



Tractors advance down Queen Street, Auckland, as part of the Groundswell protests on 22 November 2021.

Submission

**Te hau mārohi ki anamata
Transitioning to a low-emissions
and climate-resilient future (Final Draft)**

26 November 2021

EXECUTIVE SUMMARY

The Institute welcomes the opportunity to offer feedback on *Te hau mārohi ki anamata - Transitioning to a low-emissions and climate-resilient future*. The Emissions Reduction Plan (ERP) provides an opportunity to reshape how information, instruments and institutions can align with our national targets and international commitments.

The submission is broken down into two parts and a background section.

Part 1 illustrates our suggested approach given our work and conversations to date. This work is in preparation for a climate strategy that we hope to publish next year (what we refer to as Report 18).

Part 2 consists of answers to a few of the 114 questions (see Appendix 1) in *Te hau mārohi ki anamata - Transitioning to a low-emissions and climate-resilient future*. There were too many questions for the Institute to respond to given the timeframe.

Part 3 provides a background to the Institute and discusses what we have learned since operating in the long-term futures space, with a particular focus on the need for linkages and alignment between foresight, strategy and reporting and the challenges that exist in the climate change policy space.

Below we list several high-level observations for consideration.

1. Describing the end state

We consider government must work harder at creating a clear understanding of the what a low-emissions future would look and feel like. As Lewis Carroll articulated – ‘If you don't know where you are going, any road will get you there’.

2. Select the best strategy, then action (test, watch, monitor, learn, reflect and recalibrate)

It is essential to explore a diverse range of different strategies before developing the optimal strategy. There is a lot of discussion about creating a just strategy, but there are many other characteristics that should also drive the choice of strategy. Minister Shaw set out five principles on 7 July 2021. Our understanding is that these five principles should drive the choice of strategy. This means that a number of strategies should firstly be identified, then assessed against the principles and only then a final strategy is selected and tested (often to be further fine-tuned). New Zealand is at risk of spending too much time on aspects of strategy design, and not enough time on testing, adjusting and implementing a comprehensive integrated strategy.

Principle 1: A Just Transition

Principle 2: Science-led

Principle 3: Nature-based solutions

Principle 4: Apply a tikanga Māori lens

Principle 5: A clear, ambitious and affordable path¹

3. Emission reduction is largely central and adaptation is largely local

In contrast to adaptation (which is largely resolved through local solutions specific to each location or district), the structure of the economy is all about central leadership. This means the ERP must be led and actioned by central government; the task cannot be delegated. What the ERP should contain is the design of the government machinery and the punishments and incentives that will shape investors (whether they be shareholders or stakeholders). It is not appropriate for central government to imply it is not accountable. Instead it should own the problem and put in place a dashboard that helps measure what is working and what is not.

4. Responsibility and accountability

While we note the change in dialogue from ‘costs’ and ‘challenges’ to ‘responsibilities’ and ‘opportunities’ (as well as the inclusion of wellbeing as an indicator for success), the outlined direction does not deviate much from the status quo. Further, where tasks and responsibilities are delegated, it would be prudent to ensure that the necessary resources and skills are also delegated.

5. Institutions, Instruments and Information

The Institute often uses the three I’s to analyse a system: Institutions, Instruments and Information. This ensures questions are asked not only about each of the three components or the effectiveness of the linkages that co-exist between them, but whether gaps, conflicts or even double-ups in the system exist. See Appendix 2 for an overview of institutions, instruments and information regarding climate-related policy that have evolved over time. It raises the question what new institutions, instruments and information are required and what are no longer needed.

There is often a mismatch between policy design and implementation (e.g. Kiwibuild). Policy agencies and teams often lack the tools, skills or mandate to effectively administer complex and expensive programmes, particularly those requiring collaboration with the private sector. Central government does have several existing delivery agencies accustomed to managing large contracts, including Kānoa and the Energy Efficiency and Conservation Authority (EECA). It may be that creating a dedicated agency with a clear remit and funding to deliver the targets described in the ERP would bridge the gap between policy intent and on-the-ground activity. The establishment of something like a New Zealand Emissions Reduction Agency (abbreviated NZERA), along the lines of an expanded EECA (with long-term funding certainty), might help turn existing policy problems into actionable ideas. NZERA could ideally be funded through hypothecated ETS revenues.

6. ‘Short-term pain & long-term gain’ or ‘short-term gain & long-term pain’

In our view, an effective ERP is one that shifts our societal and economic systems towards decarbonisation. Arguably, the proposed approach minimises climate-related risks and overestimates the effectiveness of proposed solutions, delivering short-term gain but long-term pain. A cautious and considered steward should have a low-risk appetite; this would mean ensuring an adequate buffer exists in case low-probability high-magnitude events occur and would not rely or build-in technological solutions not yet invented or tested. Prudence, discretion and a precautionary approach should drive our approach. Although the scope of a ‘low emissions economy’ is future focused it uniquely places the onus of responsibility and accountability onto this generation. If emissions reduction was instead reframed as: (i) full decarbonisation of our energy systems and (ii) the destocking of dairy and cattle, our pathway might become easier for people to understand and action, and less difficult to delay and resist. The public sector should not take all the risks and the private sector all the benefits of the transition. But, equally, the private sector should be engaged as they are part of the solution. A classic example of the private sector solving a public sector problem was the creation of the COVID-19 vaccines. This means we need to be cognisant of the need to create incentives for the private sector that create short-term private rewards that deliver long-term public good benefits.

7. Climate policy fatigue – what are we doing about it?

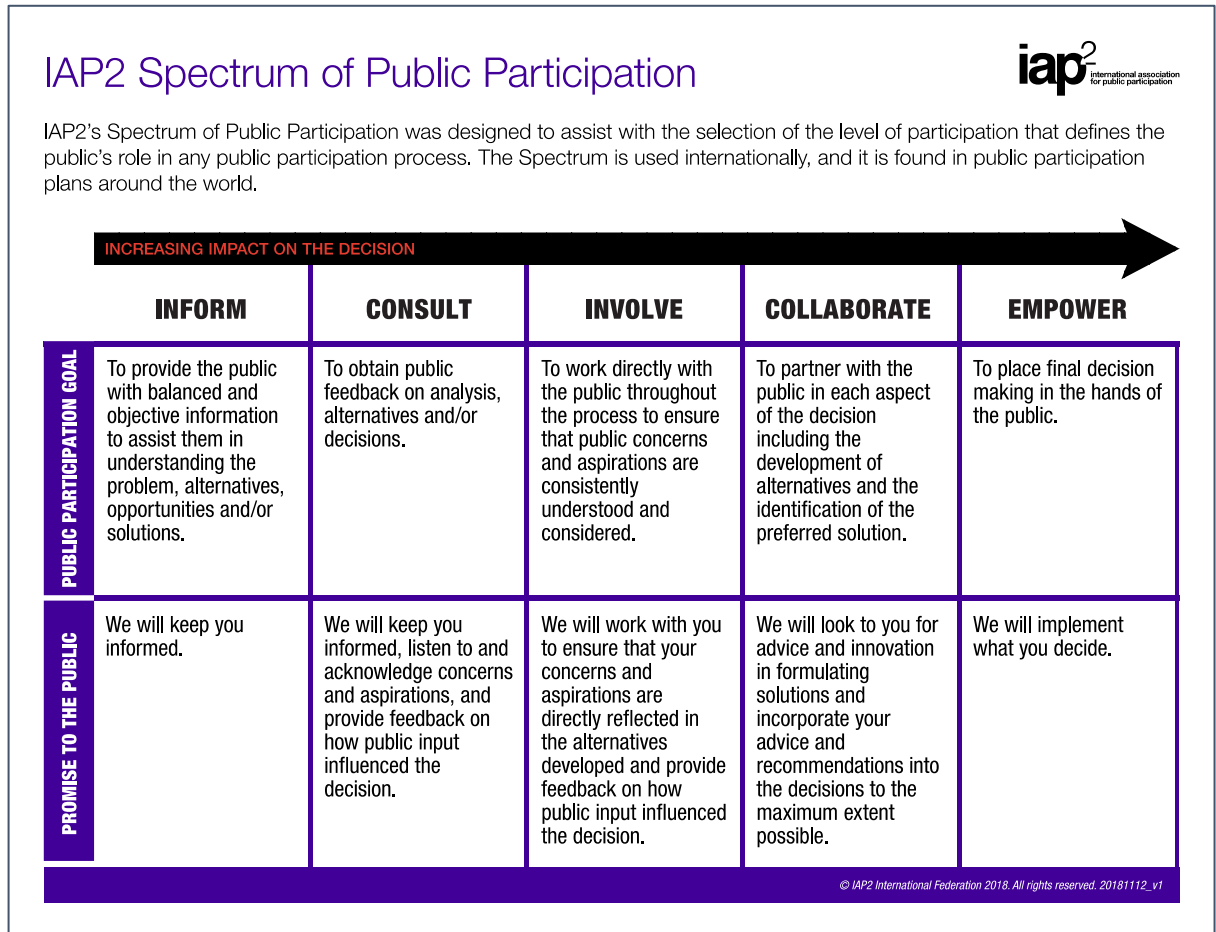
We are fortunate to have a great number of climate scientists and policy analysts who have worked for years and years in this space. We need to congratulate and look after them. This is a marathon and not a sprint. Arguably we need to give them time out, to rest, reflect and refresh – and build up another team to take over, in much the same way a baton is passed to a fresh team in a relay race (rather than simply the next generation).

8. Climate consultation fatigue – what are we doing about it?

Public consultation has a number of purposes. The most important of these is to gather ideas and policy innovations to help make a strategy better. The second, and we would argue far less important, is to legitimize a strategy. For example, the government can argue it has followed due process (e.g. all voices have been heard), that the best solution has been tested in the public arena (e.g. democratic processes have been followed), and that it can now legitimately be implemented. The problem is that this is time consuming, not just for government, who have to prepare a consultation document and summarise feedback, but also for the members of the public who are required to read, often long documents, and answer a large number of detailed questions.

We question whether over the years consultation processes are increasingly becoming processes designed to meet the second purpose (to legitimise a strategy), rather than the first (to collect ideas). It may be useful to consider this observation in terms of the IAP2 Spectrum of Public Participation from the International Association for Public Participation. See Figure 1 below.

Figure 1: IAP2 Spectrum of Public Participation²



We are at war with climate change, therefore we need war-like strategies that direct every operation towards a clearly defined, decisive, and attainable objective. This means consultation processes should be short, sharp and useful; terms used should be clear and concise, timeframes should be match the purpose and the process should be designed to deliver fast and timely feedback. Most importantly, we need to not over consult. If government has a mandate, it should use it and be judged by the consequences.

