Climate Change and Prudential Regulation: Issues in New Zealand

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Executive summary

Climate change is an emerging risk that will profoundly affect our financial sector, economy, and society. The way that we respond to climate change is complicated by the fact that the actions we take (or refrain from taking) now will often only have consequences that will not be seen until well into the future. As the prudential regulator responsible for protecting and enhancing the stability of New Zealand’s financial system, the Reserve Bank will need to have a forward-looking and flexible approach to climate change that ensures financial firms are managing their climate-related risks now in a way that keeps them resilient to climate risks into the future.

The long timeframes involved in climate change, and the transition to a low-carbon economy, mean that the private interests of financial firms and investors may not align well with the best interests of society. This is a potential market failure to which financial regulators around the world are increasingly responding by incorporating climate risks into how they monitor and manage their domestic financial sectors.

Financial regulators’ response to climate change is rapidly evolving. In New Zealand, since the Review of the Reserve Bank Act was announced in June 2018, the Reserve Bank has identified climate change as an emerging risk to New Zealand’s financial system, and has released a Climate Change Strategy. The focus of the Reserve Bank’s work at this stage is on contributing to a sustainable, productive, inclusive, and low-carbon economy by managing its own impacts on the climate, and collaborating with various private and public stakeholders to ensure that New Zealand’s transition to a low-carbon economy does not adversely impact financial stability.
Work is at an early stage, and the Reserve Bank has a range of opportunities to further develop its response to climate change and contribute to a financial system that is resilient to climate-related risk. This paper explores some of the opportunities available to the Reserve Bank, including:

- Opportunities for supervision and enforcement, such as:
  - Embedding climate risk into the supervisory framework
  - Ensuring climate risks are being considered at corporate board level
  - Improving the accuracy of information available on climate risks
  - Encouraging firms to improve their situational awareness and develop internal systems to manage and monitor climate risk

- Opportunities for macro-prudential tools, such as:
  - Stress testing and scenario planning
  - Capital overlays and sectoral requirements

- Opportunities for learning, evolving, and collaborating across stakeholders

- Opportunities for developing greener financial markets and mainstreaming green financing.

The opportunities considered in this paper are not a prescriptive list of climate change responses. They reflect possible paths of action that the Reserve Bank is currently exploring, or could take in the future. As the domestic and international responses to climate change develop and best practice emerges, new roles for regulators like the Reserve Bank may become apparent over time. The Reserve Bank will need to be able to act flexibly and proactively in responding to this dynamic risk.

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**What is the Reserve Bank’s role in regulating the financial sector?**

Chapter 1 of the first consultation document introduced New Zealand’s financial system, explaining the purpose of the financial sector, why financial regulation is needed, and who the main regulators are, and providing a brief history of how New Zealand’s regulatory framework has evolved.

New Zealand operates a ‘twin peaks’ model for financial regulation, which sees regulation split into two broad functions: conduct regulation and prudential regulation.

- **Conduct regulation** focuses on behaviours and outcomes in financial markets. Conduct regulation aims to ensure that consumers are adequately informed and that regulated entities act fairly, transparently, and with integrity.

- **Prudential regulation** focuses on the soundness and efficiency of financial markets. Prudential regulation aims to ensure that institutions adequately manage both their own financial risks and the risks they collectively pose to the financial system.

In New Zealand’s twin peaks model, the Reserve Bank is responsible for prudential regulation and the Financial Markets Authority is responsible for conduct regulation. Both agencies are operationally independent from government and have their objectives and functions set out in legislation.

This background paper focuses on the role of prudential regulation in dealing with climate risk. Appendix A considers how climate change might affect New Zealand’s wider economy.
About this paper

This paper is part of the second round of consultation for Phase 2 of the Reserve Bank of New Zealand Act 1989 (the Reserve Bank Act Review). This paper supports the two main consultation documents, *In-principle decisions and follow-up questions: The role of the Reserve Bank and how it should be governed* (C2A) and *The Reserve Bank’s role in financial policy: tools, powers, and approach* (C2B).

The terms of reference for Phase 2 of the Reserve Bank Act Review state that the Review will include a “consideration of monitoring and managing the risk that climate change poses to New Zealand’s financial stability, in light of the recommendations of the Task Force on Climate-related Financial Disclosures”. This background paper seeks to respond to this by identifying the financial risks arising from climate change, summarising how the financial sector is currently managing climate risk, and considering what role there is for the Reserve Bank in managing climate risk, based on emerging best practice.

This paper relates to the issues and options discussed in the following chapters in the two consultation documents:

- Chapter 2 of Consultation Document 2A, ‘What financial policy objectives should the Reserve Bank have?’
- Chapter 1 of Consultation Document 2B, ‘What prudential regulatory tools and powers should the Reserve Bank have?’
- Chapter 2 of Consultation Document 2B, ‘What role should the Reserve Bank play in macro-prudential policy?’
- Chapter 3 of Consultation Document 2B, ‘How should the Reserve Bank supervise and enforce prudential regulation?’
- Chapter 6 of Consultation Document 2B, ‘How should the Reserve Bank coordinate with other Government agencies?’.

The wider context

The Reserve Bank Act Review aims to ensure that the Reserve Bank’s monetary and financial policy frameworks are the most efficient and effective for New Zealand.

Phase 1 focused on improving New Zealand’s monetary policy framework, and the resulting Cabinet decisions were announced on 26 March 2018.6

Phase 2 focuses mainly on the Reserve Bank Act’s financial policy framework, which provides the basis for prudential regulation and supervision.

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5 The Minister of Finance announced its terms of reference on 7 June 2018. The Terms of Reference for Phase 2 of the Review of the Reserve Bank Act are available here.

6 You can find more information about Phase 1 on the here.
Part One: Identifying risks to financial stability from climate change

How is the financial sector exposed to climate change?

The financial sector is exposed to climate change primarily through the various sectors of the economy that it lends to, and that it insures. There are two primary risks for the financial sector arising from climate change:

- **Physical risks**: The direct damage to financial, physical, and natural capital or the supply chain due to environmental changes
- **Transition risks**: The direct or indirect costs of moving to a lower-carbon economy, which may prompt a wide-ranging re-evaluation of business models, strategies, and regulations.

These primary risks are interlinked, giving rise to trade-offs. For example, abrupt climate policy changes to bring about a swift transition to a low-carbon economy may cause significant transition risks and economic disruption now, but may reduce physical risks going forward. On the other hand, a slow or delayed reaction to climate change risks may avoid transition risks for now but would likely result in higher transition and physical risks in the long run. As these primary risks are realised, they may have knock-on consequences that are also interlinked, such as:

- **reputation risks**: The damage to a firm’s reputation due to shifting consumer values
- **regulatory risks**: Losses arising from changes to regulation to address climate change
- **social risks**: The costs to social and human capital due to the need to adapt to climate change.

In addition to physical and transition risks, there are liability risks arising from climate change. Liability risks are losses arising from parties affected by climate change seeking compensation from parties that they hold responsible for climate change.

Climate change risks in the context of other financial risks

The Basel risk-management framework\(^7\) recognises three main types of financial risk – operational risk, credit risk, and market risk. Climate change can increase all three of these risks.

- **Credit risk** is the risk that a borrower may be unable to repay their debt to a lender (or ‘creditor’). New Zealand banks lend to a variety of borrowers – including households, small businesses, and large corporates. Climate change may impact these borrowers’ wealth and incomes and therefore their ability to repay, and affect the ability of banks to assess and manage those risks effectively.\(^8\) Lending linked to carbon-intensive activities that become unviable may become unrecoverable, or ‘stranded’, wiping out value.

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\(^7\) The capital adequacy framework in New Zealand is based on the Basel capital framework developed by the Basel Committee on Banking Supervision. More information on the way the Basel framework is used in New Zealand is available here.

