



Accelerating business investment in climate change mitigation and adaptation

Key points

Accelerating public and private investment in climate change mitigation and adaptation is key to future macroeconomic and business outcomes.

The government should continue to improve the settings for business investment, and the key actions are:

- an enduring policy commitment to a low-carbon economy and investment
- reform finance policies and financial institutions
- strengthen carbon markets to support their effectiveness
- support innovation and ensure a level playing field
- accelerate divestment and investment
- provide small businesses with tools to support knowledge, investment decisions and action.

Businesses can take the following actions to accelerate investment:

- recognise that a degree of climate change is more likely than not due to global inaction
- incorporate climate change leadership into governance and management structures
- communicate the risks, opportunities and actions with shareholders, staff, customers and supply chain partners
- champion nature-based solutions
- assess the risks and opportunities.

What is the problem we are trying to solve?

Climate change is a global challenge that transcends political boundaries worldwide. Action by a few big emitters could make a big difference for many countries. The Paris Agreement was minimalist, and efforts have not achieved the threshold goals. It was adopted by 196 parties at COP21 in 2015. It entered into force in 2016. It aims to limit the increase in the global average temperature below 2°C above pre-industrial levels and encourage action to limit the increase to 1.5°C. This is driven by the UN's Intergovernmental Panel on Climate Change modelling, indicating that warming above 1.5°C risks unleashing far more severe climate change impacts, including more frequent and severe droughts, heatwaves and rainfall.

Achieving the goal of limiting warming to limit global warming to 1.5°C would require greenhouse gas emissions to peak before 2025 at the latest and decline 43% by 2030.

New Zealand is exposed to global inaction

New Zealand should act to achieve its commitments under the Paris Agreement, not least because it demonstrates that New Zealand's commitment to international legally binding commitments is an exercise in soft power that will encourage other countries to take action as well. Commitment to international agreements has served us well in different contexts, especially trade policy and free market access. New Zealand has been successful in shaping the rules and arguing for adherence to those rules. If we can do this in the trade area, which also affects the business bottom line, we could do the same for climate action.

New Zealand needs others to reduce the emissions for warmer aspirations. Otherwise, the climate externality for us will be more intense and severe – and out of our control.

However, global inaction on emissions reduction and transition investment leaves New Zealand vulnerable to climate change risks that we have insufficient control over. Businesses, households, and the government in New Zealand need a plan for a degree of climate change. Therefore, businesses need to consider the risks and opportunities associated with inaction, as well as the high probability scenarios for the global warming scenarios for New Zealand, their industry, and their business, and then determine the strategic actions required.

What are the economic risks for businesses in New Zealand

There are three sources of risk from climate change and transitioning to a low-carbon economy:

- environment risks
- economic and business risk
- investment risks.

The table below provides a brief synopsis of the risks linked to climate change. The focus of the synopsis is the risks for business. There are also social risks linked to climate change, particularly distributional risks. These social implications are better explored elsewhere.

Table 1: Climate change risks for businesses operating in New Zealand

Physical risks	Business risks	Investment uncertainty
<p>Long wave risks – structural changes in the climate</p> <p>Warmer temperatures</p> <p>Climatic zone shifts</p> <p>Habitat squeeze</p> <p>Land use change</p> <p>Sea level rise</p> <p>Coastal erosion</p> <p>Ocean acidification</p> <p>Intensification of rainfall patterns – more in the west, less in the east</p> <p>Decrease in humidity</p> <p>Short wave risks and damaging weather events</p> <p>Floods</p> <p>Droughts</p> <p>Wildfire</p> <p>Extreme temperature days</p> <p>Storm surge</p> <p>Extreme wind speed and cyclones</p>	<p>Markets change</p> <p>Disruptive demand and supply effects</p> <p>Market demand shifts away from high carbon towards green options</p> <p>Supply chain uncertainty and upward cost pressure</p> <p>Regulatory and legal standards shift</p> <p>An evolving patchwork of requirements at international and national levels</p> <p>Carbon taxation and pricing</p> <p>Shifting heterogeneous operational and product standards</p> <p>Mounting concern about liabilities for environmental impacts</p> <p>Litigation risk</p> <p>Brands and reputations evolve</p> <p>Growing expectations for responsible conduct from stakeholders</p> <p>Risk of loss of trust and confidence</p> <p>Technology and innovation</p> <p>Innovation and adoption are notoriously uneven and disruptive</p> <p>Emerging technology is still maturing</p> <p>Switching technologies involves risks</p>	<p>Timing is key</p> <p>Moving too early could mean overinvesting in dated technology</p> <p>Moving too late could put upward pressure on costs and timeframe</p> <p>Right-sizing matters</p> <p>Matching the investment to the challenge requires a good understanding of the scope of the challenge.</p> <p>Flexibility matters</p> <p>Moving early with a small investment with options is better than a significant investment that locks in trajectories.</p>

