	10 years (2018–2028) (p. 4)	No	No	No
Ministry of Business, Innovation and Employment	Minimum Wage Review 2019	Dec 2019	Economics	Employment	Narrow	n.k.	No	No	No
Ministry of Business, Innovation and Employment	Economics of Utility-Scale Solar in Aotearoa New Zealand	May 2020	Economics	Energy	Narrow	40 years (2020–2060) (p. 1)	Yes	Implicit	Yes (Allan Miller consulting)
Ministry of Business, Innovation and Employment	Energy in New Zealand 2020	Aug 2020	Energy	Energy	Wide	30 years (2020–2050) (p. 26)	Yes	Explicit	No
Ministry of Business, Innovation and Employment	Minimum Wage Review 2020	Dec 2020	Economics	Employment	Narrow	4 years (2020–2024) (p. 30)	No	No	No
Ministry of Business, Innovation and Employment	Fuel Security and Fuel Stockholding Costs and Benefits 2020	Dec 2020	Economics	Energy	Medium	n.k.	Yes	Implicit	Yes (Hale and Twomey Ltd)
Ministry of Business, Innovation and Employment	National Construction Pipeline Report 2020	Dec 2020	Infrastructure	Infrastructure	Narrow	5 years (2020–2025) (p. 11)	No	No	No
Ministry of Business, Innovation and Employment	Review of FMA Funding Scenarios	Aug 2021	Economics	Economics	Wide	4 years (2021–2025) (p. 5)	Yes	Implicit	No
Ministry of Business, Innovation and Employment	New Zealand's Energy Outlook Electricity Insight	n.d.	Energy	Electricity	Wide	60 years (1990–2040) (p. 7)	Yes	Explicit	No
Ministry of Business, Innovation and Employment	Managing buildings after an emergency event	n.d.	Infrastructure	Urban Development	Medium	n.k.	No	No	No
Ministry of Health	Guide to PRIMHD Activity Collection and Use	2021	Health	Health	Narrow	n.k.	No	No	No

Entity	Scenario title #	Date published	Type*	Subject*	Breadth*	Time horizon	Climate-related*	Explicit/ implicit climate	Data/guidance (entity)*
Ministry of Health	Diabetes Surveillance Population-based estimates and projections for New Zealand, 2001 – 2011	Sep 2007	Health	Health	Wide	4 years (2007–2011) (p. 13)	No	No	No
Ministry of Health	Screening level Risk Characterization or Mercury Exposure from compact lamps	Dec 2008	Health	Health	Narrow	n.k.	No	No	Yes (Toxicology Excellence for Risk Assessment)
Ministry of Health	Potential Health Impacts from the COVID-19 Pandemic for New Zealand if Eradication Fails	Mar 2020	Health	COVID-19	Narrow	9 months (p. 6)	No	No	Yes (Health, Environment & Infection Research Unit (HEIRU), Burden of Disease Epidemiology, Equity and Cost-Effectiveness Programme (BODE³) and University of Otago Wellington)
Ministry of Health	Potential Worse Case Health Impacts from the COVID-19 Pandemic for New Zealand if Eradication Fails	Mar 2020	Health	COVID-19	Narrow	1 year (2020–2021) (p. 2)	No	No	Yes (Health, Environment & Infection Research Unit (HEIRU), Burden of Disease Epidemiology, Equity and Cost-Effectiveness Programme (BODE³) and University of Otago Wellington)
Ministry of Housing and Urban Development	New Zealand Housing Report 2009/2010	Sep 2010	Infrastructure	Housing	Wide	25 years (2006–2031) (p. 22)	No	No	No
Ministry of Housing and Urban Development	Urban Development Authorities	Feb 2017	Infrastructure	Urban Development	Medium	n.k.	No	No	No
Ministry of Housing and Urban Development	Healthy Homes Standards	Sep 2018	Infrastructure	Housing	Medium	n.k.	Yes	Implicit	No
Ministry of Housing and Urban Development	Public Housing Funding Review 2019	Mar 2020	Infrastructure	Housing	Medium	25 years (2020–2045) (p. 35)	No	No	No