PART ONE: WHAT THE INSTITUTE WOULD DO

Given the Institute’s observations above, we believe the most important question that MfE could have asked the public was as follows: how would you go about reducing Aotearoa New Zealand’s emissions? Ideally the answer to this question should be sought in a timely and effective manner. This could take the form of a worksheet (see our example below), a workshop of experts, a survey (asking people to rank and share actions) or a narrative in the form of an academic paper or an essay. From our experience, seeking out ideas from a diverse range of people, particularly experts, can be very cost effective and timely.

Figure 2 is only a tentative example. This thinking has evolved from work we are undertaking in prep for our upcoming *Report 18: Climate Change Strategy for Aotearoa New Zealand*. The ideas have come from patrons and other interested parties that continue to share their thinking with us.

It is not simply about getting together a list of ideas, but seeing how they might be integrated to develop win-win situations (perhaps using the principles to test ideas and drive change). Strategy is hard work and requires a team of professionals to test and challenge ideas and then formulating them into an action plan. That is why we like the idea of creating a New Zealand Emissions Reduction Agency (abbreviated NZERA) to manage, measure and report publicly against the emission reduction goals.

Figure 2: Worksheet: How would you go about reducing Aotearoa New Zealand’s emissions?

What? (Actions)			
Stop	Reduce	Increase	Start
<ul style="list-style-type: none"> - Coal - Importing livestock and fish feed 	<ul style="list-style-type: none"> - Waste - Wine growing - Milk powder - Concrete - Dairy, cattle, deer and horse livestock 	<ul style="list-style-type: none"> - Grains - Native trees - Rail/boat transportation - Green electricity - Plant feed for livestock and fish - Water storage 	<ul style="list-style-type: none"> - Bioplastics - Steel and cement substitution - Mine landfills to reduce methane emissions
How? (Tools and initiatives)			
<ul style="list-style-type: none"> - Ban coal mine expansion/opening through RMA - Ban all internal combustion engines 	<ul style="list-style-type: none"> - Implement a container deposit scheme - Analyse landfill - Analyse matching water with land use - Assess milk powder production (given it has a low-commodity, high-carbon footprint) - Tax concrete imports - Tax pollution 	<ul style="list-style-type: none"> - Improve transmission links for renewable energy generation - Incentivise decarbonisation of heavy industry - Design a wildfire prevention and management system - Climate change taxonomy - TCFD reporting (XRB) - Low carbon procurement policy for government 	<ul style="list-style-type: none"> - Support firms to quantify embodied emissions and work with industry to establish supply chains for low-carbon materials - Allow pre-payment of Industrial Allocations under the ETS to fund emission reduction projects for major emitters

PART TWO: WHAT WE THINK

In this section, we have responded to a small number of selected questions relating to the following sections of the document:

1. **Meeting the net-zero challenge:**
 - Transition pathway (Q1 – 6)
 - Making an equitable transition (Q13)
2. **Aligning systems and tools**
 - Government accountability and coordination (Q23)
 - Funding and financing (Q27)
 - Emissions pricing (Q30)
 - Planning (Q35)

The questions put forward generally call for an opinion rather than evidence. This means that although the goal has been to support our opinion with research, we have had to seek out and rely on international research – which means risks exist in terms of gaps in Aotearoa New Zealand research and risks in applying international research to Aotearoa New Zealand conditions.

1.0 Meeting the net-zero challenge

Transition pathway (questions 1 – 7)

Q1. Do you agree that the emissions reduction plan should be guided by a set of principles? If so, are the five principles set out above the correct ones? Please explain why or why not.

Yes, overall, the emissions reduction plan should be built off a set of principles. However, the assumptions which underpin the principles must be made explicit. Below, we comment (and raise concerns) on each of the principles individually.

Principle 1: A fair, equitable and inclusive transition (A Just Transition)

- recognise and foster opportunities for affected regions, communities, employees, employers, and iwi and Māori, to reduce emissions in ways that work best for them
- incorporate te ao Māori in transition planning
- minimise and avoid the negative impacts, and social and environmental risks, of the transition and specific policies, including avoiding:
 - exacerbating existing inequities
 - penalising early movers
 - compounding historic grievances with iwi/Māori
 - leaving too much of a burden for future generations
 - exacerbating environmental issues.

The Institute agrees with the intent of this principle, however trade-offs will need to be made – what is just for one group in society may not be just for another. For example, it may be better to improve the size of the economic pizza, and get a slightly smaller proportion of the pizza, but still get a larger slice. Context is everything and a principle is not a rule; judgement is required.

Principle 2: An evidence-based approach (Science-led)

- draw on a range of sources including (but not limited to) the Intergovernmental Panel on Climate Change (IPCC), and mātauranga Māori.
- ensure emissions reductions are developed using the most up-to-date science and take into account our domestic context and international commitments.

The Institute agrees with this principle in theory, but have concerns around how this will be applied in practice.

We are concerned that the models and data used to develop and inform the ‘evidence base’ are often linear/equilibrium based. Research demonstrates that dynamic³ or agent-based models are seen by many as the most appropriate way to model and understand structural economic change.⁴ However over reliance on models and modelling is an acknowledged risk. Despite the Intergovernmental Panel on Climate Change (IPCC) being a key information source, there appears to be little detail regarding the IPCC’s recommended uptake of rapid, far-reaching and unprecedented transformation of socio-technical systems.

The Institute considers scenarios are a very useful tool for exploring the future, particularly during uncertain times. Some may argue scenarios are not evidence-based, and to some degree that may be true – but they do have value.

There is also a lot of value in wisdom, narratives, and reflection. Mātauranga is a case in point; New Zealand benefits from the wisdom passed on by generations, but some may argue that is not evidence. Our view is that there are different types of evidence and therefore different types of information sources. The independence and verification of information sources are also important requirements to consider when publishing data and/or using data as evidence to make decisions.

Principle 3: Environmental and social benefits beyond emissions reductions (Nature-based solutions)

- Promote nature-based solutions, which can sequester carbon while building resilience to climate change impacts and supporting biodiversity.
- Consider wider benefits as a reason to act – such as building resilience, and broader social, health, economic, environmental and cultural benefits.

We prefer the original term: nature-based solutions. The Institute agrees with this principle, in that methods for reducing emissions should have associated co-benefits. But that may not always be the case. Given the urgent need to manage emissions, there is also a case to take wins where you can get them. If planting native forests is to be progressed, we agree that it should be done so in such a way that provides nature-based solutions⁵ and strengthens biodiversity. We do, however, hold concerns around the reliance of offsetting emissions through forestry. This does not address the systematic or structural issues of emissions and may lead to mitigation deterrence. Policymakers need to be pragmatic and understand that offsetting and carbon capture through forests is a short term fix and may pass on an even bigger problem to future generations (e.g. wilding pines).

Principle 4: Upholding Te Tiriti o Waitangi (Apply a tikanga Māori lens)

- strengthen the partnership approach and actively supporting iwi/Māori with this effort
- apply Māori values and mātauranga Māori to the transition
- involve a variety of Māori voices in the design and development of the transition.

The Institute agrees in full with this principle, but we prefer the use of the term relationship (instead of partnership), as the first is forward looking and the latter is backward looking. See presentation by the late Dr Apirana Mahuika on why we need relationships rather than partnerships (see our YouTube Channel [here](#)).

Principle 5: A clear, ambitious and affordable path

- make predictable and stable policies, which are communicated early and clearly so that households, businesses, investors and industry can make investment choices
- design effective policies that recognise the connections and flow-on effects within systems
- use commercially available, low-emissions technology now, while fostering ambition, knowledge and innovation
- acknowledge uncertainty and consider options that can adapt over time.

The Institute agrees with this principle, but hold concerns over the language used to describe and communicate the ‘path’.

Unfortunately, the assumptions, narrative and proposals are not nearly ambitious enough and are unlikely to create the mandate required by decision makers, both in terms of the urgency and scale of change (as set out by international experts). International research and evidence demonstrate that there is a far greater need for dynamic innovation and faster action than what is proposed.

The theme of a ‘achievable and affordable’ transition is built off existing assumptions that policymakers have made about the nature of the economy and the investment needed to achieve effective climate action. Such a narrative is likely to increase mitigation deterrence,⁶ as well as increase the public’s expectations that such a pathway is possible. For example, ‘achievable’ implies an action is 100 percent feasible and ‘affordable’ implies that a solution can be bought. The Government must use language carefully, so that public understands the dilemma – that structural changes are required, hard choices need to be made, pain will be felt by many and our behaviour needs to change.

Q2. How can we enable further private sector action to reduce emissions and help achieve a productive, sustainable and inclusive economy? In particular, what key barriers could we remove to support decarbonisation?

The private sector plays a key role in terms of the power to influence and inform (through climate change reporting and risk management). Currently, a large gap exists in the extent that climate-related information is available within the public arena. Exploring options that can be given to reporting entities to enable the consistent and timely delivery of climate-related disclosures is a key priority. It is crucial that preparers have useful, relevant and comparable climate information (including reference climate scenarios for assessing their organisation’s resilience to climate change).

Past research from the Institute has identified that the oversaturation of reporting frameworks has made it difficult to draw comparisons between entities across sectors, and in doing so, diluted the impacts of effective reporting. Insights from this research also identified that the (voluntary) domestic uptake of the TCFD framework has gained considerable traction over the past 4 years. This trend is likely to remain consistent in the coming years – considering the introduction of a mandatory TCFD reporting regime for around 200 entities. As more entities produce TCFD reports, there is a large risk that the disclosed (scenario-based) climate information will be done so in an incomparable way.

The Institute believes it is crucial for the government to develop a standardised set of ‘reference climate scenarios’ that are used to fulfil the ‘Strategy B’ requirement. This will ensure that the information is disclosed in an accurate, transparent and timely manner that enables meaningful comparison. We are currently in the process of completing a Discussion paper regarding this issue. If you would like to see an early draft, please contact us.

Reference climate scenarios should be developed by people outside of the accounting community, ideally based on NIWA’s climate projections. Importantly, for accounting profession, there is a distinction between data and information. Accountants use data to create information, but never create data to create information. The latter could lead to data being manipulated for reporting purposes. So while the XRB should not create climate reference scenarios for producing TCFD reports, the government could create climate reference scenarios that accountants could then use when preparing TCFD reports. This should help further private sector action towards reducing emissions.

Q4. How can the emissions reduction plan promote nature-based solutions that are good for both climate and biodiversity?

We support the uptake by the Government of evidence raised in the 2019 PCE⁷ report and, in particular, the advice from Dr Edward Hearnshaw, who recommended:

- Develop two separate targets for the second half of the century: a zero-gross target for fossil emissions, and a reduction target for biological emissions based on the advice of the new Climate Commission.
- Allow access to forest sinks as offsets only for biological emissions.
- Develop the tools needed to manage biological sources and sinks with a landscape approach that embraces water, soil and biodiversity objectives.