\(^8\) In New Zealand, agricultural lending is the second-biggest lending exposure of New Zealand banks, accounting for approximately 14% of banks’ total assets. Climate risk is likely to affect dairy profits. Heavily indebted farms may default on loans, increasing risk.
Market risk is the risk of loss caused by adverse changes in market prices. The transition to a low-carbon economy is likely to change market prices, due either to increases in the cost of carbon-intensive activities through regulations/policy or to changing consumer tastes.

Operational risk is the risk of loss caused by operational failures such as human error, inadequate internal processes, or external events. Climate change that increases the likelihood of extreme weather events will increase operational risks.

The Basel risk-management framework requires banks to hold financial resources – known as ‘capital’ – and have in place systems to manage and mitigate their exposure to these financial risks. To the extent that climate change is assessed as a material source of financial risk, it should be treated in the same way as any other risk within the risk-management framework. However, traditional approaches to managing risk may not deal effectively with climate change risks. This is because climate change risks have some distinctive characteristics, including their:

- far-reaching impacts: Climate change effects will be widespread, and will affect a range of industries
- timeframes: The effects of climate risk will be felt long term, beyond standard business cycles
- identification: There is a lack of clear, reliable, and standardised information to help borrowers and lenders to identify climate change-related risks
- measurement: It is difficult to assess now the uncertain effects of climate change in the long term. The magnitude of the future impact will be heavily influenced by action taken today by firms, governments, and other stakeholders.

Due to these characteristics, it may be difficult to assess, price, and manage climate risks accurately.

How might climate change risks be felt?

Climate change may impact cash flows. Climate-related financial risks may impact the future viability of current business models and strategies. The costs created by extreme weather events and ‘greening’ current business models may affect cash flows in the short run.

Climate change may change the distribution and risk of funding. The transition to a low-carbon economy will require a large scale-up and a redirection of investment towards the adaptation to and mitigation of climate change. Lenders and investors may redirect their funds to more sustainable sectors to minimise their exposure to climate risk and to fulfil corporate social responsibility objectives. Over time, carbon-intensive sectors, or lenders with concentrated exposures to those sectors, may increasingly struggle to attract funding.

Climate change may impact the composition and value of balance sheets. Financial firms may need to divest from highly exposed assets. Firms with concentrated exposures to carbon-intensive industries

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9 A survey of the United Kingdom banking sector found that on average bank planning horizons are only four years (Prudential Regulation Authority, 2018).

10 Even where information is available, it often is not available on an asset or project level (Task Force on Climate-related Financial Disclosures, 2017).
will be particularly vulnerable. The way in which assets and liabilities are valued may also change as long-term trends break down – requiring a more forward-looking expectations approach with less reliance on historical prices and trends.

_Firms will need to change their risk-management and business strategies going forward._ Firms should be evaluating how their businesses are exposed to climate change risks and forming comprehensive management strategies in anticipation of those risks.

**How big are the risks to the financial sector of climate change?**

The international financial sector is highly exposed to climate risks. The risks are highly uncertain and hard to measure: a 2015 study of the value of global assets at risk in the next 100 years as a consequence of climate change revealed a range from US$4.2 trillion to $43 trillion (The Economist Intelligence Unit, 2015). For New Zealand, climate change will likely bring about profound changes for our environment, economy, and financial sector.\(^\text{11}\) The magnitude of climate change impacts in the future will be strongly affected by the actions taken by governments, industry, businesses, and households to mitigate climate risk today. The market will have more confidence in anticipating and preparing for the transition to a low-carbon economy if it is confident that it will be smooth, managed, and sustainable.\(^\text{12}\)

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\(^\text{11}\) New Zealand’s average sea and air temperatures, extreme weather events and sea levels are all expected to rise due to climate change. The effects of these will be felt differently across different regions and industries. For example, low-lying coastal areas will be particularly vulnerable to physical risks; emission-intensive sectors, like dairy farming, may be particularly exposed to transition risks; and green industries such as forestry and horticulture may be in a position to benefit from the opportunities presented by the shift to a low-carbon economy.

\(^\text{12}\) For information on the Government’s plan for climate change see the [climate change programme](#).
Part Two: How the financial sector is currently managing climate risk

The Reserve Bank’s supervisory framework is discussed in detail in Chapter 3 of Consultation Document 2B. The framework is guided by three pillars of market discipline, self-discipline, and regulatory discipline. Firms and investors monitor and influence firms’ risk-taking through self- and market discipline, supported – but only where necessary and proportional – by regulatory discipline exerted by the Reserve Bank to influence private risk-taking and -monitoring incentives or support the market-based channels through which private discipline is exerted. In this way, the three pillars encourage investors and regulated firms to align their private interests with the public interest.

Market discipline – how is the international market pricing and responding to climate risk?

Through 'market discipline', investors monitor and influence firms' risk-taking behaviour. Market discipline works when investors can identify the risks that an investment exposes them to and can either demand a certain return or 'price' in order to be compensated for those risks, or place their money elsewhere to avoid those risks in the first place. For market discipline to work in relation to climate risks, investors need to have access to accurate and decision-useful information on climate risks, and be willing and able to act on that information. The special characteristics of climate risks identified above may make that information hard to source and respond to, possibly blunting the channel of market discipline.

Cognisant of the importance of market discipline in bringing about good management of climate-related risks – and, ultimately, good outcomes for society - international market regulators and participants are taking steps to improve the process for disclosing climate-related financial risks in financial filings. Since 2017, more than 600 organisations – including hundreds of financial firms – have endorsed a privately led but officially backed Task Force on Climate-related Financial Disclosures (TCFD). All four of the Australian parents of New Zealand’s big four banks have supported the TCFD, although the New Zealand subsidiaries themselves have not endorsed TCFD recommendations.

In the context of these developments, as well as increasing coverage of climate change risks in the mainstream media, there are signs of intensifying market discipline of climate-related risks. In the United States in 2018, corporate shareholders made a record number of climate-related bankruptcy filings; global asset managers are starting to shift their money from emission-intensive assets into greener options; and issues of green bonds are hitting record highs with each new year, now at more than US$100 billion annually. Despite this progress, it is widely accepted that climate risks remain hard for markets to identify, price, and respond to accurately. This may be particularly so for New Zealand, without a deep share or bond market.
Self-discipline – how are firms taking account of climate risks and staying situationally aware?

Through ‘self-discipline’, bank managers and directors monitor and manage their own risk-taking behaviour. If the process works well, regulated entities will behave prudently, in accordance with their risk appetites. The Reserve Bank is currently assessing how regulated entities in New Zealand are identifying and managing climate risks.

Evidence from Australia and the United Kingdom indicates that, although banks and insurers are beginning to consider the immediate physical risks to their business models of climate change, there may be a gap between awareness and action. Climate change is identified by one-third of Australian businesses as a current material financial risk, and a further half of Australian businesses think it will be a material risk in the future. However, firms are still in the early stages of taking meaningful action (Australian Prudential Regulation Authority [APRA], 2019). In the UK, three-quarters of UK banks recognise the immediate risks of climate change, but only one in ten is taking a long-term strategic approach to address it (Prudential Regulatory Authority [PRA], 2018).

It is widely recognised that the dynamic nature of climate risks means that firms should be using anticipatory governance to assess, plan, and learn from new information as it becomes available. This means that risk management should start at the top level of governance and cascade down to sub-committee and management levels (APRA, 2019). In the UK, for example, the PRA’s supervisory expectations impose a requirement for boards to better understand the financial risks of climate change, including by appointing senior managers with responsibility for managing climate risks. Nevertheless, financial firms face the same problems as financial markets in identifying, measuring, and responding to climate risks, given a lack of accurate information on those risks. It may be that a lack of New Zealand-specific information will leave New Zealand firms particularly vulnerable, with less situational awareness and fewer incentives to respond to climate-related risks than their international counterparts.
Part Three: What role is there for the Reserve Bank to intervene in climate risk?

Identifying the need for regulatory intervention

The transition to a low-carbon economy is likely to be driven by a combination of government policy and changing market behaviours, and there will likely be a role for financial regulators in facilitating a smooth transition and catalysing market-led change.