Entity	Scenario title #	Date published	Type*	Subject*	Breadth*	Time horizon	Climate-related*	Explicit/ implicit climate	Data/guidance (entity)*
Ministry of Housing and Urban Development	Infrastructure fund	Apr 2021	Infrastructure	Infrastructure	Wide	n.k.	Yes	Implicit	No
Ministry of Housing and Urban Development/ Ministry of Business, Innovation and Employment	Cost benefit analysis for a minimum standard for rental housing	Nov 2014	Infrastructure	Housing	Medium	20 years (2014–2034) (p. 10)	No	No	Yes (Sapere research group)
Ministry of Housing and Urban Development/ Ministry for the Environment	Cost-benefit analysis of proposed Medium Density Residential Standards	2021	Infrastructure	Housing	Medium	5 years (2021–2026) (p. 68)	No	No	Yes (PWC and Sense Partners)
Ministry of Justice	The Use of Imprisonment in New Zealand	Jun 1998	Security	Justice	Medium	n.k.	No	No	No
Ministry of Justice	Criminal Justice Forecast 2010-2020	Sep 2010	Security	Justice	Medium	10 years (2010–2020) (p. 1)	No	No	No
Ministry of Justice	Justice Sector Forecast 2011 – 2021	Sep 2011	Security	Justice	Wide	10 years (2011–2021) (p. 1)	No	No	No
Ministry of Justice	Justice Sector Forecast 2012 – 2022	Sep 2012	Security	Justice	Wide	10 years (2012–2022) (p. 1)	No	No	No
Ministry of Social Development	Implications of Labour Market Change for Retirement Income Policy	2001	Economics	Social welfare	Wide	50 years (2001–2051) (p. 10)	No	No	No
Ministry of Social Development	Business of Ageing Update: Final Report 2015	2015	Economics	Social welfare	Wide	55 years (2006–2061) (p. 37)	No	No	No
Ministry of Social Development	Estimating time on benefit and the associated cost	Oct 2010	Economics	Social welfare	Narrow	10 years (2009–2019) (p. 9)	No	No	Yes (Centre for Social Research and Evaluation)
Ministry of Social Development	Actuarial valuation of the Benefit System for Working-age Adults	Jun 2011	Economics	Social welfare	Narrow	n.k.	No	No	Yes (Taylor Fry Pty Ltd)
Ministry of Social Development	Baseline valuation of the social housing system	Jun 2015	Economics	Social welfare	Wide	n.k.	No	No	Yes (Taylor Fry Pty Ltd)
Ministry of Social Development	Report of the Enhancing Intake Decision-Making Project	Oct 2017	Economics	Social welfare	Narrow	n.k.	No	No	No