Source: NZIER based on Ministry for the Environment 2018; 2020; Cambridge Institute for Sustainability Leadership (CISL) 2019

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The opportunities linked to climate action

The response to climate change presents a range of investment opportunities. These opportunities include:

- Demand associated with transition
- Investment in reducing the emissions intensity on production, logistics and consumption
- Investment in resilience and infrastructure

- The opportunities are local, national and international.

The table below briefly explores a few opportunities to show the possible potential. Several reports could be written in each of these examples. The list is not intended to be extensive or in-depth, but further investigation of these opportunities would be economically, environmentally and socially advantageous for New Zealand and investors.

Table 2 Opportunities for public and private investment linked to climate change

Investment opportunity	Transition demand	Reduces carbon intensity	Improve resilience	Local market	Export opportunity
Energy infrastructure Generation, distribution and storage	Transition to clean energy foundational	Industrial processes need reliable, clean energy	Household generation and storage improves resilience	More renewable energy supply needed for transition	New Zealand brand position
Civil infrastructure Transport, storm management, preparedness			Transport, telecommunications and storm management investments are needed	Demonstrate need for more resilient infrastructure	
Circular economy Inputs, design, production, logistics, use, collection, energy, waste management	Under-investment in recycling facilities Exporting waste less tenable	Estimates suggest a circular economy may reduce emissions by 39%	Increased efficiency More supply chain management Design out waste Strengthen brand	Increased investment in local recycling Reduced cost pressure on land-fill	Strengthen brand
Sustainable food production Grass feed livestock, advanced horticulture and blue economy	Lower emissions agriculture Technological advancement Food technology science	Global leader in carbon efficient agriculture	Efficiency improvement, more resilient Reduced reliance on imported inputs	Sustainable food price premium	Sustainable food price premium
Nature-based solutions Restoration, ecotourism, carbon farming and biodiversity credits	Pricing in emissions creates an opportunity for markets	Pricing in emissions promotes investment in lower emission intensity	Nature-based solutions can sequester carbon, restore biodiversity and absorb the effects of climate events	Green bonds are tools for capital investment	By 2050, the global demand for biodiversity credits may be \$120B (The World Economic Forum and McKinsey and Company 2023)

Source: NZIER

What are the barriers to business investment?

Business investment in climate mitigation and adaptation is a new context for well-traversed business investment settings. In general, the key influences of the business environment in New Zealand are well understood. The main influences on business investment are access to capital, financial constraints, the cost of capital, business expectations, uncertainty, risks, regulation technology and economic geography (Ministry of Business, Innovation and Employment 2020; Dixit, Dixit, and Pindyck 1994).

In general, the favourable conditions that support and encourage business investment in the context of New Zealand are (NZIER 2023a):

- Strong and reliable institutions
- Trade policy is well developed for agriculture but less so for other sectors
- Robust competition policy
- Starting a business is more accessible than in other countries
- Corruption is consistently lower than in most countries, and high trust in institutions
- Human capital is comparable with other countries, but the labour market is small.

What's different about business investment in climate action in New Zealand compared to other business investments?