In general, regulatory intervention may be justified where firms' private incentives are not well aligned with public policy goals, the misalignment is causing a material risk to the regulatory system (and the regulator’s objectives in that system), and the risk to the regulatory system and the regulator’s objectives can be meaningfully mitigated through regulatory action that is proportional to the risks.

Two specific failures appear to be occurring in the financial sector on this issue, although these two examples are not exhaustive. The first is a lack of awareness at senior management and board levels, which is impeding self-discipline. The second is that the financial implications of climate risk are hard to measure and are not uniformly disclosed by firms (when they are disclosed, disclosures are difficult to compare). This lack of information impedes self- and market discipline.

Barriers to effective self- and market discipline mean that private incentives for monitoring and managing climate risks may not be achieving outcomes that are in the public interest. Operating within existing risk-management frameworks, investors and firms may be misallocating resources or accepting more risk because the costs that arise from climate change are being mis-measured or mispriced. Regulatory intervention to address this may be justified.

Identifying the objectives of the Reserve Bank’s intervention

Under the existing Reserve Bank Act, the Reserve Bank has a statutory responsibility for “promoting the maintenance of a sound and efficient financial system”. As discussed in Chapter 2 of Consultation Document 2A, the Minister has made an in-principle decision to amend the Reserve Bank’s high-level financial policy objective to “protecting and enhancing the stability of the New Zealand financial system”. Like climate-related risks themselves, financial stability is a dynamic and multi-dimensional objective. It is a broad and flexible objective that captures the need to consider how regulatory settings can affect the financial system and real economy through time, and incorporates a number of intermediate goals, such as protecting the resilience of the financial system and mitigating excessive volatility. The Reserve Bank’s primary objective may also be supported by secondary objectives that could further (and more directly) capture climate risk. Chapter 2 of Consultation Document 2A sets out some of these secondary objectives.

Climate change poses a clear risk to the advancement of the Reserve Bank’s financial stability objective, but the priority assigned to it may depend on other concerns. The Reserve Bank takes a risk-based approach to regulatory intervention, and has a mandate to respond to a wide range of risks other than climate change that may pose more immediate threats to financial stability. Intervention in climate issues should be proportional to the risks posed, and be based on where climate risks sit in the Reserve Bank’s order of priorities.
Given the financial sector’s heavy exposure to climate risks set out above, the risks posed by climate change to the Reserve Bank’s objectives could be material. Reserve Bank action on climate change could be justified to support the resilience of the financial sector and the resilience of regulated firms to climate risks, and to avoid the short-term risks of a disorderly, abrupt transition. The degree of required regulatory intervention may change over time: as the available information on climate risk increases – and as the nature and size of the risks and the channels through which those risks will crystallise become better understood – more interventionist approaches may become justified. The Reserve Bank’s financial objectives should be broad and flexible enough to facilitate this.

The Reserve Bank’s approach to climate change is detailed in its Climate Change Strategy (Appendix B).

**Identifying the limits of the Reserve Bank’s intervention**

The extent to which financial regulators should use their regulatory tools to proactively promote a greener financial system remains an open question. A Reserve Bank intervention to advance climate goals unrelated to financial stability could be outside its legislative mandate. The legislated objectives of the Reserve Bank are currently being reconsidered in Chapter 2 of Consultation Document 2A. This chapter discusses the inclusion of lower-tier objectives that could guide the implementation of the primary financial stability objective. These lower-tier objectives stem more widely into market development, and also focus on improving the resilience of regulated firms and of the financial system.

Although its interventions to address financial stability risks stemming from climate change could also support sustainable growth and contribute to the Government’s objective of a sustainable, productive, and inclusive economy, it may be stretching the Reserve Bank’s financial stability mandate too far to expect it to actively promote certain industries, or redirect the allocation of resources, or develop a market for green finance in New Zealand.

Beyond these legislative considerations, there are structural factors that could limit the actions that the Reserve Bank is able to take on climate change. The first limitation is a lack of whole-of-economy understanding about climate-related financial risk. Accurate information is necessary for the Reserve Bank to pinpoint where failures are occurring and ensure that the Reserve Bank can intervene in an efficient, meaningful way. For example, system-wide stress testing could be a valuable method for determining the adequacy of current arrangements. However, scenarios would need to be carefully designed to deliver robust results.

**The Reserve Bank’s role within a wider response**

The distinctive characteristics of climate change risk that justify regulatory intervention also make it unlikely that climate change risks will be addressed effectively by individual regulators working in isolation. The Reserve Bank’s regulatory perimeter is limited to registered banks, non-bank deposit takers, and insurers. However, the financial risks of climate change are also likely to affect financial agents not regulated by the Reserve Bank, such as KiwiSaver funds and asset managers.

Climate-related risks to the New Zealand financial market are likely to be most effectively managed as part of a cross-government response to climate change. It is important for the transition to be predictable and for the cross-government approach to be consistent. Where the Reserve Bank’s mandate aligns with Government transition goals, the Reserve Bank can facilitate a consistent cross-government approach to the transition. A lack of regulatory consistency could cause confusion and undermine business confidence.
Part Four: Evolving international practice

How are other jurisdictions responding to climate-related financial risks?

**Australian Prudential Regulation Authority**

APRA is Australia’s financial system prudential regulator, with statutory objectives of financial safety and efficiency, competition, contestability, and competitive neutrality and, in balancing these objectives, an objective to promote financial system stability in Australia. APRA has clearly identified that it views climate risk as a “foreseeable, material risk to financial stability that is actionable now” (APRA, 2019). APRA board members have highlighted how climate risks are starting to affect both the Australian and global economies, bringing about “unavoidable” transition risk (Summerhayes, 2017a). APRA has also flagged to its regulated entities that it will be taking a proactive stance in dealing with climate risks (Summerhayes, 2017b). For example, although APRA has “no immediate plans” to introduce new prudential standards for climate risk, this position is “likely to change” (Summerhayes, 2017a).

APRA’s current approach to climate change is focused on information-gathering and -sharing, intended to ensure that future policy-making is based on credible information about best practice for managing climate risk in an Australian context (APRA, 2019). To this end, APRA facilitates coordination and information-sharing between itself and other financial regulators on climate risk.

On the domestic level, Australian financial regulators established a Council of Financial Regulators Working Group on Climate Risk in 2017 (APRA, 2018). The working group involves all four of Australia’s main financial regulatory agencies and aims to update regulators on relevant climate risk developments and promote understanding. In addition to this, APRA has an internal working group dedicated to developing APRA’s supervisory response to climate risk (Summerhayes, 2017a). APRA is also engaging with financial firms to increase their understanding of climate risk, and to encourage them to consider climate risks within their wider risk-management frameworks. For example, APRA recently conducted a survey of financial firms to gauge their awareness of climate risk and identify industry best practice (APRA, 2019). APRA has also supported the development of industry initiatives such as the Actuaries Climate Index, a tool that measures the frequency of extreme weather events.

New Zealand and Australia are both exposed to high transition and physical risks from climate change. Australia’s and New Zealand’s financial systems also have a strong home-host relationship, as all four of New Zealand’s largest banks are owned by Australian parent banks. This may be a reason for the Reserve Bank to adopt a relatively consistent approach to APRA in relation to climate risk, in order to enhance trans-Tasman coordination as well as hold New Zealand subsidiaries to standards similar to those of their Australian parents.

**The Bank of England**

Similar to the Reserve Bank’s role in New Zealand’s financial system, the Bank of England (BoE) is the UK’s central bank and one of its key financial regulators, with a statutory responsibility for making sure that the UK financial system is safe and sound. In pursuing its primary financial stability objective, the BoE is obliged to take into account secondary objectives, such as supporting the economic policy of the Government and protecting and enhancing the resilience of the UK financial
system. ‘Resilience’ is considered to be a forward-looking concept, where the BoE is obliged to scan the horizon and identify and manage emerging risks effectively.