Entity	Scenario title #	Date published	Type*	Subject*	Breadth*	Time horizon	Climate-related*	Explicit/ implicit climate	Data/guidance (entity)*
Ministry of Social Development	Designing a wage supplement approach as a possible alternative to Minimum Wage Exemption permits	Sep 2018	Economics	Social welfare	Narrow	n.k.	No	No	No
Ministry of Transport	Air New Zealand – Singapore Airlines Strategic Alliance Analysis	Dec 2013	Infrastructure	Transport	Narrow	15 years (2013–2028) (p. 6)	No	No	Yes (Seabury APG Airline Planning)
Ministry of Transport	Regulation 2025 Scenarios summary and key findings	Aug 2016	Infrastructure	Transport	Wide	10 years (2025–2035) (p. 5)	Yes	Explicit	No
Ministry of Transport	Transport Outlook: Future State	Nov 2017	Infrastructure	Transport	Wide	25 years (2017–2042) (p. 7)	Yes	Explicit	No
Ministry of Transport	Future Demand	2014	Infrastructure	Transport	Medium	28 years (2042) (p. 1)	Yes	Implicit	No
Motu	Land-use modelling in New Zealand: current practice and future needs	Nov 2018	Infrastructure	Land use	Medium	n.k.	Yes	Explicit	No
Motu	Potential Social Impacts of Land-use Changes, 2020 – 2050	Mar 2019	Infrastructure	Land use	Wide	30 years (2020–2050) (p. 1)	Yes	Explicit	No
Motu	Climate And Land-Use Change: A Synthesis Of Lurnz Modelling	May 2019	Climate Change	Land use	Medium	80 years (2019–2099) (p. 4)	Yes	Explicit	No
National Infrastructure Unit	The Thirty Year New Zealand Infrastructure Plan 2015	Aug 2015	Infrastructure	Infrastructure	Medium	30 years (2015–2045) (p. 1)	Yes	Implicit	No
NIWA	Waterwise: irrigation, agriculture, and sustainability	2008	Biodiversity	Agriculture	Medium	4 years (2000–2004) (p. 2)	Yes	Implicit	No
NIWA	CHES For The Grey River Catchment	2016	Biodiversity	Water quality	Narrow	n.k.	Yes	Explicit	No
NIWA	Transitioning to a Hydrogen Economy – Identification of Preferred Hydrogen chains	Nov 2007	Economics	Energy	Medium	43 years (2007–2050) (p. 5)	Yes	Explicit	Yes (CRL energy)

Entity	Scenario title #	Date published	Type*	Subject*	Breadth*	Time horizon	Climate-related*	Explicit/ implicit climate	Data/guidance (entity)*
NIWA	Bioenergy Options for New Zealand – Pathways Analysis	Aug 2008	Energy	Fuel	Medium	42 years (2008–2050) (p. 17)	Yes	Explicit	Yes (Scion)
NIWA	Transitioning to Hydrogen Economy – Hydrogen Energy Options: Scenarios, Sensitivities and Pathways	Nov 2008	Economics	Energy	Medium	42 years (2008–2050) (p. 3)	Yes	Explicit	Yes (CRL energy)
NIWA	Bioenergy Options for New Zealand – Research And Development Strategy	Feb 2009	Energy	Fuel	Medium	41 years (2009–2050) (p. 6)	Yes	Explicit	Yes (Scion)
NIWA	Bioenergy Options For New Zealand Analysis Of Large-Scale Bioenergy From Forestry	Apr 2009	Energy	Fuel	Medium	41 years (2009–2050) (p. 29)	Yes	Explicit	Yes (Scion)
NIWA	Transitioning to a Hydrogen Economy – Hydrogen Research Strategy for Facilitating the Uptake of Hydrogen as an Energy Carrier in New Zealand	May 2009	Economics	Energy	Medium	41 years (2009–2050) (p. 3)	Yes	Explicit	Yes (CRL energy)
NIWA	Modelling Future Water Demand for Wellington using Multiple Climate Change Scenarios	Jun 2011	Climate Change	Infrastructure	Narrow	79 years (2011–2090) (p. 15)	Yes	Explicit	Yes (MWH)
NIWA	Mark-Recapture Sample Size Effects on Demographic Rate Estimation of White-capped Albatross	Nov 2015	Biodiversity	Conservation	Narrow	10 years (2015–2025) (p. 10)	No	No	Yes (NIWA)
NIWA	Visions for nature and nature's contributions to people for the 21st century	Feb 2018	Biodiversity	Environment	Wide	n.k.	Yes	Explicit	Yes (IPBES)
New Zealand Treasury	Manual for the Long Term Fiscal Model	Mar 2000	Economics	Economics	Narrow	n.k.	No	No	No
New Zealand Treasury	Long-term fiscal projections and their relationship with the intertemporal budget constraint	Mar 2002	Economics	Economics	Medium	50 years (2001–2051) (p. 24)	No	No	No