Q5. Are there any other views you wish to share in relation to the Transition Pathway?

The ERP provides an opportunity to reshape how information, instruments and institutions should best work together to pivot our societal and economic systems.

Uptake of strategy mapping as a tool

The Institute was pleased to see the use of a strategy map to illustrate and communicate the transition pathway (see Figure 2 of the discussion document, also see Appendix 3 of this submission). We strongly advocate using strategy mapping as, due to its visual nature, its quick turnaround, and endless repeatability is ideally suited to the task of guiding complex, long-term transitions. For more information on strategy mapping, read *Discussion Paper 2021/02 - Need for speed: strategy mapping and adaptive management*, found [here](#).

Concerns over clarity

The Transition Pathway could better illustrate the means (e.g. decarbonisation) and the ends (e.g., what a low emissions economy looks like). Clear policy suggestions regarding some of the economy's most emission/climate intensive areas (agriculture, energy and nature-based solutions) are not included in any detail. As for the policy suggestions that are included, we are not sure to what extent the feasibility, costing, or estimates have been calculated.

The Institute is concerned with the strategic capability across government departments. Our analysis of government department strategies (GDSs) found low levels of climate change action articulated within existing strategies. Although this year's research is still in progress, it is clear there is very little discourse on trade-offs between generations or possible impacts on current or future New Zealanders, or indeed an understanding that the economy needs to pivot in order to reach the 2050 target.

Concerns over the lack of regulatory intervention

The document emphasises that strong policies alone will not be enough to manage this transition and that private sector leadership is crucial. The Government has indicated that it will support the mobilisation of private sector leadership, but we were not able to identify any substantive and targeted regulatory action to prohibit harmful behaviour. The ERP must address the emission intensive and ecologically destructive industries, as well as consumer behaviour. A recent example of regulation used to shift harmful consumer behaviour was the ban on single-use plastics.

Concerns over uncertain funding options

We strongly advocate the need for faster upfront investment to support the (urgently needed) development of large scale climate-related interventions. The investment mechanisms required to finance such developments (namely decarbonisation and long-term resilience) must be set up in the short-term. The Institute holds concerns over the lack of certainty and clarity of when these funding decisions will be made, considering that "many of the policies and strategies to be included in the emissions reduction plan will depend on future funding decisions". The budget cycle, with its emphasis on short-term expenditure and lengthy annual vetting process, is not well suited to delivering long-term investment certainty. The timely development of a mechanism to guarantee long-term funding certainty is crucial. Similar long-term fiscal challenges, such as infrastructure spending, have mechanisms to provide a clear pipeline of projects and funding, such as the National Land Transport Programme.

Concerns about the lack of data to inform decision making

The government has identified policy itself will not be enough to meet emissions budgets. The document contains various proposals to close the emissions gap, many of which have not been quantified and therefore are very uncertain. Uncertain and unquantified proposals arise from a lack of data/information and have ultimately reduced the Government's ability to meet emissions budgets. Additional proposals and commitments from the private sector are now required in order to close the gap.

Concerns on the overreliance on non-existent technologies

We are concerned that the decision to push the largest emissions reductions out into the 2030s/2040s increases uncertainty and ultimately delays action. The reliance upon "additional emissions reductions policies [that] will be developed as new opportunities arise" as well as technologies that do not exist yet will lead to mitigation deterrence.

Q6. Which actions to reduce emissions can also best improve our ability to adapt to the effects of climate change?

Supporting regions and communities to lead their own transition planning, including through developing the skills of regional leaders, will drive innovation and economic change, while building resilience to future shocks. Central government has a role to play in supporting these processes through the provision of timely, high quality and useful transition planning tools and resources.

Making an equitable transition (question 13)

Q13. Do you agree with the objectives for an Equitable Transitions Strategy as set out by the Climate Change Commission? What additional objectives should be included?

An objective to consider is the distribution of household/consumer emissions. Higher income households/consumers are likely to have a large emissions profile as well as a greater ability to afford to make behavioural changes to reduce emissions. If household emissions are becoming targeted to reduce then it should be the higher income, largest emitting households that reduce first (or more). Statistics New Zealand are preparing data on the distribution of household emissions.

2.0 Aligning systems and tools

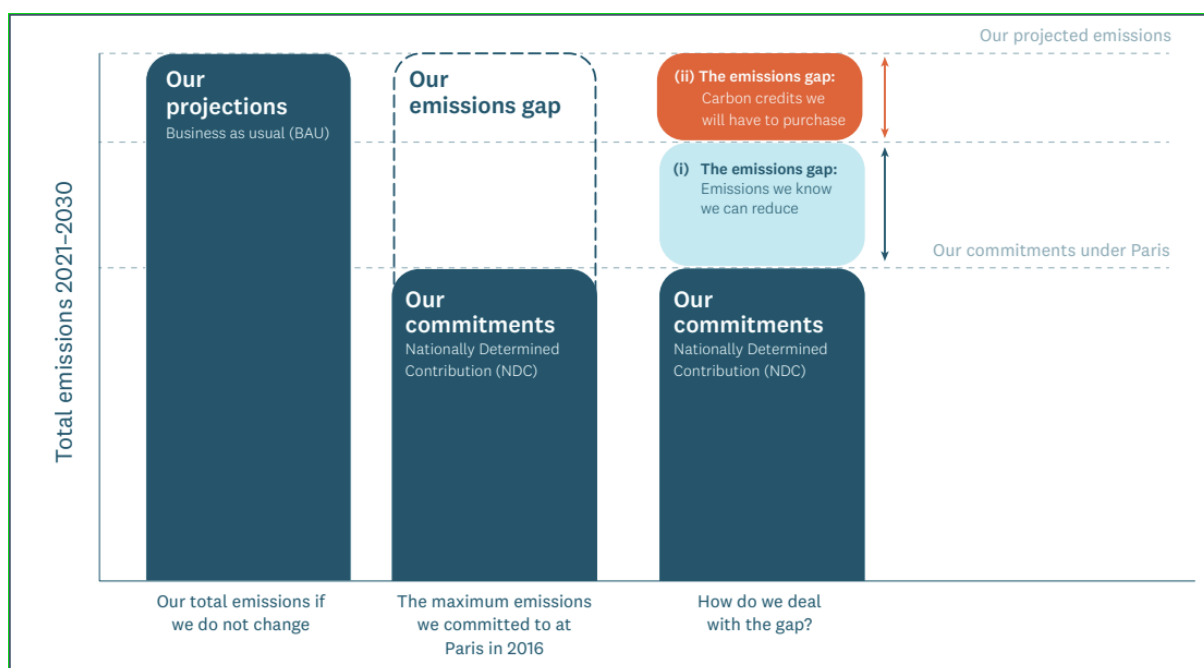
Government accountability and coordination (question 23)

Q23. Is there anything else you wish to share in relation to government accountability and coordination?

The Institute has recently undertaken research into exploring whether or not the commitment to purchase offshore carbon credits creates a requirement to disclose that obligation in the financial statements of the New Zealand Government. The size of this obligation, what is called our emissions gap, is shaped by the difference between our projections and our nationally determined contribution (NDC) (see Figure 3 overleaf). Once our expected emission reductions from country-wide actions are deducted, a shortfall is created. Unfortunately, this shortfall can only be met through purchasing offshore carbon credits.

If one can argue that climate policy (strategy) and accounting policy (reporting) should be linked, the question then becomes not if, but when should this obligation be reported in the financial statements of nation states. To learn more about this topic, read *Discussion Paper 2021/04 – An Accounting Dilemma: Does a commitment to purchase offshore carbon credits create a requirement to disclose that obligation in the financial statements of the New Zealand Government?* Found [here](#).

Figure 3: Illustration of Aotearoa New Zealand’s emissions gap



Funding and financing (question 27)

Climate change requires a step change in how we approach financing. Our climate targets will require significant, sustained investment from public and private sectors. To meet this challenge, we will need to:

- increase the amount of public funding available for new climate initiatives
- support the flow of private investment towards climate-positive outcomes and the growth of the green finance market
- consider how our policies, incentives and existing spending are contributing to where money flows across the economy
- ensure that our communities and businesses can access the finance they need to invest in the transition

Q27. Is there anything else you wish to share in relation to funding and financing?

The Institute agrees that meeting our emissions budgets will require significant, sustained and directed investment from the both the public and private sectors, and generally, support the proposed funding and financing approach. We list various concerns/issues below:

Faster upfront investment

We strongly advocate the need for faster upfront investment to support the (urgently needed) development of large scale climate-related interventions. The investment mechanisms required to finance such developments (namely decarbonisation and long-term resilience) must be set up in the short-term. The Institute holds concerns over the lack of certainty and clarity of when these funding decisions will be made, considering that “many of the policies and strategies to be included in the emissions reduction plan will depend on future funding decisions”. The budget cycle, with its emphasis on short-term expenditure and lengthy annual vetting process, is not well suited to delivering long-term investment certainty. The timely development of a mechanism to guarantee long-term funding certainty is crucial. Similar long-term fiscal challenges, such as infrastructure spending, have mechanisms to provide a clear pipeline of projects and funding, such as the National Land Transport Programme.

Mandatory climate-related financial disclosures (reference climate scenarios)

In terms of mobilising private investment by overcoming information barriers, the Institute welcomes the introduction of this mandate. However, our work in this space has identified that an information/resource gap exists within the framework used for disclosures.

As part of the disclosure requirements, entities must undertake scenario analysis – where the only criteria is “a 2c or lower scenario”. As more entities begin to disclose such information, there is a risk that different scenarios are used and are therefore incomparable. It is crucial to develop a standardised set of reference climate scenarios that are used. This will ensure that the information is disclosed in an accurate, transparent and timely manner that enables meaningful comparison.

The Institute is currently in the process of completing a discussion paper regarding this issue, but wanted to raise the issue here as work of this size is virtually impossible without funding. We believe that this issue also fits under the criteria of the Government’s support of private investment by overcoming information barriers.

Crown research institutes

The Institute is currently in the process of completing an infographic that assesses the level of explicit climate-related applied funding across the public sector. Our initial results indicated how underfunded our Crown research institutes, scientific community and other key climate-related institutions are. These institutions simply are not receiving the amount of funding that they require, and thus are restricted in the work they can do – especially in a time where said services are of an extremely high demand.

The government’s Future Pathways work is currently investigating the best model for New Zealand’s science system to work collaboratively delivering on national priorities. This work will be vital to ensuring Universities, CRIs, government agencies and the private sector can deploy domestic research and innovation to tackle climate change, while creating new opportunities in emerging industries.

Research, science and innovation (Question 41)

Q41. Are there any other views you wish to share in relation to research, science and innovation?