The BoE has identified climate risk as a material risk to its financial stability mandate. In order to protect and promote its mandate, the BoE – and the PRA within it – is actively responding to climate risk and closely supervising the financial sector’s resilience to it. The BoE’s approach in relation to climate change is twofold.

Firstly, climate risk is being embedded into the PRA’s supervisory framework for banks and insurers. This approach is focused on increasing firms' situational awareness of climate risk at the board level, and encouraging firms to include climate risk in their risk-management frameworks.

The PRA formally sets supervisory expectations for banks and insurers in relation to climate risks, including expecting:

- an evolving, proportionate, firm response to climate risk
- firms to embed a consideration of climate risk into governance frameworks
- firms to consider climate change in line with risk appetites and incorporating climate risk into risk-management processes
- a regular use of scenario analysis to test resilience to short- and long-term climate risks
- firms to develop and maintain appropriate disclosures of material climate risks.

Secondly, the BoE is working to enhance the resilience of the UK financial system by supporting an orderly transition to a low-carbon economy (PRA, 2018). The BoE undertakes research on climate change, on topics ranging from the impact of climate change on financial regulators to the key theoretical and empirical modelling issues when analysing macroeconomic risks attributed to climate change. In 2019 the BoE will include climate risk scenarios in its financial industry stress tests to help assess the adequacy of the current transition arrangements and inform future policy-making (Carney, 2019). The BoE has also committed to reducing, and disclosing information about, its own carbon emissions.

The BoE is also an active member of domestic and international climate-related financial risk initiatives that bring together senior representatives from across the financial sector to build capacity and share information and best practice on climate risk responses. For example, the BoE is a founding member of the Central Banks and Supervisors Network for Greening the Financial System (NGFS), the Sustainable Insurance Forum, the G20 Sustainable Finance Study Group, and the TCFD.

De Nederlandsche Bank

The Netherlands as a low-lying country is highly exposed to the physical risks of climate change, and is also exposed to transition risks as its energy sector is fuelled by emission-intensive sources. Although New Zealand’s climate risks are different from those of the Netherlands, both countries are small, open economies with independent financial regulators. The De Nederlandsche Bank (DNB) is the Netherlands’ central bank and financial supervisor. Its statutory objective is to safeguard financial

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13 More information on the Central Banks and Supervisors Network for Greening the Financial System can be found here.
stability and price stability. It advances this objective by promoting a resilient financial system that contributes to sustainable economic growth, with strong and sound financial institutions.

The DNB recognises that climate change may have “profound implications” for financial stability (DNB, 2018a), and through its supervisory practices is seeking to foster a forward-looking, sustainable financial sector that is resilient and adaptive to a range of scenarios (DNB, 2018b). This involves extending the strategic planning horizon and devoting more attention to considering sustainability risks.

The DNB’s current approach to climate change focuses on analysing and understanding the financial, economic, and prudential implications of climate risk, and ensuring that the financial sector understands and mitigates emerging climate risks and adapts in a controlled manner to the transition to a low-carbon economy. It is doing this through information-sharing, incorporating climate risk into its supervisory framework, and stress testing. The DNB is a leader in climate-related stress testing, conducting its first test in 2018. The DNB acknowledges that stress testing is difficult, but is a useful tool for modelling and assessing severe but plausible climate change scenarios.

The DNB is also considering ways to developing a sustainable financial market, along with other domestic regulators. Together, the regulators have recommended that all domestic financial firms rapidly adopt the TCFD disclosure framework to help make climate-related data more widely available, comparable, reliable, and complete (Sustainable Finance Platform, 2018).

**The Monetary Authority of Singapore**

The Monetary Authority of Singapore (MAS) is Singapore’s central bank and integrated financial regulator and supervisor. It has a primary objective to maintain price stability conducive to sustainable economic growth and a sound and progressive financial services sector. In advancing this objective, MAS has taken an active approach to climate change, focused on improving firms’ situational awareness, corporate cultures, and disclosures on climate risks. It is doing this by encouraging regulated entities to incorporate climate risks into their risk-management processes, to recognise the importance of climate risks at a board level, and to voluntarily adopt the recommendations of the TCFD. (Alongside this, the Singapore Exchange in 2017 introduced ‘comply or explain’ sustainability disclosure requirements for the financial sector [Wong, 2017; Wang 2018]).

To monitor how well these voluntary changes are being adopted, MAS is integrating environmental risks into its supervisory framework for banks and insurers. Supervisory standard assessments now focus on how well firms are integrating sustainability concerns into their core business- and risk-management decision-making, and going forward climate-related scenarios will be included in industry-wide stress tests (Wang, 2018).

MAS is unusual among financial regulators in that it is also actively addressing barriers to green finance and promoting growth in the green bond market, empowered by a statutory objective to

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14 The successful conduct of climate-related stress testing is hampered by difficulties in: locating detailed data on which scenarios can be based; identifying which individual assets are exposed to climate risk; modelling the dynamic interactions between the macro-economy, the financial system, climate change, and environmental policies; and modelling the severe but long-term impacts of climate risk. These issues were mitigated by using individualised data collected by firms, allowing the DNB to construct a detailed picture of the exposures the financial sector has to different industries (DNB, 2018b).

15 Banks in Singapore are expected to assess environmental risk when evaluating a client’s credit risk, and insurers are expected to factor environmental risk into their investment and underwriting decisions.
promote Singapore as a progressive financial centre. For example, in 2017 MAS introduced a Green Bond Grant Scheme to nurture the growth of the Singapore green bond market, and in June 2018 it signed an undertaking with the World Bank to help grow the Asian green bond market by:

- encouraging investor awareness of climate risk through capacity-building
- promoting the use of internationally recognised green bond standards and frameworks.

Although Singapore has a small, open economy like New Zealand’s, the Reserve Bank does not have a financial market objective like MAS’s. The Reserve Bank also differs from MAS in being operationally independent of government (in contrast, the head of MAS is Singapore’s Minister of Finance). However, similar to MAS, the Reserve Bank may have an interest in deepening New Zealand’s financial markets, which are fairly shallow and narrow. Opportunities for the Reserve Bank to develop green finance in New Zealand are discussed further in Part Five.

**Other international developments in relation to climate-related financial risk**

**The European Commission**

In March 2018 the European Commission released a plan for financing sustainable growth. The plan aims to reorient capital flows towards sustainable investment, to manage climate-related financial risks, and to foster transparency and long-termism in financial and economic activities. So far this plan has resulted in a classification system for sustainable economic activity as well as a harmonised green bond standard across the European Union. This means that firms can have more confidence when investing in green projects that the projects are actually sustainable and not green-washed.

**The Central Banks and Supervisors Network for Greening the Financial System**

The NGFS is a voluntary coalition of 36 central banks and financial supervisors, which are collectively developing best practice to manage climate risk, conduct research on environmental risks and climate risks, and encourage mainstream finance to mobilise in support of the transition to a low-carbon economy. The Reserve Bank is an active member of the NGFS. The NGFS released its first comprehensive report this year, in which it issued six key recommendations (NGFS, 2019):

- Central banks/supervisors should integrate climate risk into financial stability monitoring.
- Central banks/supervisors should integrate sustainability factors into own-portfolio management.
- Central banks/supervisors should bridge data gaps and make information publicly available whenever possible.
- Central banks/supervisors should collaborate with other institutions to build awareness, improve understanding of climate risk, and encourage technical assistance and knowledge-sharing.
- Policy-makers and supervisors should encourage companies to adopt TCFD climate disclosure recommendations, and assist in the development of an internationally consistent environmental disclosure framework.
- Policy-makers should collaborate with relevant stakeholders to develop a taxonomy determining which economic activities support the transition and which are more exposed to climate risks.
The People’s Bank of China

The People’s Bank of China (PBOC) has become a key player in mainstreaming green finance in China, working closely with other governmental agencies to develop comprehensive green banking guidelines, as well as utilising more interventionist methods such as macro-prudential policy and credit-allocation policies.