Entity	Scenario title #	Date published	Type*	Subject*	Breadth*	Time horizon	Climate-related*	Explicit/ implicit climate	Data/guidance (entity)*
New Zealand Treasury	Population Ageing In New Zealand: Implications for Living Standards and the Optimal Rate of Saving	Jun 2003	Economics	Population	Wide	48 years (2003–2051) (p. 8)	No	No	No
New Zealand Treasury	Challenges and Choices: Modelling New Zealand's Long-term Fiscal Position	Jan 2010	Economics	Economics	Wide	40 years (2010–2050) (p. 3)	Yes	Implicit	No
New Zealand Treasury	Save now, prosper later	Mar 2011	Economics	Economics	Medium	14 years (2011–2025) (p. 9)	No	No	Yes (NZIER)
New Zealand Treasury	Modelling Shocks to New Zealand's Fiscal Position	Jun 2011	Economics	Economics	Medium	19 years (2006–2025) (p. 18)	No	No	No
New Zealand Treasury	Economy-Wide Impacts of Industry Policy	Sep 2012	Economics	Economics	Medium	n.k.	Yes	Implicit	Yes (NZIER)
New Zealand Treasury	Intergenerational Smoothing of New Zealand's Future Fiscal Costs	Jul 2013	Economics	Economics	Medium	45 years (2015–2060) (p. 11)	No	No	No
New Zealand Treasury	Fiscal Policy Scenarios to 2030	Oct 2016	Economics	Economics	Medium	15 years (2015–2030) (p. 3)	No	No	No
New Zealand Treasury	Using IDI Data to Estimate Fiscal Impacts of Better Social Sector Performance	Nov 2016	Economics	Economics	Narrow	45 years (2015–2060) (p. 25)	No	No	Yes (Statistics New Zealand)
New Zealand Treasury	Fiscal Policy Scenarios to 2030	Mar 2017	Economics	Economics	Medium	3 years (2017–2020) (p. 3)	No	No	No
New Zealand Treasury	Overseas Investment in Forestry****	Jul 2018	Economics	Forestry	Narrow	n.k.	No	No	No
New Zealand Treasury	Golden Years – Understanding the New Zealand Superannuation Fund	Jun 2021	Economics	Economics	Medium	50 years (2015–2065) (p. 25)	No	No	No
New Zealand Treasury	Shocks and Scenarios Analysis Using a Stochastic Neoclassical Growth Model	Sep 2021	Economics	Economics	Wide	40 years (2021–2061) (p. 3)	Yes	Explicit	No
New Zealand Treasury	National Infrastructure Unit	Dec 2017	Infrastructure	Infrastructure	Narrow	50 years (2067) (p. 4)	Yes	Explicit	Yes (StatsNZ, MfE, etc)

Entity	Scenario title #	Date published	Type*	Subject*	Breadth*	Time horizon	Climate-related*	Explicit/ implicit climate	Data/guidance (entity)*
New Zealand Transport Agency	Climate Change Effects on the Land Transport Network Volume Two: Approach to Risk Management	2009	Climate Change	Infrastructure	Medium	10, 50, 100 years (2019, 2059, 2109) (p. 7)	Yes	Explicit	Yes (NIWA)
Parliamentary Commissioner for the Environment	Future Currents	2005	Energy	Electricity	Narrow	45 years (2050) (p. 11)	Yes	Explicit	No
Parliamentary Commissioner for the Environment	Healthy, Wealthy and Wise	2006	Health	Electricity	Narrow	45 years (2050) (p. 10)	No	No	No
Parliamentary Commissioner for the Environment	Land Use and Farming Intensity: For 1996, 2008 and 2020	Nov 2013	Economics	Land use	Medium	7 years (2013–2020) (p. 7)	Yes	Explicit	Yes (Motu)
Parliamentary Commissioner for the Environment	Preparing New Zealand for rising seas: Certainty and Uncertainty	Nov 2015	Climate Change	Climate-related risk	Wide	85 years (2015–2100) (p. 75)	Yes	Explicit	No
Public Service Commission	Cost-Benefit Analysis of the Mainstream Supported Employment Programme 1998	1998	Economics	Employment	Wide	6 years (economic analysis)	No	No	No
Public Service Commission	Strengthening Strategic Management: Summary of Fiscal Modelling Work	n.d.	Economics	Economics	Wide	55 years (1996–2051) (demographic estimates)	No	No	Yes (NZIER)
Public Service Commission	Getting Better at Managing for Shared Outcomes	n.d.	Economics	Management	Medium	n.k.	No	No	No
Reserve Bank of New Zealand	Economic outlook****	Aug 2020	Economics	Economics	Narrow	3 years (2020–2023) (p. 10)	No	No	No
Sports New Zealand	Scenarios report – The Future Of Play, Active Recreation And Sport In New Zealand	Nov 2020	Education	Sport	Narrow	20 years (2020–2040) (p. 3)	Yes	Implicit	No
Statistics New Zealand	Auckland's future population under alternative migration scenarios	Jun 2017	Security	Population	Medium	27 years (2016–2043) (p. 7)	No	No	No
Statistics New Zealand	Analytical retrospective superlative index based on New Zealand's CPI 2017	Nov 2018	Economics	Economics	Narrow	15 years (2002–2017) (p. 4)	No	No	No