Yes. The Institute is becoming increasingly concerned that we are yet to pivot and invest in research systems to collect and report climate change data. It is crucial to consistently repeat research over time to identify progress (i.e. what works and what does not). Whilst undertaking work across a range of topics, the Institute consistently observes the poor state of research data. This observation simply reinforces the need for a stronger, better funded and more connected research community focussed on delivering data, that can be turned into information and ultimately provide knowledge for decision-makers making investment decisions (e.g. away from stranded assets to new and emerging industry) and/or public analysts making recommendations to Ministers.

To illustrate this, the Institute has been involved in the aquaculture space relating to New Zealand King Salmon’s applications to farm salmon. Throughout this work, it was identified that many inconsistencies associated with the term ‘temperature’ exist. Temperature is commonly understood to have a universal (and therefore comparable) meaning across a range of consent applications. However, the Institute has recently learned that this is not the case. There has been a general failure of care. To learn more about this topic, *Working paper 2021/14 – The Role of Water Temperature in Climate Change Policy – A New Zealand King Salmon Case Study* and *Working Paper 2021/15 – Looking for a taxonomy for Aotearoa New Zealand’s oceans*, found [here](#).

Sea water temperature is dependent on the inclusion of multiple characteristics to ensure accuracy, independence and comparability. In this case, comparing water temperature over time or between farms requires reporting on the (i) location, (ii) time of day, (iii) day of the year, (iv) the tide and (v) the depth, as well as specifying who undertook the research. Climate change, as NZKS is discovering, is happening very fast. In the case of NZKS, it is now seeking cooler water to farm salmon. Investors, bankers, insurance companies, and those undertaking resource management decisions should expect that they can access and be provided with useful data that is reliable and can be compared. Work is urgently required in this space.

This becomes one of our recommendations – to build a stronger and more coherent research community and register of research material for current and future policy makers.

Emissions pricing (Question 30)

Q30. Do you agree the treatment of forestry in the NZ ETS should not result in a delay, or reduction of effort, in reducing gross emissions in other sectors of the economy?

Yes.

The Institute understands that planting forests is an attractive option as it provides flexibility for meeting domestic and international targets and that no key player will complain. If planting forests is going to continue to be used as a tool for sequestering emission (reducing net emissions), then it should be done in a way that provides nature-based solutions and strengthens biodiversity – where long-term carbon storage is a positive externality rather than the sole purpose of planting.

We wish to reiterate the concern that the continued reliance on carbon sinks to bring down net emissions does not address and/or motivate structural and systematic changes that drive decarbonisation. Policymakers need to be pragmatic and understand that offsetting and carbon capture through forests is a short-term solution and simply passes on an even bigger problem to future generations. Priority of investment should be given to active system change and dynamic innovation, which should begin to be funded through ETS hypothecation.

In this regard, we support the uptake by the Commission of evidence raised in the 2019 PCE⁸ report and, in particular, the advice from Dr Edward Hearnshaw, who recommended:

- Develop two separate targets for the second half of the century: a zero-gross target for fossil emissions, and a reduction target for biological emissions based on the advice of the new Climate Commission.
- Allow access to forest sinks as offsets only for biological emissions.
- Develop the tools needed to manage biological sources and sinks with a landscape approach that embraces water, soil and biodiversity objectives.

Planning (Question 35)

Q35. Are there any other views you wish to share in relation to planning?

Yes. The Institute believes there is a place for national conversations on complex issues.

Government intervention in industry is not new. There have been other times in our history when government needed to intervene. For example, in the 1960s and 70s, New Zealand needed to take time to reflect and reconsider its position given the balance of payment crises, the oil price and supply shock, and the economic shock of the UK joining the European Economic Community.⁹ The concept of ‘indicative planning’ (a form of economic planning implemented by a state) was adopted at a national level, and the importance of long-term thinking recognised by government, leading to the National Development Conferences of 1968 and 1969.

These conferences reflected the need for Aotearoa New Zealand to establish economic development options in the emerging international economy. This was part of an international trend of focusing on development economics, made popular during the 1960s as former colonies became independent, a trend that influenced policy in developed countries during this time as well. In April 1976, the National government established an Economic and Social Planning Task Force, whose role was to examine planning in the public and private sectors and issues affecting national development. In addition, it was to make recommendations based on the study of previous programmes and current trends in New Zealand. Proposals government considered were the establishment of a Commission for the Future, a New Zealand Planning Council, and a Population Commission. (Although the latter was not progressed, the Commission for the Future and the Planning Council were subsequently established under the New Zealand Planning Act 1977 under the Muldoon-led National government.

Figure 4: The first National Development Conference, Wellington, March 1968¹⁰



Recently, the Institute completed a survey regarding Long-term Insights Briefings¹¹ and as part of this survey 98% of respondents agreed that there is little consensus on what Aotearoa New Zealand's long term vision is. This shows that the lack of embedded foresight within public policy is impacting the Government's ability to develop and implement systems capable to drive outcomes and collective values. This, then, in turn impedes the strategic capability of key institutions, instruments and information. In response to the institutional frameworks and policies that need to be implemented to enable decarbonisation and the transition toward a low emissions economy, we first must consider those that have been implemented in the past, and focus on how our current institutions and instruments could be altered to enable Aotearoa New Zealand to become an intelligent and agile country – one with the foresight and ability to ascertain the outcomes New Zealanders want, and to deliver on those outcomes.

This leads to planning for agriculture and aquaculture. Agriculture is the old economic powerhouse of New Zealand and many are now considering aquaculture will become the new economic powerhouse. We discuss these briefly in turn, in terms of emissions reduction planning.

Agriculture

The *Te hau mārohi ki anamata Transitioning to a low-emissions and climate-resilient future* plan contains few agriculturally-targeted proposals, which expectedly, will result in no new reductions in agricultural emissions (making up 48% of Aotearoa New Zealand's gross emissions) over the next four years. While we understand that the outputs from He Waka Eke Noa are to be consulted on separately, the lack of an integrated and considered approach to reducing agricultural emissions in this plan is of concern (which is why we have selected a photo from the Groundswell protests on the cover).

The work of He Waka Eke Noa has a timeline set to 2025, consequently indicating that any substantive emissions reductions are expected in the second and third budget periods (2026 - 2030 and 2031- 2035). If the proposed policy options from He Waka Eke Noa are unsatisfactory, the agricultural sector will then be required to enter the ETS. He Waka Eke Noa recently released a draft document containing two price-based policy options for consultation. Analysis of the options found that neither of the two options, nor the ETS backstop, would be expected to reduce emissions by even 1 percent by 2030.¹² The draft document instead states that the "majority of emissions reductions are expected to be achieved through recycling revenue into research and development, incentives to uptake technology, or actions on-farm that help reduce emissions".¹³

In the Institute's opinion, the lack of an integrated response to agricultural emissions and the decision to delay reductions to later periods will result in mitigation deterrence and failure to meet overall emissions reduction targets. Instead, there must be intervention at a much larger and more urgent scale.

In this regard, as part of a wider strategy to decarbonise the economy, we support the notion of funding the agricultural sector to pivot toward the production of less emission-intensive products. There are existing examples of funded land-use changes that have been applied at a smaller scale. For example, 'The Incentives Scheme' saw the establishment of a \$40 million fund to protect Lake Rotorua.¹⁴ The scheme 'buys' nitrogen off landowners (priced at \$400 per kg of nitrate) and has an overall aim to reduce 100 tonnes of nitrogen from entering Rotorua's waterways by 2022. A fund of \$90 million with similar purpose was also established in Taupō a few years prior.¹⁵

Aquaculture

Unlike agriculture, aquaculture is a relatively new and emerging sector and although vested interests exist in aquaculture, they are nowhere as large in scale as they are in agriculture. In this regard, the Government has the ability to forward engage with climate-related risks and opportunities, much more effectively than that of the agriculture sector. Further, there are significant carbon issues with salmon farming, for example all existing salmon feed comes from either Australia or Chile (and the conversion rate is significant) and in the case of NZKS, about half is exported overseas. It is not a carbon light industry (imagine if all our livestock feed was imported from overseas).

Similar to agriculture, however, climate change presents a significant risk to Aotearoa New Zealand's fisheries and aquaculture operations. It was estimated that the Aotearoa New Zealand's seafood sector employs around 2,500 people and in 2019 earned more than \$2b in export revenue.¹⁶ Physical risks aside, as markets and governing institutions begin to mitigate and adapt to climate change, Aotearoa New Zealand's fisheries and aquaculture sectors will be faced with shifting regulatory requirements and market expectations. Significant risks and opportunities will be inevitable regardless of the trajectory of Aotearoa New Zealand's climate response.

To achieve this goal of net zero emissions by 2050, urgent need and care is required to pivot toward low (or ideally zero) emission industries – requiring extra attention to support sustainable, productive, inclusive and resilient growth in impacted sectors. In this regard, the Institute is concerned that various industries have not seriously acknowledged the fact that the social and ecological systems (of which many operations are built upon) will increasingly be placed under immense pressure from climate change.¹⁷

New Zealand has a responsibility to future generations, not just in terms of delivering a zero-based economy, but in terms of delivering a functioning economy; an economy that is able to provide social and environmental wellbeing for humans, flora and fauna. This is not easy but it is our responsibility to work towards an integrated approach that delivers a solid future and that means making hard decisions today based on quality research.

PART 3: BACKGROUND INFORMATION

The McGuinness Institute (the Institute) is an independent think tank based in Wellington, New Zealand. We undertake research and policy work with a particular focus on Aotearoa New Zealand's long-term future. Exploring the future is as much art than science.

3.1 Our Approach

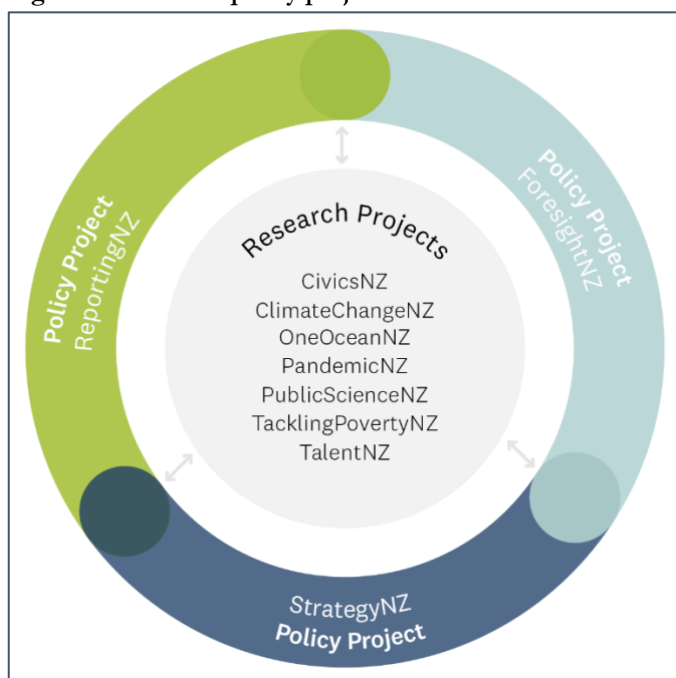
The methodology that drives our work is shaped by the need to have an integrated, whole-system approach.