- Climate change is disruptive at regional, national and global scales, with industry-specific effects (IPCC 2022; Ministry for the Environment 2020; New Zealand Treasury and Ministry for the Environment 2023).
- The scale of the investment required The global projected investment requirement for climate action is around US\$6.3–\$6.7 trillion per year by 2030, which will need to come from a combination of private

and public sources (London School of Economics 2024).

- Investors bear the risks, but the benefits are shared (the free-rider problem); as a consequence, investors may be reluctant to act (W. Nordhaus 2019)
- Short-termism is a persistent challenge for investment life cycles that require a return on investment (Dasgupta 2008; W. D. Nordhaus 2021).
- There is uncertainty about the scale and timing of the return on the investment, particularly in relation to rare but potentially catastrophic storm events.

Consider the hypothetical investment challenge of a port to determine how high it should build a sea wall

The business needs to balance the benefits of mitigating the risk of damage with the cost of the infrastructure in the context of the increasing severity and frequency of storms and their being less predictable.

The benefits of the sea wall are likely to benefit other parts of the economy and society, so should there be a contribution from those beneficiaries? If so, how much and how could they be persuaded to contribute?

The cost of capital for business demands a return, even if the infrastructure continues to protect the harbour beyond the accounting life of the asset, but a commercial rate of return is likely to discount distant future benefits. How much of the long-term benefits to society are to be reflected in the cost of capital? And critically, where does the port go to get independent expert analysis on the hazard risk to support its decision-making processes and stakeholder engagement with other beneficiaries?

What needs to happen to encourage investment?

An essential role for the government is to set the right incentives, send the proper signals, and intervene to address market failures and

government failures linked to climate change and climate change investment. Without setting out the market and government failures, commitment to enduring policy in the following areas is recommended:²

- An enduring policy commitment to a low-carbon economy and low-carbon investment
- Reform finance policies and financial institutions
- Strengthen carbon markets to support their effectiveness
- Support niche responses and ensure a level playing field against incumbents
- Accelerate divestment and investment
- Invest in public infrastructure resilience
- Provide small businesses with tools to understand climate risks, investment costs, and benefits.

An enduring policy commitment to a low-carbon economy and low-carbon investment

International responses from businesses to robust policies for incentivising investment in a low-carbon economy show how decisive policy can be (OECD 2024a). For example, decisive policy commitment to renewable energy and electric cars has shown that producers and investors will respond to a changing market when there is a high degree of certainty about the policy commitments. That commitment spurs innovation, competition and investment in the whole supply chain. This is because businesses understand the policy signal, have certainty in travel direction, and can identify market opportunities.

Reform finance policies and financial institutions

There is a clear need for the following changes to lower the barriers to private investment

and increase the relative attractiveness of such options:

Change market structures so that the value of positive externalities from the environment or the avoidance of negative externalities such as greenhouse gases can be reflected in company accounts – some progress has been made on this through climate risk disclosures and standards (XRB 2024).

Develop and maintain private markets for public environment goods and services such as biodiversity credits, carbon credits or wetland/peatland credits, including the regime to monitor and report on the credibility of credit schemes (OECD 2024a; W. D. Nordhaus 2021).

Promote debt and equity tools for investment in climate action and environmental stewardship, such as green bonds, natural disaster insurance, responsible investment reporting requirements and enforcement (New Zealand Treasury 2022; OECD 2024a; The World Bank 2024).

Lower the investment assessment barriers for small business through climate action tools and risk management disclosures tailored for small, medium and large businesses.

Strengthen carbon markets to support their effectiveness

Well-functioning carbon markets are pivotal for encouraging businesses and consumers to choose a low-carbon pathway. Carbon pricing internalises the external cost of emitting, which shifts consumer and business decisions (Weitzman 2017). Low carbon prices and free credits undermine the emissions trading scheme (ETS). They are effectively pushing the cost of transitioning or the consequences of not transitioning to lower emissions in the future. This cannot continue indefinitely, and the costs could compound if extremely rapid changes are needed in a highly constrained

² An assessment of the market and government failures was completed to support the recommendations, but left

off the publication for brevity. These policy issues are well cover in many other publications.

market. The Climate Change Commission's advice on improvements to the ETS was (Climate Change Commission 2024):

- Reduce the quantity of the units in the ETS as soon as possible to decrease the risk of not achieving targets.
- Income from ETS auctions is uncertain; therefore, policies should not depend on it.
- Clear policy goals about reducing greenhouse gas emissions are needed for a well-functioning market.