Banks can earn green ‘points’ that contribute to the PBOC’s risk assessments. Risk weights can be lowered for ‘green’ assets based on empirical evidence of lower risk e.g. lower non-performing loan ratios for green loans. Unlike Western financial regulators, which tend to emphasise market neutrality and encourage market-based and industry-led solutions, the PBOC seeks to guide investment actively to key areas for economic and social development (PBOC, 2018). The PBOC is also involved in international initiatives such as the G20 Green Finance Study Group. These policies may be of limited relevance to the Reserve Bank, as the PBOC is not independent and – unlike the Reserve Bank – has an objective to promote sustainable development.

A summary of emerging international trends and guiding principles

- Financial regulators are increasingly recognising the financial risks of climate change, and incorporating those risks into their ordinary policy-making processes. Climate change is coming to be seen less as a sustainability and social responsibility issue, and more as a threat to economic productivity and financial stability. This shift is likely to increase as the effects of climate change become more pronounced. However, it is a shift that still has some way to go.

- Financial regulators intend to play a supporting role in the transition to a low-carbon economy, rather than be its primary drivers. Financial regulators aim to be catalysts for market-led change by supporting private-sector transition initiatives and encouraging firms to incorporate climate risks into their risk-management processes. This catalyst role seeks to improve the resilience of the financial system, and encourage regulated firms to be resilient and forward-looking when identifying and managing climate risks.

- Financial regulators are focusing on closing information gaps as an early step towards market-led change. This is being done through methods such as stress testing, encouraging or requiring climate-related financial disclosures, conducting research and surveys, and public/private collaborations across domestic and international information-sharing forums.

- A few financial regulators are developing frameworks for green finance. Most regulator-led initiatives in this area are focused on improving available information about green finance and providing standardised definitions and regulations for what constitutes green bonds or green activities.

- The role of financial policy-makers is to develop frameworks where financial markets can adjust efficiently to broader cross-government climate policies. When financial regulators work within governments’ broader approaches, they can encourage consistency and create predictability for firms.
International experience indicates that an effective response to climate-related financial stability risks in New Zealand will require:

- **forward-looking and proactive governance**: Financial regulators should be anticipating emerging climate risks and acting now in order to mitigate long-run impacts. This should be balanced with a financial regulator’s need to be proactive and responsive to short-term risks.

- **a consistent, committed approach**: Where possible, financial regulators should be time consistent and coordinate with other agencies in order to establish common goals and a consistent cross-government approach.

- **transparent expectations and regulations**: The development, implementation, and enforcement of expectations/rules should be clear and easily understood by regulated firms.

- **flexible and adaptive to changing information**: Financial regulators should keep up to date with new information on climate risk and have the capacity to evolve in response to changing circumstances and new developments in best practice.

- **management of climate risk should be proportional and risk-based**: Financial regulators should give climate risk an appropriate weighting relevant to other financial risks. The burden of rules and their enforcement should be proportional to the expected costs and benefits of mitigation.
Part Five: What is the direction of travel for the Reserve Bank?

The Reserve Bank has a number of opportunities to better align private and public interests in managing climate change risks. Broadly, these opportunities involve either incentivising improved private monitoring of climate-related risk-taking or incentivising firms and investors to reallocate their resources to reduce their climate risk exposures.

The opportunities considered in this paper are not exhaustive, or mutually exclusive. They reflect emerging best practice as identified from international trends, including from the recommendations of the NGFS, of which the Reserve Bank is a member. They are not intended as a prescriptive list of climate change responses, and reflect possible paths of action that the Reserve Bank is currently exploring, or could take in future. The opportunities cover multiple functions of the Reserve Bank, and aim to improve the resilience of regulators, regulated firms, and the financial system overall.

As this is an active area, best practice is still developing and new roles for central banks and financial regulators may become apparent over time. This may require the Reserve Bank to act flexibly and be proactive and forward-looking in its identification and management of climate risk. For more information about what the Reserve Bank is currently doing to identify and manage climate risk, see Appendix B: ‘The Reserve Bank’s Climate Change Strategy’.

Opportunities for supervision and enforcement

The Reserve Bank’s supervision and enforcement framework is discussed in Chapter 3 of Consultation Document 2B, ‘How should the Reserve Bank supervise and enforce prudential regulation?’. The following subsections address different ways in which the Reserve Bank could incorporate climate risk into its existing supervisory and enforcement functions. The range of opportunities available to the Reserve Bank includes embedding climate risk into the existing supervisory surveillance framework, working with firms to incorporate climate risk into internal management processes, and incorporating climate risk into disclosure and attestation requirements.

Opportunity 1: Embedding climate risk into the supervisory surveillance framework

Embedding climate risk into the supervisory framework could improve firms’ situational awareness and encourage firms to be aware of and responsive to emerging risks, and dynamic in their management of those risks. It would allow the Reserve Bank to gather information about current industry practice and potentially catalyse firms to think about whether their current practices are sufficient, and help support an orderly transition to a low-carbon economy. Incorporating climate risk into the normal supervisory framework aligns with the Reserve Bank’s core functions, as it recognises that climate risk could impact soundness and efficiency.

‘Good’ supervision requires supervisors to be adaptive and alert to emerging threats. Surveying how firms are currently responding to climate risk will encourage the Reserve Bank to be forward-looking and proactive in the way it mitigates this emerging risk. Surveillance is also a crucial first step to dealing effectively with climate risk, because the Reserve Bank needs to have base knowledge of what the practices of regulated firms looks like. Supervisors could assess system-wide exposure based on qualitative data and quantitative metrics arising from information supplied by firms. To help with this process, the NGFS is currently developing a handbook on climate risk management for...
supervisors and firms. This could ensure that the Reserve Bank’s supervision is consistent with international best practice and would provide firms with certainty on how supervisors plan to monitor climate risk management.

This would not necessarily require the Reserve Bank to dedicate resources specifically to climate risk supervision. The Reserve Bank has the power to request information about any matter. Questions concerning the management of climate risk can be included in supervisors’ regular meetings with directors. When a regulator asks questions about an issue, it signals to firms that the issue is important. Therefore the act of surveillance is likely to improve firm awareness of climate risk, and encourage firms to start taking action themselves without needing prescriptive changes.

The Reserve Bank is already taking action on this issue. Climate change was identified as a material risk in the November 2018 Financial Stability Report (FSR). The Reserve Bank sent letters to regulated entities earlier this year, requesting information about how firms are addressing climate risk, in order to identify current industry practice. The results of this survey were discussed in the May 2019 FSR.

However, there are more intensive surveillance requirements that the Reserve Bank could impose on regulated firms. Next steps could include issuing supervisory expectations of firms’ management of climate risk. Expectations would encourage the industry to build capacity and develop best practice. The Reserve Bank could also administer a thematic review of how the banking sector as a whole is managing climate risk. The most prescriptive approach would be formal prudential requirements, as these would require regulatory change.

**Opportunity 2: Helping regulated firms to assess their own strategic resilience and develop internal systems to manage climate-related risks**

Building on opportunity 1, firms’ strategic resilience to climate change could be improved by encouraging regulated firms to improve their internal management systems to deal effectively with climate risk. This may encourage firms to reduce their exposure and shift their financial flows to support the transition. Facilitating the development of internal systems to manage climate risk would ensure that firms are not only identifying climate risk, but also taking clear, measurable actions to respond to climate risk. Internal systems may be bridges between firms’ long-term strategies and day-to-day activities, and could ensure that current business strategies are in line with an orderly transition to a low-carbon economy.

Under this opportunity, firms could be encouraged or required to develop their own forecasting capabilities and resilience assessments through scenario analysis and risk modelling. Firms could also be encouraged to consider whether financing flows are consistent with an orderly transition and practising long-termism in order to predict and manage the long-term tail risks of climate change. This would improve their exposure management and promote more accurate risk-based pricing. Risk modelling would also help firms to identify gaps in their own risk management and stay abreast of emerging threats. Firms could build on commonly available models and industry guidance for scenario analysis. For climate scenarios that are tailored to the New Zealand context, the Reserve Bank could collaborate with environmental and economic agencies to develop a range of climate scenarios.