We believe that policy requires equal focus on foresight, strategy and reporting. Foresight drives strategy but is shaped by reporting. Strategy drives reporting but is shaped by foresight. Lastly, reporting drives foresight but is shaped by strategy. That is why we have three interlinking policy projects, one for each focus.

However, policy projects alone will not ensure we create value; we need to delve into complex problems in order to solve them. That is the role of our research projects. The diagram below shows how we see these two types of project; the Institute focuses on each research project, through the policy lenses of foresight, strategy and reporting. This way we can move between the specific and the general with relative ease.

You will note that one of the research projects relates directly to climate change. See our website page [here](#).

Figure 5: Our three policy projects



3.2 About our Climate Change Project

In 2019, the Institute focused specifically on climate change. The overall aim of this project has been to explore a climate strategy for Aotearoa New Zealand. We hope to publish a Project 2058 report on climate change late in 2022. Our work programme aims to provide young people with a platform to enable them to amplify their thinking and have their voices heard.

Examples of past climate-related research include:

1. **KiMuaNZ: Exploring Climate Futures workshop (July 2019)**

The KiMuaNZ workshop brought together 40 young New Zealanders between the ages of 18 and 25 who have a connection with the Pacific. They shared experiences and understandings of climate change issues in

order to develop different scenarios for New Zealand and our Pacific neighbours. We recommend viewing a video of the workshop [here](#) and reading the resulting booklet [here](#). Most importantly, they shared their observations individually in the booklet.

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

This paper, found [here](#), aimed to answer three research questions:

- What international protocols does New Zealand currently follow and to what extent do these protocols set standards or guidance for climate reporting? (See Section 7)
- How might international protocols be influenced or strengthened to improve climate reporting and how likely is it for an international climate reporting standard to be developed in the short term? This question assumes that New Zealand can influence the quality of climate reporting standards through consultation with the international standard-setters. (See Section 8)
- Given the current situation, what direct changes could New Zealand policy-makers and standard-setters make to improve climate reporting in New Zealand? This question assumes that New Zealand actively pursues other ways to strengthen climate reporting. (See Section 8)

3. **Webinar with Mark Carney in conversation with Adrian Orr (Reserve Bank) and Hon James Shaw (May 2020)**

On 28 May 2020, Simpson Grierson, Climate Disclosure Standards Board (CDSB) and the McGuinness Institute hosted a virtual roundtable discussion to hear the perspectives of some of the world's thought leaders on climate change and finance: Mark Carney (UN Special Envoy for Climate Action and Finance and former Governor of the Bank of England), Adrian Orr (Governor of the Reserve Bank of New Zealand) and James Shaw (Minister for Climate Change, Minister for Statistics and Associate Minister of Finance). They discussed rapid pathways to achieve New Zealand's transition to a low-carbon future, with a particular focus on the Recommendations of the Task Force on Climate-related Financial Disclosures (TCFD).

4. **Presentations on Climate Change Reporting: How to prepare and report climate scenarios (Feb 2021) and Scenario Development (Mar 2021)**

Auckland Council asked the Institute to present on how to prepare and report climate scenarios. The PowerPoint slides can be found [here](#). This page also provides a later presentation (March 2021) to Victoria University that explores how to develop scenarios.

5. **Emissions Reduction Plan strategy mapping workshop (May 2021)**

The Emissions Reduction Plan strategy mapping workshop connected a group of highly motivated and informed parties to explore the creation of an emissions reduction plan strategy map. The workshop helped the participants learn more about the strategy mapping tool, and tested whether a strategy mapping exercise (worksheet 1) followed by an assumption mapping exercise (worksheet 2) could contribute to improving the design and communication of a strategy. See the worksheets on our website [here](#).

6. **Establishing Aotearoa New Zealand's Reference Climate Scenarios (August 2021)**

This discussion, held on 18 August 2021, was part of the first stage of 'Establishing Aotearoa New Zealand's reference climate scenarios', a discussion that brought attendees online for two hours during day one of Alert Level 4 lockdown. This discussion will contribute to Report 18: Climate Change Strategy for Aotearoa New Zealand.

The discussion included a presentation by Professor Nick Golledge (Antarctic Research Centre, Victoria University of Wellington) on the IPCC Sixth Assessment Report, as well as a presentation by Wendy McGuinness.

View Nick's presentation and Wendy's slideshow [here](#).

3.3 Key lessons

Early this year, Wendy McGuinness gave a presentation to Auckland Council which outlined some key concerns and traps we have discovered while interpreting climate change research. We discuss some of these traps below.

1. **The difference between ‘data’, ‘information’ and ‘knowledge’**

Data on its own does not create information; data becomes information only when data forms patterns (or not). In addition information on its own does not create knowledge, information only becomes knowledge when there is sufficient information to illustrate how the system works. Hence knowledge is not simply dependent on quality and timely data or relevant information – true knowledge evolves from understanding how a system operates dynamically (e.g. how it responds to new stimuli). Knowledge often comes from observing a system over a long period of time and is passed on from one generation to another. Climate change is relatively new and we are still very much at the data stage. We need to focus on the quality and timeliness of the data we have and to collect, sort and chronicle data for current and future generations – so that we can benchmark progress or what does not work.

2. **The difference between ‘strategy’ and ‘foresight’.**

Strategy deals with the means to an end; it is hard work. It focuses on ‘how’ and the ‘goal’ – in particular how to reach the goal. Foresight is creative, playful and explorative and focuses on ‘what if’. We find that, in the climate space, not enough effort is put into foresight.

3. **The difference between ‘probable futures’, ‘preferred futures’ and ‘possible futures’.**

The Cone of Plausibility makes the distinctions clear. We find that, in the climate space, the narrative quickly goes to the preferred future and not enough time is spent on the possible futures. A trick that futurists talk about is the trap of talking yourself into a preferred future. Some futurists refuse to go into the preferred future space due to the way it creates bias and blind spots. Basically it can trap you into thinking only about the goal (and how to get there) and you fail to seek out new conflicting information that might make you change your goal or allow you to pivot to find an optimal position and in some cases better position from where you started. The risk in the climate space is that many people and communities have (or are in the process of) developing a preferred future (e.g. the status quo or a green utopia), when in practice we need to keep a very open and curious mind. We find in the climate space the tension arises because people are trapped in a preferred future. The Government will need to work hard to focus the debate on probable and possible futures, particularly at this early stage of policy development.

4. **The difference between ‘probability’ and ‘magnitude’.**

People tend to not take into account low-probability high-magnitude events. New Zealand has three of these in recent years: the Christchurch earthquakes, Whakaari / White Island and the terrorist attack. Some experts argue we are simply not wired to consider and prepare for low probability outcomes – the majority outcome tends to rule – even if we are dealing with something like a 60/40 ratio, we tend to plan for the 60 and forget the 40 percent chance exists. This means we need to work hard to ensure that low-probability events are taken into consideration and uncertainty over those probabilities are at best – a broad estimate. We find in the climate space, we need to work hard to ensure low-probability possibilities are discussed early in the process

5. **The difference between ‘models’ and ‘scenarios’.**

This distinction is important and is, in our view, leading to confusion in the climate change space.

- Models are about assumptions and tend to be financial in nature and identify probable outcomes. A model contains a great deal more logic and aims to be transparent. They are more science than art.
- Scenarios are explorative narratives that are, to a degree, made up. They are used to explore possible futures and are iterative – exploring connections and relationships as you move through the scenario. See our worksheet (Attachment 3) on how to develop climate change scenarios attached. They are more art than science.

Models often inform scenarios (they are an input) whereas scenarios can identify areas of study that might lead to new models or changes in assumptions of existing models. They can and often work together but they are tools that have very different purposes. We find that, in the climate space, people frequently mix up models and scenarios; for example in our view the IPCC scenarios are really models.¹⁸

In 2008, the Institute undertook some scenario work which used climate change and genetic modification as a way to explore the future: Report 6 – Four Possible Futures for New Zealand in 2058 (updated April 2009).¹⁹ It includes some quite detailed timelines for each of the four scenarios: The journey from 2008 to 2058 – which might be of interest. To illustrate the difference between what a model can tell you versus a scenario – the lessons learnt from this scenario work identified the following things to watch – to indicate which of the four worlds we might be moving towards:

- A fortress mentality versus a desire to work with others, both between individuals and between countries.
- Disparities in wealth, health, education and technological adoption within societies and between countries.
- The type of leadership style, in particular whether it is proactive and forward thinking or complacent and reactive.
- The extent to which privacy and secrets are accepted norms in government, or whether transparency and public accountability are the more common ethic. (page 47)

Importantly, long-term strategies that rely on modelling alone can be severely flawed, and should be avoided because they fail to take into account low-probability events and fail to imagine how the timing of events bring about different outcomes. The Institute challenged 36 young people at a youth workshop to develop and design a card game that enabled people to learn that the timing of the card (how the cards are played) lead to major changes in outcomes.²⁰ We suggest that in the climate change space, scenarios have an important role to play and Government should create a space and place for scenario development.