Support innovation and ensure a level playing

Innovation is costly, and markets can be challenging for new entrants. Achieving climate goals requires greater use of existing low-carbon technologies, such as renewable energy and electric vehicles, and the development and deployment of new clean technologies, such as digital tools, recycling, carbon capture and biotechnology.

However, while investment in research, development, and deployment is a critical business activity, it is also risky, globally competitive, and requires the adoption of carbon technologies. It is a fraught process for business leaders needing to choose the best way forward while determining how and when to shift away from current mature activities that often involve existing capital assets.

Accelerate divestment and investment

Subsidies and tax incentives introduce inefficiencies and distortions in the market. However, the success of electric vehicle subsidy schemes has shown that they can be surprisingly effective in achieving behaviour changes. Subsidies and tax incentives could be an option, but the benefits and detriments of using such economic policy tools should be investigated and considered quantitatively (Ministry of Business Innovation and Employment 2022). Climate action and incentivising businesses will require a formal

exploration of a wide range of options and the trade-offs involved with each option.

Allow for accelerated depreciation on non-transition assets such as coal-fired heaters and industrial plants.

Invest in public infrastructure resilience.

Public infrastructure resilience is critical in responding to gradual environmental changes and recovery from climate change-related weather events.

The ability to build infrastructure such as transport links, sea walls, flood management, electricity transmission, and network communications. Governments have an instrumental role in commissioning, procuring and stimulating infrastructure investments even when private businesses can often manage the construction and maintenance of it. The infrastructure characteristics and the potential for free rider problems result in underinvestment if the company is the sole decision maker. Governments are better able to direct the settings and develop public infrastructure.

The resilience of that infrastructure can be defined as a combination of the strength of the infrastructure to cope with severe events and the infrastructure's ability to bounce back, even if it experiences some damage.

Assessments on the speed of economic and social recovery from climatic events show that the availability of public infrastructure, such as roads and communications, is a leading contributor to the ability to respond to emergencies and the recovery speed.

Three key climate change-related policy insights from the OECD (2024b) were:

- Weaknesses in the enabling environment and lack of risk awareness are hampering public and private investment decisions, and a systemic approach is needed to make physical climate risk visible in investment decisions to demonstrate that resilience is a source of value rather than only cost.

- Addressing regulatory barriers to private financing, ensuring effective risk sharing, and, in some cases, using public support strategically will be critical for unlocking this potential.
- Integrating climate resilience into long-term planning and linking planning to financing will be critical for ensuring the effective use of public resources, reducing perceived risk to the private sector and building flexibility to address uncertainty over time.

Provide small businesses with tools to support knowledge, investment decisions and action

In New Zealand, the majority of businesses are small businesses. Being small limits resources, capacity and specific capabilities related to assessing the risks and opportunities associated with climate change mitigation and adaptation options. Even if individual businesses can do little on mitigation, they may still be exposed to environmental and economic risks from climate change, and therefore, they need to adapt.

Distributional effects are also an essential consideration at the household and firm level because the financial capacity and ability to actively invest time in decision-making varies. For example, small businesses have reported decision paralysis as a critical barrier to investment in digitalisation (Xero 2021). Investment in climate mitigation and adaptation presents a similar complex decision scenario with many options, scenarios and trade-offs.

Just as the Treasury developed the CBAX tool to increase the accessibility and standardisation of cost-benefit analysis for policy, it could create a tool for small businesses to quantify the costs and benefits of risks, mitigation and adaptation strategies. As with CBAX, this tool could include standardised risk profiles (by industry and region) and evidence-based values regarding

costs and benefits. A set of how-to guidelines would also be helpful.