Entity	Scenario title #	Date published	Type*	Subject*	Breadth*	Time horizon	Climate-related*	Explicit/ implicit climate	Data/guidance (entity)*
Statistics New Zealand	National population projections: 2020(base) – 2073	Dec 2020	Security	Population	Wide	53 years (2020–2073) (Title)	No	No	No
Statistics New Zealand	Analytical retrospective superlative index based on New Zealand's CPI: 2020	Apr 2021	Economics	Economics	Narrow	18 years (2002–2020) (Results)	No	No	No
Te Puni Kōkiri	Ngā Kaihanga Hou, For Māori Future Makers	2007	Economics	Māori Futures	Narrow	23 years (2030) (p. 16)	No	No	No
Te Puni Kōkiri	Māori, Science and Innovation – scenarios of potential, opportunity and value	Dec 2010	Economics	Māori Futures	Wide	51 years (2010–2061) (p. 4)	Yes	Implicit	Yes (Berl economics)
The Aotearoa Circle	Climate-related risk scenarios for the 2050s: Exploring plausible futures for aquaculture and fisheries in New Zealand	2020	Climate Change	Climate-related risk	Medium	30 years (2050) (p. 12)	Yes	Explicit	Yes (KPMG)
The Royal Society of New Zealand	Climate change implications for New Zealand	Apr 2016	Climate Change	Climate-related risk	Wide	85 years (2015–2100) (p. 22)	Yes	Explicit	No
Tourism New Zealand	Tourism New Zealand Scenario Models****	Dec 2020	Economics	Tourism	Wide	4 years (2020–2024) (p. 2)	No	No	No
Victoria University	2050 Scenarios for the future ofNew Zealand tourism	2014	Economics	Tourism	Narrow	36 years (2050) (p. 1)	Yes	Explicit	No
Westpac New Zealand Limited	Westpac NZ Climate Risk Report	2020	Climate Change	Weather	Medium	30 years (2050) (p. 2)	Yes	Explicit	Yes (NIWA)

* The McGuinness Institute's interpretation based on reading the document.

** These reports are more impact-focused than scenario-focused – i.e. they use climate change projections (linked to representative concentration pathways, which are in turn linked to greenhouse gas emissions) to model what these changes may mean for storms, food production, pests and diseases. Many reports of this kind that have not been included; however, we felt it was important to include these two from MPI (as they were the closest in terms of relevance to the subject matter that we could find from MPI).

*** These reports use the same base dataset as MfE's 2018 Climate Change Projections for New Zealand. They contain more detailed information on the impacts of climate change at a local/regional level.