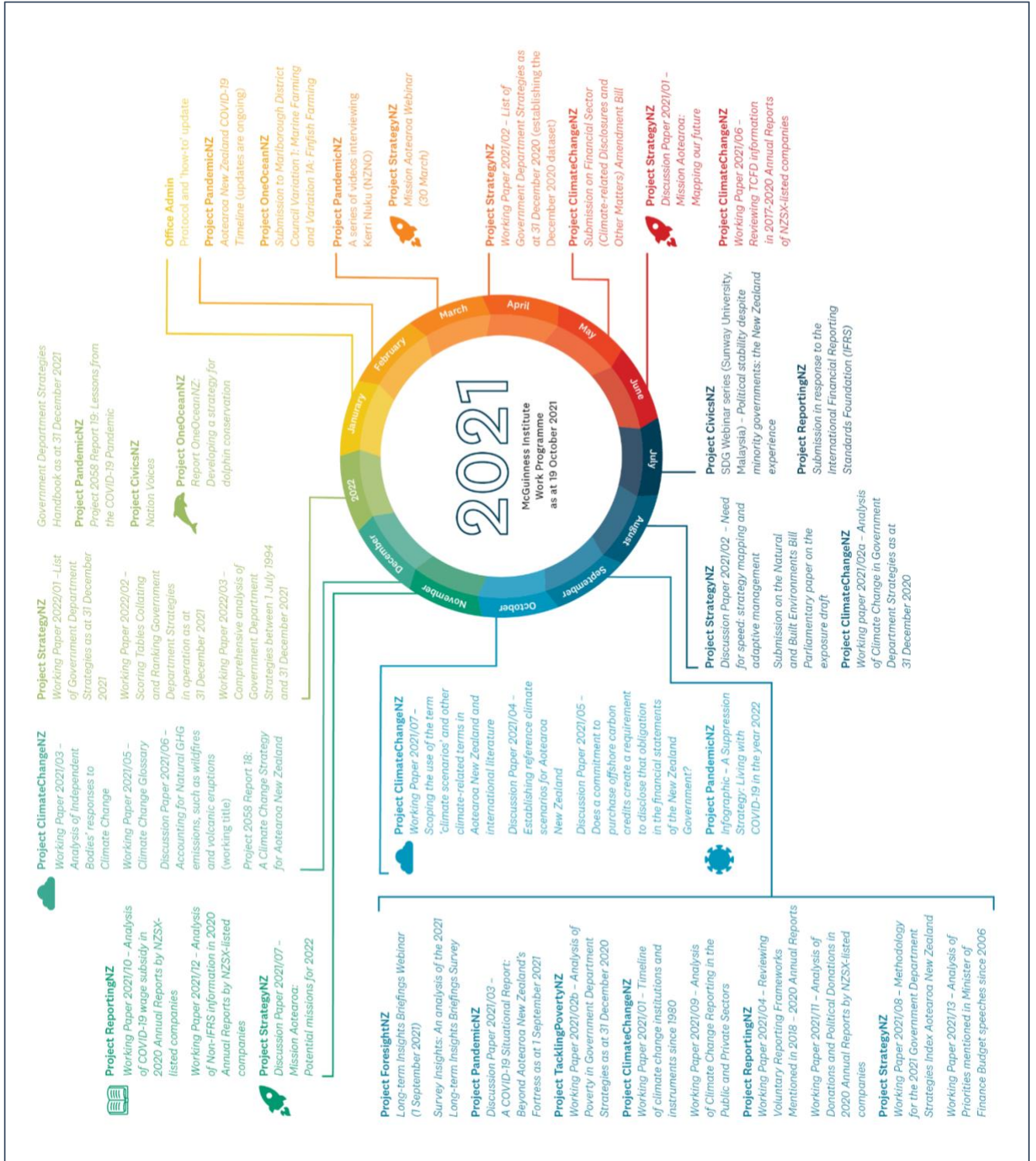
6. **The difference between ‘types of research’.**

Being clear about the different types of research available for the country to invest in will be important not just from an input perspective but also in terms of what gaps/opportunities exist that require further research. We define three different types of research below:

- **Primary versus secondary research** Primary research is gathering new data rather than relying on already existing data. Secondary research is where you are not the author and you have decided to rely on the work of others to build your knowledge. The Institute, for example, does a mixture of both primary and secondary research.
- **Non-targeted (broad) research versus targeted research** Targeted research is where a researcher focuses on a specific issue that has often emerged from broad research. Non-targeted is a grant or gift that enables the recipient to undertake research without strings.
- **Basic versus applied research** Basic research (also called pure research or fundamental research), is driven by curiosity or interest in a scientific question. It aims to improve scientific theories and prediction of phenomena. It is a major means of generating new ideas, principles and theories and is often academic in nature. In contrast, applied research is designed to solve a specific practical problem, it is often commercial in nature rather than to acquire knowledge for knowledge’s sake.

We find that, in the climate space, not enough effort is put into examining and differentiating between the different types of research that are needed. No one seems to be managing the research that currently exists or identifying research gaps. Instead, we are seeing technology based silver-bullet solutions (applied targeted research) rather than social solutions.

Figure 6: Our 2021 Work Programme



Appendix 1: List of questions from Te hau mārohi ki anamata: Transitioning to a low-emissions and climate-resilient future

1. Do you agree that the emissions reduction plan should be guided by a set of principles? If so, are the five principles set out above the correct ones? Please explain why or why not.
2. How can we enable further private sector action to reduce emissions and help achieve a productive, sustainable and inclusive economy? In particular, what key barriers could we remove to support decarbonisation?
3. In addition to the actions already committed to and the proposed actions in this document, what further measures could be used to help close the gap?
4. How can the emissions reduction plan promote nature-based solutions that are good for both climate and biodiversity?
5. Are there any other views you wish to share in relation to the Transition Pathway?
6. Which actions to reduce emissions can also best improve our ability to adapt to the effects of climate change?
7. Which actions to reduce emissions could increase future risks and impacts of climate change, and therefore need to be avoided?
8. The Climate Change Commission has recommended that the Government and iwi/Māori partner on a series of national plans and strategies to decarbonise our economy. Which, if any, of the strategies listed are a particular priority for your whānau, hapū or iwi and why is this?
9. What actions should a Māori-led transition strategy prioritise? What impact do you think these actions will have for Māori generally or for our emission reduction targets? What impact will these actions have for you?
10. What would help your whānau, community, Māori collective or business to participate in the development of the strategy?
11. What information would your Māori collective, community or business like to capture in an emissions profile? Could this information support emissions reductions at a whānau level?
12. Reflecting on the Commission's recommendation for a mechanism that would build strong Te Tiriti partnerships, what existing models of partnership are you aware of that have resulted in good outcomes for Māori? Why were they effective?

Equitable transitions strategy

The Climate Change Commission recommends developing an Equitable Transitions Strategy that addresses the following objectives: partnership with iwi/Māori, proactive transition planning, strengthening the responsiveness of the education system, supporting workers in transition, and minimising unequal impacts in all new policies.

13. Do you agree with the objectives for an Equitable Transitions Strategy as set out by the Climate Change Commission? What additional objectives should be included?
14. What additional measures are needed to give effect to the objectives noted by the Climate Change Commission, and any other objectives that you think should be included in an Equitable Transitions Strategy?

The Commission suggests that the Equitable Transitions Strategy should be co-designed alongside iwi/Māori, local government, regional economic development agencies, businesses, workers, unions, the disability community and community groups.

15. What models and approaches should be used in developing an Equitable Transitions Strategy to ensure that it incorporates and effectively responds to the perspectives and priorities of different groups?

Other actions

16. How can Government further support households (particularly low-income households) to reduce their emissions footprint?
17. How can Government further support workers at threat of displacement to develop new skills and find good jobs with minimal disruption?
18. What additional resources, tools and information are needed to support community transition planning?
19. How could the uptake of low-emissions business models and production methods be best encouraged?
20. Is there anything else you wish to share in relation to making an equitable transition?
21. In addition to the Climate Change Commission monitoring and reporting on progress, what other measures are needed to ensure government is held accountable?

22. How can new ways of working together, like mission-oriented innovation, help meet our ambitious goals for a fair and inclusive society and a productive, sustainable and climate-resilient economy?
23. Is there anything else you wish to share in relation to government accountability and coordination?
24. What are the main barriers or gaps that affect the flow of private capital into low-emissions investment in Aotearoa?
25. What constraints have Māori and Māori collectives experienced in accessing finance for climate change response activities?
26. What else should the Government prioritise in directing public and private finance into low-emissions investment and activity?
27. Is there anything else you wish to share in relation to funding and financing?
28. Do you have sufficient information on future emissions price paths to inform your investment decisions?
29. What emissions price are you factoring into your investment decisions?
30. Do you agree the treatment of forestry in the NZ ETS should not result in a delay, or reduction of effort, in reducing gross emissions in other sectors of the economy?
31. What are your views on the options presented above to constrain forestry inside the NZ ETS? What does the Government need to consider when assessing options? What unintended consequences do we need to consider to ensure we do not unnecessarily restrict forest planting?
32. Are there any other views you wish to share in relation to emissions pricing?
33. In addition to resource management reform, what changes should we prioritise to ensure our planning system enables emissions reductions across sectors? This could include partnerships, emissions impact quantification for planning decisions, improving data and evidence, expectations for crown entities, enabling local government to make decisions to reduce emissions.
34. What more do we need to do to promote urban intensification, support low-emissions land uses and concentrate intensification around public transport and walkable neighbourhoods?
35. Are there any other views you wish to share in relation to planning?
36. What are the big challenges, particularly around technology, that a mission-based approach could help solve?
37. How can the research, science and innovation system better support sectors such as energy, waste or hard-to-abate industries?
38. What opportunities are there in areas where Aotearoa has a unique global advantage in low-emissions abatement?
39. How can Aotearoa grow frontier firms to have an impact on the global green economy? Are there additional requirements needed to ensure the growth of Māori frontier firms? How can we best support and learn from mātauranga Māori in the science and innovation systems, to lower emissions?
40. What are the opportunities for innovation that could generate the greatest reduction in emissions? What emissions reduction could we expect from these innovations, and how could we quantify it?
41. Are there any other views you wish to share in relation to research, science and innovation?
42. What information, tools or forums would encourage you to take greater action on climate change?
43. What messages and/or sources of information would you trust to inform you on the need and benefits of reducing your individual and/or your businesses emissions?
44. Are there other views you wish to share in relation to behaviour change?
45. Recognising our strengths, challenges, and opportunities, what do you think our circular economy could look like in 2030, 2040, and 2050, and what do we need to do to get there?
46. How would you define the bioeconomy and what should be in scope of a bioeconomy agenda? What opportunities do you see in the bioeconomy for Aotearoa?
47. What should a circular economy strategy for Aotearoa include? Do you agree the bioeconomy should be included within a circular economy strategy?
48. What are your views of the potential proposals we have outlined? What work could we progress or start immediately on a circular economy and/or bioeconomy before drawing up a comprehensive strategy?
49. What do you see as the main barriers to taking a circular approach, or expanding the bioeconomy in Aotearoa?
50. The Commission notes the need for cross-sector regulations and investments that would help us move to a more circular economy. Which regulations and investments should we prioritise (and why)?
51. Are there any other views you wish to share in relation to a circular economy and/or bioeconomy?
52. Do you support the target to reduce VKT by cars and light vehicles by 20 per cent by 2035 through providing better travel options, particularly in our largest cities, and associated actions?

53. Do you support the target to make 30 per cent of the light vehicle fleet zero-emissions vehicles by 2035, and the associated actions?
54. Do you support the target to reduce emissions from freight transport by 25 per cent by 2035, and the associated actions?
55. Do you support the target to reduce the emissions intensity of transport fuel by 15 per cent by 2035, and the associated actions?
56. The Climate Change Commission has recommended setting a time limit on light vehicles with internal combustion engines entering, being manufactured, or assembled in Aotearoa as early as 2030. Do you support this change, and if so, when and how do you think it should take effect?
57. Are there any other views you wish to share in relation to transport?

Energy strategy

58. In your view, what are the key priorities, challenges and opportunities that an energy strategy must address to enable a successful and equitable transition of the energy system?
59. What areas require clear signalling to set a pathway for transition?