Actions for business

There is a vital role for government. Likewise, businesses can investigate the actions that will support investment and climate action. There are two types of investment:

- **Mitigation investments** that reduce the risk outlook
- **Adaptation investments** that prepare businesses for predicted outcomes and or strategically reposition a business to improve performance in a changing natural and economic environment.

Recognise that a degree of climate change is more likely than not due to global inaction

Investment in climate change mitigation and adaptation has been plagued by short-termism and uncertainty. Climate change would have seemed like a long-term possibility that might eventuate sometime in the future for many New Zealanders. Time has passed. To some degree, climate change seems more likely than the continuation of the 'status quo.' The Paris Agreement aimed to limit global warming, not prevent it. Inaction or insufficient action to reduce greenhouse gas emissions globally has led to the current situation.

Global under-investment in developing, deploying, and adopting lower carbon outcomes remains below the estimated required levels.

Action on emissions in New Zealand contributes to the global goal of avoiding the more severe climate change scenarios because all countries need to act to realise global outcomes. However, inaction globally leaves New Zealand vulnerable to climate change risks that we have insufficient control over. So, businesses, households, and governments in New Zealand must recognise that some level of climate change is more likely than not, and the trend is for some level

of global warming instead of none. Therefore, businesses need to consider the risks and opportunities associated with inaction, as well as the high probability scenarios for the global warming scenarios for New Zealand, their industry, and their business, and then determine the strategic actions required.

In New Zealand, major businesses already see the costs of inaction on climate change as more costly and risky for business success and profitability than strategic actions to respond to the risks and opportunities of climate change. The momentum needs to grow, and experiences can be shared where competition allows them to.

Incorporate climate change leadership into governance and senior management structures

Risk management and monitoring business sustainability are at the core of good governance.

Leadership and effective decision-making require the capability and capacity to determine strategic direction in the face of uncertainty, market dynamics, and an evolving regulatory framework.

Communicate the risks, opportunities and actions with shareholders, staff, customers and supply chain partners

In a changing world where climate externalities are being internalised through carbon pricing, it is favourable to take customers and stakeholders along.

Communication is always an opportunity for marketing and brand positioning.

Champion opportunities for nature-based solutions

Business investment in nature-based solutions offers the potential for protecting and improving existing natural capital with a wide range of benefits. The European Commission defines nature-based solutions as:

“Solutions that are inspired and supported by nature, which are cost-effective, simultaneously provide environmental, social and economic benefits and help build resilience. Such solutions bring more, and more diverse, nature and natural features and processes into cities, landscapes and seascapes, through locally adapted, resource-efficient and systemic interventions.”
(European Investment Bank and European Union 2023, 2).

Nature-based solutions can potentially bring social, economic, and environmental benefits simultaneously. Delivery of equity, biodiversity and climate change objectives through the investment in and stewardship of the natural environment. The benefits of ecosystem services where are:

- provisioning for economic activity
- environmental regulation (such as the ability of coastal ecosystems to protect human development from storm damage),
- supporting biological services like carbon absorption
- cultural benefits such as recreation and connection to nature have well-established health benefits.

See NZIER’s report *Valuing the Hauraki Gulf: An ecosystem services and natural capital approach* for a detailed example of the application of the assessment of ecosystem services (NZIER 2023b).

The challenge is attracting business investment in nature-based solutions, which requires mechanisms for businesses to demonstrate the return from that investment. Addressing the barriers to private investment in nature-based solutions reflects the discussion earlier in this Insight article.

Complete an assessment of the risks and opportunities

Business investment decisions require robust and considered due diligence. This involves six