**** These reports were more illustrative, typically PowerPoint presentations.

***** These reports are done by MPI and are purely scenario maps.

Appendix 5: List of Aotearoa New Zealand local government scenarios (as at 4 November 2021)

Table 2: List of Aotearoa New Zealand local government scenarios (as at 4 November 2021)

For a searchable version of these tables, please see here.

Entity	Scenario title #	Date published	Topic	Sub-topic*	Breadth*	Time horizon	Climate-related*	Explicit/ implicit	Data/guidance (entity)*
Auckland Council	Auckland region climate change projections and impacts	2020	Climate Change	Adaptation	Medium	34, 74, 89 years (2040, 2090, 2110) (p. 18)	Yes	Explicit	Yes (NIWA)
Auckland Regional Council	An Assessment of Potential Impacts of Different Growth Scenarios on Auckland's Natural Environment	Sep 2017	Infrastructure	Land use	Medium	29 years (2017–2046) (p. 5)	Yes	Explicit	No
Auckland Regional Council	Auckland Plan Scenario Evaluation Workstream	Sep 2011	Infrastructure	Land use	Medium	45 years (2006–2051) (p. 7)	No	No	No
Auckland Regional Council	Aucklands Climate Plan	Dec 2020	Climate Change	Adaptation	Medium	30 years (2020–2050) (p. 22)	Yes	Explicit	No
Bay of Plenty Regional Council	Climate change projections and impacts for the Bay of Plenty Region	2019	Climate Change	Adaptation	Medium	34, 74, 84 years (2040, 2090, 2100) (p. 11)	Yes	Explicit	Yes (NIWA)
Central Hawke's Bay District Council	Central Hawke's Bay District Demographic and Economic Growth Projections 2020–2051	n.d.	Security	Population	Medium	31 years (2020–2051) (p. 1)	No	No	Yes (Squillions LTD)
Central Hawke's Bay District Council	Facing The Facts: Long Term Plan 2021–2031	Jun 2021	Security	Population	Medium	10 years (2021–2031) (p. 1)	No	No	No
Central Otago District Council	The Past, Present and Future Climate of Central Otago	Aug 2017	Climate Change	Climate change	Medium	10 years (2018–2028) (p. 6)	Yes	Explicit	Yes (Bodeker Scientific)
Environment Canterbury	Climate change projections for the Canterbury Region	2020	Climate Change	Adaptation	Medium	34, 74, 84 years (2040, 2090, 2100) (p. 9)	Yes	Explicit	Yes (NIWA)
Environment Southland, Gore District Council, Invercargill City Council, and Southland District Council	Southland climate change impact assessment	2018	Climate Change	Adaptation	Medium	34, 74 years (2040, 2090) (p. 9)	Yes	Explicit	Yes (NIWA)
Gisborne District Council and Hawke's Bay Regional Council	Climate change projections and impacts for Tairāwhiti and Hawke's Bay	2020	Climate Change	Adaptation	Medium	34, 74, 84 years (2040, 2090, 2100) (p. 14)	Yes	Explicit	Yes (NIWA)