Setting targets for the energy system

60. What level of ambition would you like to see Government adopt, as we consider the Commission's proposal for a renewable energy target?

Phasing out fossil gas while maintaining consumer wellbeing and security of supply

61. What are your views on the outcomes, scope, measures to manage distributional impacts, timeframes and approach that should be considered to develop a plan for managing the phase out of fossil gas?

Decarbonising the industry sector

62. How can work underway to decarbonise the industrial sector be brought together, and how would this make it easier to meet emissions budgets and ensure an equitable transition?
63. Are there any issues, challenges and opportunities for decarbonising the industrial sector that the Government should consider, that are not covered by existing work or the Commission's recommendations?

Addressing current data gaps on New Zealand's energy use and associated emissions through an Energy and Emissions Reporting scheme

64. In your view, should the definition of a large energy user for the purposes of the proposed Energy and Emissions Reporting scheme include commercial and transport companies that meet a specified threshold?
65. We have identified a proposed threshold of 1 kt CO₂e for large stationary energy users including commercial entities. In your view, is this proposed threshold reasonable and aligned with the Government's intention to meet emissions budgets and ensure an equitable transition?
66. In your view, what is an appropriate threshold for other large energy users such as transport companies?
67. Are there other issues, challenges or opportunities arising from including commercial and transport companies in the definition of large energy users for the purposes of the proposed Energy and Emissions Reporting scheme that the Government should consider? Supporting evidence on fleet size and characteristics is welcomed.

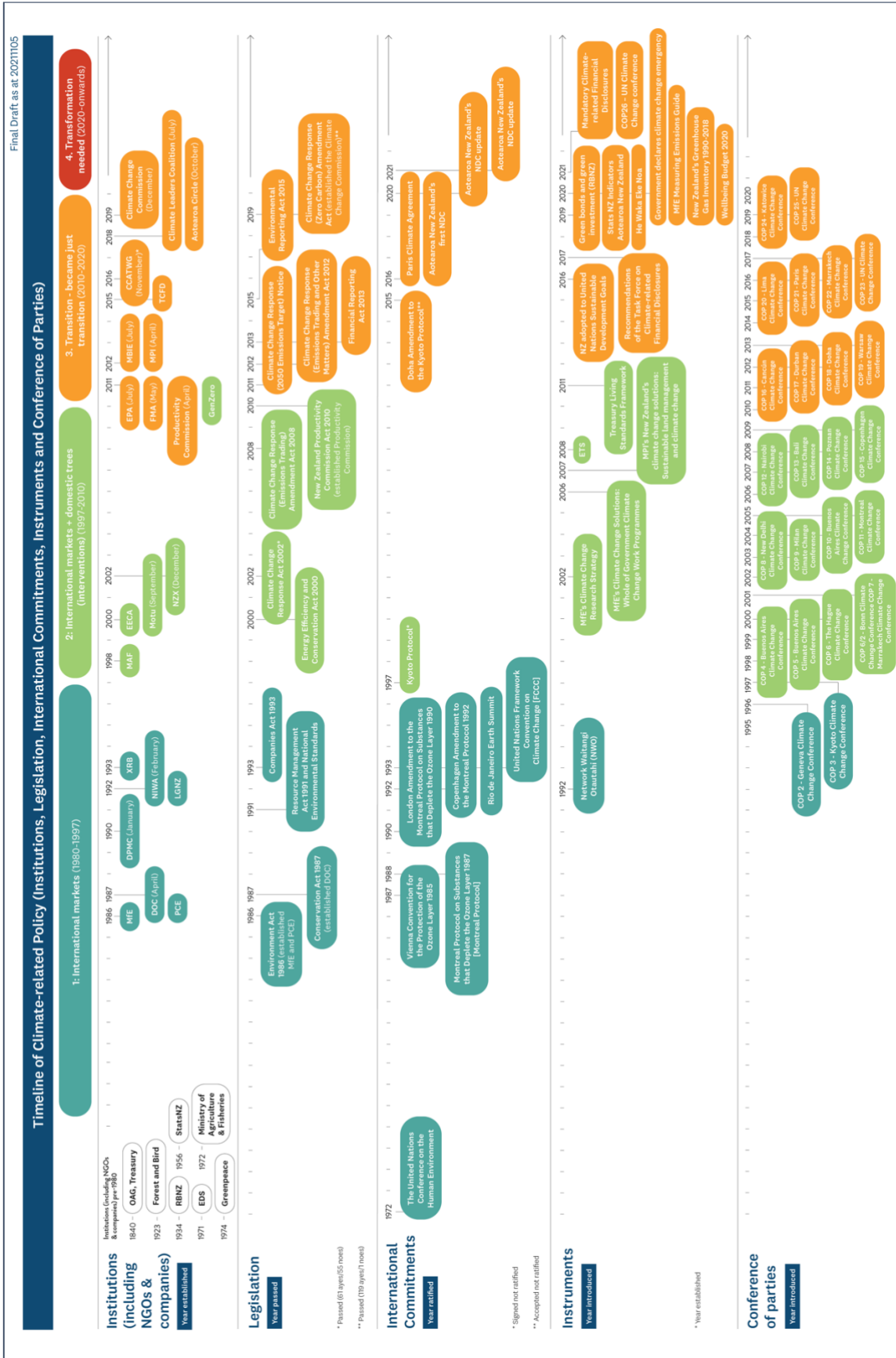
Supporting development and use of low-emissions fuels

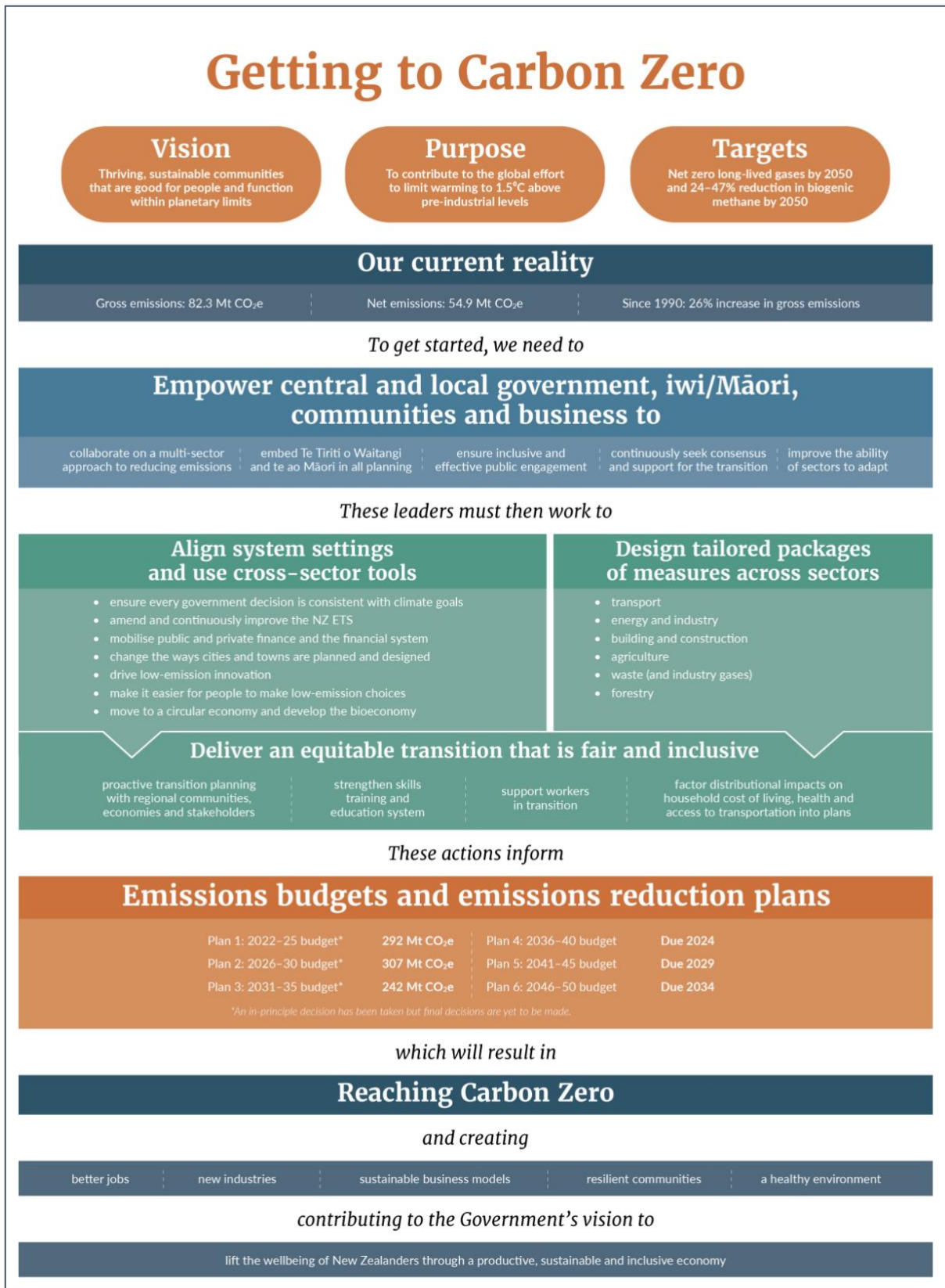
68. What level of support could or should Government provide for development of low-emissions fuels, including bioenergy and hydrogen resources, to support decarbonisation of industrial heat, electricity and transport?
69. Are there any other views you wish to share in relation to energy?
70. The Commission recommended the Government improve the energy efficiency of buildings by introducing mandatory participation in energy performance programmes for existing commercial and public buildings. What are your views on this?
71. What could the Government do to help the building and construction sector reduce emissions from other sectors, such as energy, industry, transport and waste?