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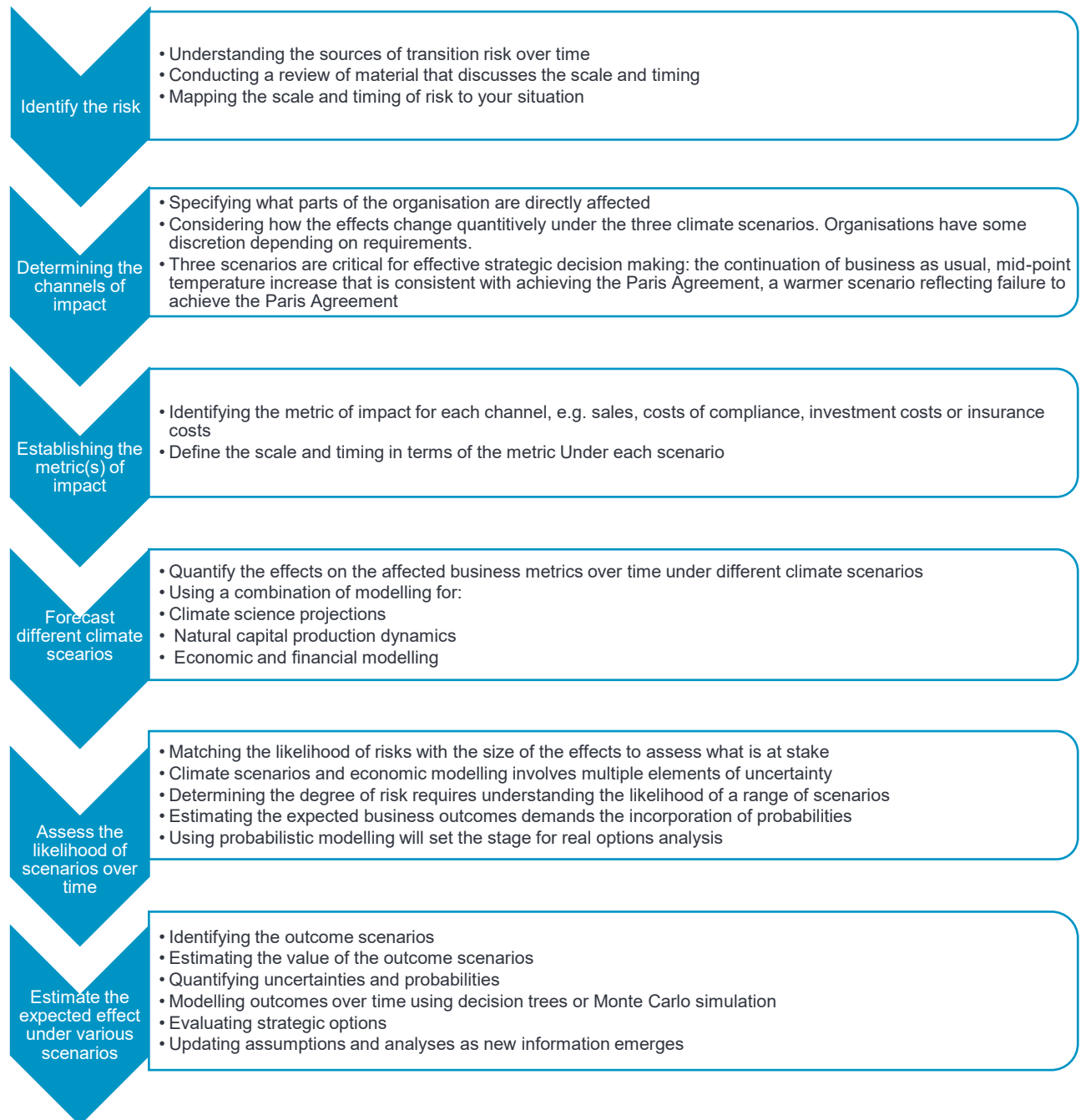
critical steps described in the figure below. Industry bodies are in a good position to fund evidence-based research on the likely risks and opportunities for specific industries and regions. This would help address barriers to investment, such as short-termism and the free rider problem. Research by industry bodies would also support small business and overcome challenges with the limited capacity for research among sole traders.

The climate risk assessment framework is equally applicable at the industry level as it is to an individual business. The only difference

is that focus at the industry level would be broader and more thematic than the specificity needed at the business (or business unit) level.

With the right level of investment, industry associations could also develop assessment tools for businesses to assess the risks and the costs and benefits of mitigation or adaptation options. This tool would provide a starting point for quantitative and qualitative climate action investment options assessment.

Figure 1 Assessing the risks and opportunities linked to climate change



Source: NZIER

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