The Reserve Bank could use existing tools and resources to encourage firms to exercise anticipatory governance and improve strategic resilience. For example, the Reserve Bank could continue to
exercise soft power and highlight the importance of long-termism and resilience to climate risk. The Reserve Bank could also evaluate the financial sector’s resilience to long-term risks in the FSR. This would signal the importance of strategic resilience to the financial sector. Alternatively, the Reserve Bank could take a prescriptive approach and require evidence that firms are developing internal systems to manage climate risk. For example, the Reserve Bank could require firms to conduct long-term modelling, and demonstrate how the results of this modelling have been used to inform risk-management processes. This could be included in supervisory expectations issued by the Reserve Bank, a pathway discussed above.

Opportunity 3: Setting climate-related disclosure requirements

The Reserve Bank’s disclosure and director attestation regimes are discussed in Chapters 1 and 3 of Consultation Document 2B, ‘What prudential regulatory tools and powers should the Reserve Bank have?’ and ‘How should the Reserve Bank supervise and enforce prudential regulation?’.

Disclosing climate risks consistently, clearly, and reliably would improve the flow of information on and awareness of climate risk. Disclosure would also enable market players and policy-makers to identify and capitalise on opportunities arising from climate risk, which could lead to innovation and the growth of green finance. Disclosure requirements would also be connected to options for climate-related stress testing, discussed below. If disclosures indicate that firms are not satisfactorily identifying and managing risk, requiring firms to model climate risk and publish those results could improve situational awareness and increase the amount of information available at the firm level.

There are several privately led international initiatives to improve the disclosure of climate risks. Most notably, the TCFD has been a leader in this area and released recommendations for climate-related financial disclosures in 2017. The recommendations had five key features (TCFD, 2017):

- Measures must be adoptable by all organisations.
- Disclosures should be included in financial filings.
- Disclosures must be designed to solicit decision-useful, forward-looking information on financial impacts.
- Disclosures should have a strong focus on risks and opportunities related to the transition to a lower-carbon economy.
- Disclosure regimes and mandatory reporting requirements should be aligned, in order to reduce administrative costs and ensure that users can be compared.

The NGFS has collectively endorsed the TCFD recommendations and advised that supervisors and policy-makers foster the broad adoption of these recommendations. The Reserve Bank could encourage the adoption of the TCFD framework in a range of ways. The first would be to provide guidance to firms on how to meet the TCFD requirements. The next step up would be a ‘comply or explain’ approach, where firms would be considered non-compliant if they did not disclose risks and failed to provide adequate explanations. This approach would have greater flexibility and lower

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16 The Reserve Bank has previously expressed the importance of long-termism in speeches given by the Governor. In a recent speech, Adrian Orr emphasised that the Reserve Bank had a “strong, vested interest in, and influence on, the long-term economic wellbeing of New Zealand” and warned that “myopia” or short-sighted action focused on immediate gains may have adverse effects in the long term (Orr, 2018).
compliance costs than a mandatory regime specifying the climate risk data that firms are required to disclose. The Reserve Bank could also use the existing dashboard to provide investors and stakeholders with access to the right information. This would also assist with making disclosures readily comparable.

Although the Reserve Bank’s disclosure regime only captures registered banks, New Zealand’s financial reporting framework covers a broader set of corporate entities. Currently, the Ministry for Business, Innovation and Employment (MBIE) and the Ministry for the Environment (MfE) are jointly exploring how to design a climate-related disclosure system for New Zealand that would align with evolving international best practice. Their ongoing work in this area is likely to capture registered banks. MBIE’s and MfE’s disclosure work is in response to recommendations 7.3 and 7.4 in the Productivity Commission’s Low Emissions Economy Final Report released last year, which relate to climate-related financial disclosures:

- **Recommendation 7.3**: The Government should endorse the recommendations of the TCFD as one avenue for the disclosure of climate risk.
- **Recommendation 7.4**: The Government should implement mandatory (on a comply or explain basis) principles-based climate-related financial disclosures by way of a standard under section 17(2)(iii) of the Financial Reporting Act 2013. These disclosures should be audited and accessible to the general public.

Rather than developing bespoke climate risk disclosure requirements for registered banks the Reserve Bank may prefer to support MBIE’s and MfE’s exploratory work on this issue, and adapt or supplement any future action taken where necessary for registered banks. MBIE and MfE will be publishing a discussion paper on climate-related disclosures later in 2019.

**Opportunity 4: Adding climate risks to directors’ attestation requirements**

Alongside incorporating climate risk in the disclosure framework, directors could be required to attest that their banks have internal systems in place to manage and respond to material climate risks. This would encourage awareness of climate risks at the governance level.

In practice, enforcing director attestations in relation to climate risks may be difficult. As climate-related financial disclosure is a new area and best practice is still developing, it would be difficult to establish clear attestation requirements for directors: it is not yet clear exactly what best practice for directors in this context actually is. The long-term nature of climate risks also means that attestations may be an ineffective tool to incentivise directors to manage them. Directors will realise that, by the time climate risks that they failed to mitigate are realised, they will likely have moved on.

Nevertheless, there are various ways that the Reserve Bank could consider to enhance climate change governance and corporate cultures. For example, the Reserve Bank could consider:

- **publishing best practice guidelines/expectations for directors in relation to climate risk**

Climate risk is an emerging risk, and international experience shows that firms are looking to financial regulators and central banks for guidance on how to manage it effectively. The Reserve Bank could issue supervisory expectations to clarify how directors and boards are expected to respond. This would encourage directors to improve their awareness and develop best practice, without being

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17 **Section 451** of the Financial Markets Conduct Act defines the entities that must report.
prescriptive. For example, the PRA’s supervisory expectations state that a specific senior manager is expected to be responsible for managing climate risk, and set out what optimal management looks like. Supervisory expectations are primarily moral suasion tools that signal to firm executives what they ought to be doing.

**regulating positive obligations for directors in relation to climate risk**

A more prescriptive alternative requirement would be to create positive obligations for specific individuals. Positive obligations would need to identify clearly what directors are expected and required to do in order to manage climate risk effectively. The responsibility for managing climate risk could be allocated to a senior role holder in order to promote awareness of climate risk at the board level. This would require regulators to identify key responsibilities in relation to climate risk, and hold individuals accountable for these responsibilities.

Positive obligations for board members would strongly encourage situational awareness at the top level. Directors would be more motivated to be alert to gaps in their organisations’ risk-management approaches and to consider climate risks and opportunities. Such requirements would also encourage anticipatory governance, which involves exercising foresight and embedding long-term interests into day-to-day decision-making. However, this approach may make directors more risk averse, and could involve significant costs for regulated firms and the regulator to operationalise.

### Opportunities to collaborate with other agencies and regulated firms

**Opportunity 5: Supporting information-sharing hubs and research programmes**

Coordination is discussed in Chapter 6 of Consultation Document 2B, ‘How should the Reserve Bank coordinate with other Government agencies?’.

Supporting cross-government information-sharing about climate risk could improve the Reserve Bank’s holistic understanding of climate risk. New Zealand currently has no whole-of-economy understanding of the level of financial exposure to climate risk (New Zealand Productivity Commission, 2018). The Reserve Bank could provide a unique perspective and lend its financial expertise to discussions with other government agencies that formulate climate policy. Extending the number of agencies with which the Reserve Bank coordinates would have several benefits:

- It would improve the implementation of climate-related policy on a national level.
- Information provided by the Reserve Bank could inform other agencies’ policy-making.
- Information that other agencies provide to the Reserve Bank could increase the Reserve Bank’s understanding of climate risk.
- Specialised agencies such as the [Interim Climate Change Committee](#) or the newly established independent [Climate Change Commission](#) could provide standardised climate change scenarios that the Reserve Bank could use for its analysis of financial sector stability.