Entity	Scenario title #	Date published	Topic	Sub-topic*	Breadth*	Time horizon	Climate-related*	Explicit/ implicit	Data/guidance (entity)*
Greater Wellington regional council	Growth scenarios for the Wellington Region: Towards 2041	Aug 2014	Economics	Innovation	Medium	28 years (2013–2041) (p. 1)	No	No	Yes (Business and Economic Research Limited – BERL)
Greater Wellington Regional Council	Planning for Growth: Growth Scenario Engagement	Jun 2019	Infrastructure	Housing	Medium	30 years (2019–2049) (p. 3)	Yes	Explicit	Yes (Global Research Ltd)
Greater Wellington Regional Council	North Wellington Public Transport – Scenarios report	n.d.	Infrastructure	Transport	Narrow	20 years (2007–2027 depending on scenario) (p. 32)	No	No	Yes (Sinclair Knight Merz – SKM)
Greater Wellington Regional Council	Climate change and variability – Wellington Region	2017	Climate Change	Adaptation	Medium	34, 74, 84 years (2040, 2090, 2100) (p. 13)	Yes	Explicit	Yes (NIWA)
Greater Wellington Regional Council	Wellington Region climate change extremes and implications	2019	Climate Change	Adaptation	Medium	34, 74 years (2040, 2090) (p. 13)	Yes	Explicit	Yes (NIWA)
Horizons Regional Council	Action for healthy waterways: A discussion document on national direction for our essential freshwater	Oct 2019	Infrastructure	Water Quality	Medium	10 years (p. 13)	Yes	Implicit	No
Horizons Regional Council	Climate Change and Variability – Horizons Region	2016	Climate Change	Adaptation	Medium	34, 74, 84 years (2040, 2090, 2100) (p. 8)	Yes	Explicit	Yes (NIWA)
Horizons Regional Council	Climate change implications for the Manawatū-Whanganui Region	2019	Climate Change	Adaptation	Medium	34 , 74 years (2040, 2090) (p. 12)	Yes	Explicit	Yes (NIWA)
Mackenzie District Council	Mackenzie District Growth Projections – 2020	Aug 2020	Security	Population	Medium	30 years (2020–2050) (p. 6)	No	No	Yes (Rationale Limited)
Marlborough District Council	Climate change projections and impacts for Marlborough	2021	Climate Change	Adaptation	Medium	34, 74, 84 years (2040, 2090, 2100) (p. 9)	Yes	Explicit	Yes (NIWA)
Nelson-Tasman district council	Nelson-Tasman FDS	Jun 2019	Infrastructure	Housing	Medium	30 years (2018–2048) (p.3)	No	No	Yes (Hill Young Cooper Limited and Resource Management Group Limited)

Entity	Scenario title #	Date published	Topic	Sub-topic*	Breadth*	Time horizon	Climate-related*	Explicit/ implicit	Data/guidance (entity)*
New Plymouth District Council, the Taranaki Regional Council and South Taranaki District Council	Climate Trends, Hazards and Extremes – Taranaki	Oct 2008	Climate Change	Climate-related risk	Medium	82 years (2008–2090) (p. 12)	Yes	Explicit	Yes (NIWA)
Northland Regional Council	Climate Change Projections and Implications for Northland	2016	Climate Change	Adaptation	Medium	34, 74, 84 years (2040, 2090, 2100) (p. 11)	Yes	Explicit	Yes (NIWA)
Ōpōtiki District Council	Opotiki Harbour Development Social and Economic Evaluation	Jun 2005	Economics	Land use	Medium	20 years (2009–2029) (p. 18)	No	No	Yes (URS Australia Pty Ltd)
Otago Regional Council	Climate change projections for the Otago Region	2019	Climate Change	Adaptation	Medium	34, 74, 84 years (2040, 2090, 2100) (p. 8)	Yes	Explicit	Yes (NIWA)
Ruapehu District Council	Long Term Plan 2021–2031	Jun 2021	Economics	Economics	Medium	10 years (2021–2031) (p. 1)	Yes	Explicit	No
Tasman District Council	Climate Change and Variability – Tasman District	2015	Climate Change	Adaptation	Medium	34, 74, 84 years (2040, 2090, 2100) (p. 7)	Yes	Explicit	Yes (NIWA)
Tasman District Council	Climate change projections for Tasman and impacts on agricultural systems	2019	Climate Change	Adaptation	Medium	34, 74 years (2040, 2090) (p. 7)	Yes	Explicit	Yes (NIWA)
Thames-Coromandel District Council	2021 – 2031 Long Term Plan	Jun 2021	Economics	Economics	Medium	10 years (2021–2031)	No	No	Yes (Audit NZ)
Waipā District Council	Waipa District Growth Strategy	Jun 2009	Security	Population	Medium	41 years (2009–2050) (p. 4)	No	No	Yes (Beca Group)

* The McGuinness Institute's interpretation based on reading the document.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