72. The Building for Climate Change programme proposes capping the total emissions from buildings. The caps are anticipated to reduce demand for fossil fuels over time, while allowing flexibility and time for the possibility of low-emissions alternatives. Subsequently, the Commission recommended the Government set a date to end the expansion of fossil gas pipeline infrastructure (recommendation 20.8a). What are your views on setting a date to end new fossil gas connections in all buildings (for example, by 2025) and for eliminating fossil gas in all buildings (for example, by 2050)? How could Government best support people, communities and businesses to reduce demand for fossil fuels in buildings?
73. The Government is developing options for reducing fossil fuel use in industry, as outlined in the Energy and industry section. What are your views on the best way to address the use of fossil fuels (for example, coal, fossil gas and LPG) in boilers used for space and water heating in commercial buildings?
74. Do you believe that the Government's policies and proposed actions to reduce building-related emissions will adversely affect any particular people or groups? If so, what actions or policies could help reduce any adverse impacts?
75. How could the Government ensure the needs and aspirations of Māori and iwi are effectively recognised, understood and considered within the Building for Climate Change programme?
76. Do you support the proposed behaviour change activity focusing on two key groups: consumers and industry (including building product producers and building sector tradespeople)? What should the Government take into account when seeking to raise awareness of low-emissions buildings in these groups?
77. Are there any key areas in the building and construction sector where you think that a contestable fund could help drive low-emissions innovation and encourage, or amplify, emissions reduction opportunities? Examples could include building design, product innovation, building methodologies or other?
78. The Ministry of Business, Innovation and Employment (MBIE) is considering a range of initiatives and incentives to reduce construction waste and increase reuse, repurposing and recycling of materials. Are there any options not specified in this document that you believe should be considered?
79. What should the Government take into account in exploring how to encourage low-emissions buildings and retrofits (including reducing embodied emissions), such as through financial and other incentives?
80. What should the Government take into account in seeking to coordinate and support workforce transformation, to ensure the sector has the right workforce at the right time?
81. Our future vision for Aotearoa includes a place where all New Zealanders have a warm, dry, safe and durable home to live in. How can we ensure that all New Zealanders benefit from improved thermal performance standards for our buildings?
82. Are there any other views you wish to share on the role of the building and construction sector in the first emissions reduction plan?
83. How could the Government better support and target farm advisory and extension services to support farmers and growers to reduce their emissions?
 - a. How could the Government support the specific needs of Māori-collective land owners?
84. What could the Government do to encourage uptake of on-farm mitigation practices, ahead of implementing a pricing mechanism for agricultural emissions?
85. What research and development on mitigations should Government and the sector be supporting?
86. How could the Government help industry and Māori agribusinesses show their environmental credentials for low-emissions food and fibre products to international customers?
87. How could the Government help reduce barriers to changing land use to lower emissions farming systems and products? What tools and information would be most useful to support decision-making on land use?
88. Are there any other views you wish to share in relation to agriculture
89. The Commission's recommended emissions reduction target for the waste sector significantly increased in its final advice. Do you support the target to reduce waste biogenic methane emissions by 40 per cent by 2035?
90. Do you support more funding for education and behaviour change initiatives to help households, communities and businesses reduce their organic waste (for example, food, cardboard, timber)?
91. What other policies would support households, communities and businesses to manage the impacts of higher waste disposal costs?
92. Would you support a proposal to ban the disposal of food, green and paper waste at landfills for all households and businesses by 1 January 2030, if there were alternative ways to recycle this waste instead?
93. Would you support a proposal to ban all organic materials going to landfills that are unsuitable for capturing methane gas?

94. Do you support a potential requirement to install landfill gas (LFG) capture systems at landfill sites that are suitable?
95. Would you support a more standardised approach to collection systems for households and businesses, which prioritises separating recyclables such as fibre (paper and cardboard) and food and garden waste?
96. Do you think transfer stations should be required to separate and recycle materials, rather than sending them to landfill?
97. Do you think the proposals outlined in this document should also extend to farm dumps?
98. Do you have any alternative ideas on how we can manage emissions from farm dumps, and waste production on farms?
99. What other options could significantly reduce landfill waste emissions across Aotearoa?
100. Do you think it would be possible to phase down the bulk import of hydrofluorocarbons (HFCs) more quickly than under the existing Kigali Amendment timetable, or not?
101. One proposal is to extend the import phase down to finished products containing high-global warming potential HFCs. What impact would this have on you or your business?
102. What are your views on restricting the import or sale of finished products that contain high-global warming potential HFCs, where alternatives are available?
103. What are your views on utilising lower global warming potential refrigerants in servicing existing equipment?
104. Do you have any thoughts on alternatives to HFC refrigerants Aotearoa should utilise (eg, hydrofluoroolefins or natural refrigerants)?
105. Can you suggest ways to reduce refrigerant emissions, in combination with other aspects of heating and cooling design, such as energy efficiency and building design?
106. Do you think we should look to forestry to provide a buffer in case other sectors of the economy under-deliver reductions, or to increase the ambition of our future international commitments?
107. What do you think the Government could do to support new employment and enable employment transitions in rural communities affected by land-use change into forestry?
108. What's needed to make it more economically viable to establish and maintain native forest through planting or regeneration on private land?
109. What kinds of forests and forestry systems, for example long-rotation alternative exotic species, continuous canopy harvest, exotic to native transition, should the Government encourage and why?
 - a. Do you think limits are needed, for example, on different permanent exotic forest systems, and their location or management? Why or why not?
 - b. What policies are needed to seize the opportunities associated with forestry while managing any negative impacts?
110. If we used more wood and wood residues from our forests to replace high-emitting products and energy sources, would you support more afforestation? Why or why not?
111. What role do you think should be played by:
 - a. central and local governments in influencing the location and scale of afforestation through policies such as the resource management system, ETS and investment
 - b. the private sector in influencing the location and scale of afforestation?
 - c. Please provide reasons for your answer.
112. Pests are a risk to carbon sequestration and storage in new, regenerating and existing forest. How could the Government support pest control/management?
113. From an iwi/Māori perspective, which issues and potential policies are a priority and why, and is anything critical missing?
114. Are there any other views you wish to share in relation to forestry?

Appendix 2: Timeline of Climate-related Policy (Institutions, Legislation, International Commitments, Instruments, and Conference of Parties)





Endnotes

1. See Shaw, J. (7 July 2021). *"It falls to us" - Principles for guiding the Emissions Reduction Plan* [speech]. Beehive. Retrieved 29 November 2021 from <https://www.beehive.govt.nz/speech/it-falls-us-principles-guiding-emissions-reduction-plan>.
2. See International Association for Public Participation (IAP2). (2018). *IAP2 Spectrum of Public Participation*. Retrieved 29 November 2021 from https://iap2.org.au/wpcontent/uploads/2020/01/2018_IAP2_Spectrum.pdf.
3. Example of dynamic modelling. See Climate Change Committee (CCC). (9 December 2020). *Sixth Carbon Budget*. Retrieved 29 November from <https://www.theccc.org.uk/publication/sixth-carbon-budget>.
4. See Hofstetter, D. (August 2020). *Transformation Capital: Systemic Investing for Sustainability*. Climate-KIC. Retrieved 29 November 2021 from <https://www.climate-kic.org/wp-content/uploads/2020/08/Transformation-Capital-Systemic-Investing-for-Sustainability.pdf>.
5. Nature-based Solutions (Nbs) are defined by IUCN as ‘actions to protect, sustainably manage, and restore natural or modified ecosystems, that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits’. See International Union for Conservation of Nature (IUCN). (2021). *Nature-based Solutions*. Retrieved 29 November 2021 from <https://www.iucn.org/theme/nature-based-solutions>.
6. For the purposes of this paper ‘mitigation deterrence (MD) is broadly defined as the prospect of reduced or delayed mitigation resulting from the introduction or consideration of another climate intervention’. See Markusson, N., et al. (2018). Towards a cultural political economy of mitigation deterrence by negative emissions technologies (NETs). *Global Sustainability*, 1(10), pp. 1–9, p. 1. Retrieved 29 November 2021 from <http://wp.lancs.ac.uk/amdeg/files/2018/11/Markusson-et-al-Towards-a-cultural-political-economy-of-mitigation-deterrence-by-negative-emissions-technologies-10-10-18.pdf>.
7. See Parliamentary Commissioner for the Environment (PCE) Te Kaitiaki Taiao a Te Whare Pāremata. (March 2019). *Farms, forests and fossil fuels: The next great landscape transformation?*. Retrieved 29 November 2021 from <https://www.pce.parliament.nz/media/196523/report-farms-forests-and-fossil-fuels.pdf>.
8. Parliamentary Commissioner for the Environment (PCE) Te Kaitiaki Taiao a Te Whare Pāremata. (March 2019). *Farms, forests and fossil fuels: The next great landscape transformation?*. Retrieved 29 November 2021 from <https://www.pce.parliament.nz/media/196523/report-farms-forests-and-fossil-fuels.pdf>.
9. See Cook, M. (March 2010). Government and industrial development - Intervention, 1960s and 1970s. *Te Ara - the Encyclopedia of New Zealand*. Retrieved 29 November 2021 from <https://teara.govt.nz/en/government-and-industrial-development/page-3>.
10. See McGuinness Institute. (March 2011). *Report 11 – A History of Future-thinking Initiatives in New Zealand 1936–2010: Learning from the past to build a better future*. Retrieved 29 November 2021 from <https://www.mcguinnessinstitute.org/publications/project-2058>.
11. See McGuinness Institute. (September 2021). *Survey Insights: An analysis of the 2021 Long-term Insights Briefings Survey*. Retrieved 29 November 2021 from <https://www.mcguinnessinstitute.org/publications/surveys>.

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12. See He Waka Eke Noa Primary Sector Climate Action Partnership. (23 November 2021). *He Waka Eke Noa Discussion Document*, p. 17. Retrieved 29 November 2021 from <https://hewakaekenoa.nz/wp-content/uploads/2021/11/He-Waka-Eke-Noa-Draft-Engagement-Document-November-December-2021.pdf>.
 13. See He Waka Eke Noa Primary Sector Climate Action Partnership. (23 November 2021). *He Waka Eke Noa Discussion Document*, p. 17. Retrieved 29 November 2021 from <https://hewakaekenoa.nz/wp-content/uploads/2021/11/He-Waka-Eke-Noa-Draft-Engagement-Document-November-December-2021.pdf>.
 14. See Rotorua Te Arawa Lakes Programme. (2017). *Incentives*. Retrieved 29 November 2021 from <https://www.rotorualakes.co.nz/incentives>.
 15. See Joy, M. (26 September 2016). Mike Joy: The heavy price of our waterways pollution. *Stuff*. Retrieved 29 November 2021 from <https://www.stuff.co.nz/national/politics/opinion/84656186/mike-joy-the-heavy-price-of-our-waterways-pollution>.
 16. See The Aotearoa Circle. (n.d.). *Marine*. Retrieved 29 November 2021 from <https://www.theaotearoacircle.nz/marine>.
 17. See The Aotearoa Circle. (n.d.). *Marine*. Retrieved 29 November 2021 from <https://www.theaotearoacircle.nz/marine>.
 18. See Hausfather, Z. (21 August 2019). *Explainer: The high-emissions 'RCP8.5' global warming scenario*. Carbon Brief. Retrieved 29 November 2021 from <https://www.carbonbrief.org/explainer-the-high-emissions-rcp8-5-global-warming-scenario>.
 19. See McGuinness Institute. (Updated April 2009). *Report 6 – Four Possible Futures for New Zealand in 2058*, p. 47. Retrieved 29 November 2012 from <https://www.mcguinnessinstitute.org/publications/project-2058>.
 20. See McGuinness Institute. (n.d.). *ForesightNZ: Untangling New Zealand's long-term future*. Retrieved 29 November 2021 from <https://www.mcguinnessinstitute.org/upcoming-events-2/workshops/foresight-nz-workshop>.