In a recent report published by the Climate Change Adaptation Technical Working Group (2018), stakeholders in the New Zealand financial sector indicated that there may be a lack of national direction and objectives from Government in relation to climate change. The report also expressed concerns about a lack of coordination within and across sectors, with some stakeholders expressing a desire to work together on this issue, although finding collaboration difficult in reality due to competition. A lack of common goals means that firms’ approaches to climate risk are unlikely to be
This could be addressed by supporting information-sharing platforms that gather together a wide-ranging membership of public and private sector stakeholders. This approach to coordination would recognise that climate risks will affect institutions that are outside the Reserve Bank’s regulatory perimeter, and that the response to climate-related risks needs to be coordinated and comprehensive – rather than being undertaken in isolation. In particular, coordination with other agencies with interests in financial regulation will be crucial to ensuring a consistent response to climate-related financial risk. This could be done through information-sharing, strategic planning and possibly joint decision-making within the Council of Financial Regulators (CoFR). This could be facilitated informally (putting climate change onto CoFR’s agenda) or even by including climate change in CoFR’s terms of reference.

Opportunities involving macro-prudential tools

One of the special characteristics of climate risk is that it will have widespread effects across the financial sector, as well as the wider New Zealand economy. In order to anticipate and manage these risks, the Reserve Bank may want to incorporate climate risk into macro-prudential policy arrangements. The NGFS has highlighted that conducting quantitative analysis to size the climate risks across the financial system is key to identifying and managing risk effectively. One way in which the Reserve Bank could incorporate this recommendation would be to utilise stress testing to test the financial sector’s resilience to sudden climate-related shocks. The Reserve Bank could use macro-prudential tools to encourage better pricing of climate risk where there is compelling risk-based evidence to do so. Finally, the Reserve Bank could incorporate climate risk into its financial-market-related functions, and promote the development of green finance.

Opportunity 6: Stress testing the financial sector’s resilience to climate risk

The Reserve Bank’s approach to macro-prudential policy is discussed in Chapter 2 of Consultation 2B ‘What role should the Reserve Bank play in macro-prudential policy?’.

The Reserve Bank announced in its Climate Change Strategy (Appendix B) that it will explore the option of including climate-related scenarios in its existing stress testing processes. The results would clarify the strategic resilience of regulated entities and inform capital and regulation requirements. Incorporating standardised climate scenarios in stress tests would enhance the transparency and comparability of different firms’ resilience and exposure, allowing supervisors to compare firms and identify weak points. System-wide stress testing could also help supervisors and other policy-makers to develop efficient transition policies and identify what further action might be needed.

To get the best use out of climate-related stress tests, they should focus on the financial impacts of climate change. Stress tests should be comprehensive, rigorous, and challenging. The assumptions and methodologies used when formulating the scenarios should be clear and well considered. Data for scenarios could be supplied by agencies with expertise in climate issues18, to ensure that scenarios being considered were credible and useful. The special characteristics of climate risk are likely to make stress testing complex and difficult. In particular: identifying detailed climate data on the asset level is a significant challenge; banks may calculate their asset-level risks using different

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18 The National Institution of Water and Atmospheric Research, MfE or the Interim Climate Change Committee.
metrics and/or discount rates for long-term tail risks; and borrowers and their assets will be affected in different ways to varying extents. Nevertheless, the experience of international regulators suggests these issues are surmountable, and building an understanding of how exposures across the financial sector differ is arguably a key reason to do these tests.

The NGFS recommends that all financial regulators utilise ‘scenario analysis’, and is expected to release an analytical framework for assessing climate risk in the near future. This scenario analysis is not just limited to stress testing; it includes long-term modelling of climate risk and economy-wide climate scenarios. These results could be published in the FSR. Other financial regulators currently utilising climate-related stress testing are the DNB and the PRA. The DNB conducted its first climate-related stress test in 2018. This allowed the DNB to construct a detailed picture of the financial sector’s exposures. Approaching regulated firms for anonymised data would be an important preliminary step if the Reserve Bank were to pursue this opportunity.

Opportunity 7: Developing macro-prudential requirements in relation to climate risk

The Reserve Bank could use macro-prudential tools to encourage better pricing of climate risks. If there were compelling evidence that the costs of climate change were being undervalued by firms and investors, the Reserve Bank could consider introducing more stringent measures, such as capital overlays.

Macro-prudential tools might be used to promote the diversification of asset portfolios so that financial firms minimise their risk exposure to emission-intensive activities and industries. A lack of diversification can lead to concentration risks that add to financial instabilities. An example of this in New Zealand is banks’ heavy exposure to dairy farming, which has been identified as a risk by the Reserve Bank in its FSRs. It may be prudent for banks to diversify their lending to other agricultural industries (such as horticulture) or fund investments to help improve dairy farms’ sustainability (e.g. research and development, or planting to offset carbon emissions). The Reserve Bank could facilitate this by incorporating climate risks into bank risk assessments.

For this option to be workable, there would need to be a comprehensive taxonomy of what banking activities are ‘green’ (which could be rewarded) and which are ‘brown’ (which may be penalised). Furthermore, any macro-prudential requirements must be set for financial stability reasons, and based on clear evidence that brown investments are inherently more risky than green investments.

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19 The PRA conducted its first climate-related stress test of the UK insurance sector in April 2019.

20 The agriculture sector currently accounts for around 14% of banks’ total lending. Two-thirds of this lending is to the dairy sector. In its November 2018 FSR, the Reserve Bank observed that the balance sheets of dairy farms are stretched and the resilience of the sector to risks such as a drop in milk prices and transition risks is low.

21 A ‘brown’ activity or asset is one that is emission intensive, and therefore incompatible with the transition to a low-carbon economy.
Opportunities to address macro considerations of systemic financial instability

Opportunity 8: Promoting green finance and investment in green infrastructure

Promoting the development of green finance connects to the Reserve Bank’s financial stability objective in several ways. The Reserve Bank may have a legitimate interest in deepening financial markets. Deep and varied financial markets are more likely to be resilient to shocks and provide investors and consumers with more choice. The Reserve Bank has previously promoted market development by creating standardised disclosure or legal frameworks for certain debt instruments, such as residential mortgage obligations and covered bonds. These corrected market failures that may have caused barriers to investment in these instruments.

The Reserve Bank could ‘green’ its portfolio by buying green bonds, acting as a market maker for green finance. This would also align with the Reserve Bank’s Climate Change Strategy, as the Reserve Bank has committed to reducing or mitigating its future carbon emissions. The Reserve Bank could also incorporate additional environmental criteria in the existing risk-based framework, and ‘filter’ out bonds that were high quality but emission intensive. This would reduce the Reserve Bank’s exposure to assets that could become ‘stranded’ due to the transition. In the future, the Reserve Bank could influence demand by including suitable green instruments on the eligible collateral list (that is, assets which the Reserve Bank is prepared to take as collateral when lending to the banking system).

Looking at the green bond market more broadly, investors and lenders may be uncertain about/wary of it because there is no universally agreed definition of green finance. The Reserve Bank could promote green finance by ensuring that regulations were not inadvertently disadvantaging green finance, or by endorsing international guidelines on what constitutes green credit, or by supporting/collaborating with other regional financial regulators to produce a regional harmonised green bond standard.

There are practical limitations to the Reserve Bank’s ability to promote green finance, however. Firstly, financial markets in New Zealand are small and green finance markets are virtually non-existent. Unlike many central banks that have large asset portfolios, the Reserve Bank’s asset portfolio is kept relatively liquid. The Reserve Bank is unlikely to be a major buyer of green credit – this role may be better suited to Government. Finally, green credit may be risky. The Reserve Bank may want strong evidence that there is a risk differential between green and brown finance in order to justify including green instruments on the eligible collateral list.
How might each opportunity fit into the regulatory framework?

**Primary legislation**

Climate risk is an emerging material risk, and should ideally be addressed in the regulatory framework in the same way as any other material financial risk. However, because of the special characteristics of climate change, and the political and environmental aspects of climate risk, the Reserve Bank may have to be cautious in taking strong, decisive action.

The Reserve Bank might take up these opportunities more readily if statutory objectives clearly support the Reserve Bank in responding to climate risk. For more information on how statutory objectives can support the effective management of climate risk, see Chapter 2 of Consultation Document 2A 'What financial policy objectives should the Reserve Bank have?'. Financial stability is a sufficiently broad statutory objective that allows the Reserve Bank to manage climate risk flexibly and effectively. The Reserve Bank’s prerogative to act would be supported by the secondary objectives proposed by the Review relating to the resilience of regulated firms and the financial system. These secondary objectives would capture climate risk more clearly than the current objectives of soundness and efficiency, as resilience encourages forward-looking and proactive governance.

Including climate change objectives or specific climate-related obligations in primary legislation would compel the Reserve Bank to manage climate risk, and this could be an option if stakeholders are concerned that the Reserve Bank is not embedding climate risk into its regulatory approach. However, climate change is one of many risks that central banks must consider when overseeing the financial system, and including it could risk diverting too much attention from other risks (e.g. cyber risk). Furthermore, because best practice is still being developed, specific climate-related obligations in primary legislation may become outdated over time. Ideally, primary legislation should allow for the Reserve Bank to act flexibly, and encourage the Reserve Bank to promote the resilience of the financial system to long-term risks, including climate risk. For example, the opportunities in this paper would be complemented by reviewing whether the information-sharing and -coordination provisions in the Reserve Bank Act inadvertently prevent the Reserve Bank coordinating on this issue.

**Secondary legislation (regulations)**

Secondary legislation tends to be more dynamic and flexible to changing circumstances than primary legislation. The Reserve Bank could use its regulatory tools to encourage good pricing of climate risk. If there is compelling evidence that climate risk is still undervalued despite guidance provided in supervisory expectations, the Reserve Bank could need to introduce more stringent measures in order to address climate-related financial risks effectively. Prescriptive versions of these opportunities, such as requiring firms to provide results of climate-related stress testing, changing disclosure requirements, or assigning positive obligations to specific senior role holders in regulated firms, would require secondary legislation. Even if these measures are not currently required, there is a strong possibility that they will be needed in the next 30 years, when climate risks become more pronounced. However, regulatory change should be supported by clear evidence that current industry practice is insufficient, and ideally should reflect international best practice. Because there is currently little information available about what best practice is and what the New Zealand financial sector’s current awareness is, the Reserve Bank may prefer to issue expectations before moving towards prescriptive regulations.
Supporting legislative material

**Supervisory expectations issued by the Reserve Bank to regulated firms**

International trends indicate that central banks and financial regulators can play a key supporting role in the transition by providing guidance to firms on identifying and managing climate risk. Issuing supervisory expectations would send a clear signal to participants in the New Zealand financial sector that they need to be incorporating climate risks into their decision-making and risk-management processes. Issuing expectations at this stage would also acknowledge that financial regulators' understanding of this risk is limited; however, it needs action now. As the industry responds to these expectations and the Reserve Bank’s understanding of climate risk deepens, the Reserve Bank could then explore embedding climate-related requirements into the regulatory framework, in order to bring the industry in line with expectations.

**The financial policy remit and the risk appetite statement**

Alongside legislated objectives, the Government could provide further guidance to the Reserve Bank via mechanisms such as a financial policy remit and a risk appetite statement if decisions were made to adopt either or both of these as part of the Reserve Bank’s broader accountability and governance framework. The Minister of Finance could include an expectation that the Reserve Bank continue to build on its Climate Change Strategy, or require the Reserve Bank to have regard to climate risk when making decisions. For example, the Australian state of Victoria’s Climate Change Act 2017 requires that “a person making a decision or taking an action” in specific statutory circumstances “must have regard to the potential impacts of climate change relevant to the decision or action”. The use of the phrase “have regard to” is important – climate risk should only be a factor that the Reserve Bank could consider in policy-making. "Have regard to" would also mean that the Government is only influencing Reserve Bank operations at the margin, without undermining the Reserve Bank’s independence.
Appendix A: Further reading

This background paper has focused on the financial implications of climate change. The following sources provide more detail on the predicted effects of climate change on New Zealand’s wider economy, as well as the current ‘best practice’ for financial regulators, firms and policy-makers in identifying and managing climate risk effectively.

The predicted effects of climate change on New Zealand’s economy

- Climate Change Adaptation Technical Working Group (2018) *Adapting to Climate Change in New Zealand: Recommendations from the Climate Change Adaptation Technical Working Group*. This report assesses different industries’ exposure to climate risk, and the strengths and weaknesses of how these industries are currently managing climate risk. New Zealand is vulnerable to physical and transition risks from climate change. Agriculture, fisheries, forestry, and tourism are particularly vulnerable. There is a disconnect between central government agencies in how to be resilient and respond to climate change. The report can be accessed [here](#).

- Productivity Commission of New Zealand (2018) *Low Emissions Economy Final Report*. This report assesses New Zealand’s capacity to respond to climate change, and provides in-depth recommendations on how different sectors can smooth the transition to a low-carbon economy. New Zealand is well positioned to respond to climate change, with a low-emission electricity system, existing infrastructure for an emissions trading scheme, and room for expansion in the forestry sector. Immediate priorities for government include addressing biogenic methane and nitrous oxide, which are by-products from the agriculture industry. The report can be accessed [here](#).

International findings on the financial implications of climate risk

- Network for Greening the Financial System (2019) *A Call for Action: Climate Change as a Source of Financial Risk*. This is the NGFS’s first comprehensive report. The Reserve Bank is a member of the NGFS, so the recommendations in this report may be adopted by the Reserve Bank going forward. The report identifies the types of risk that climate change poses to financial stability and provides recommendations to central banks, financial regulators, and other policy-makers. These recommendations are not binding but reflect identified best practice to facilitate the role of the financial sector in the transition to a low-carbon economy. The report can be accessed [here](#).

- Task Force on Climate-related Financial Disclosures. (2017) *Recommendations of the Task Force on Climate-related Financial Disclosures*. The purpose of the task force was to identify the information needed by investors, lenders, and insurance underwriters to assess and price climate-related risks and opportunities appropriately. These recommendations have been adopted by a number of financial institutions worldwide and are regarded as current best practice. The report can be accessed [here](#); see also the task force’s 2018 status report [here](#).
Appendix B: The Reserve Bank’s Climate Change Strategy

The Reserve Bank is actively responding to climate risk, and published its Climate Change Strategy in December 2018. The strategy identifies how the Reserve Bank intends to identify and manage climate risks in New Zealand. The Climate Change Strategy is available here.

The focus of the Reserve Bank at this stage is on contributing to the Government’s objective of a sustainable, productive, and inclusive economy by managing the Reserve Bank’s individual impact on the climate and reflecting climate risk in core functions. The Reserve Bank will also collaborate with others, both domestically and internationally, to identify, monitor, and manage climate-related financial risks. The Reserve Bank intends to manage climate risk by facilitating the flow of information, identifying risk, and using its soft power to advocate for firms to manage their individual climate risks. Further action is likely to be guided by NGFS best practice.

The first branch of the Reserve Bank’s Climate Change Strategy is to monitor and manage its own practices. For example, the Reserve Bank will publish its carbon footprint in its Annual Report. The Reserve Bank will also reflect on how it can improve its sustainability, for example by reviewing how energy is used. These actions will inform a target and strategy for reducing its future greenhouse gas emissions, and evaluate performance against that target.

The second branch is to build an understanding of how and why the New Zealand financial sector is exposed to climate risk, then incorporate climate concerns into its core decision-making processes. In its November 2018 FSR the Reserve Bank identified climate risk as a financial risk, saying that climate change would have a "significant effect on New Zealand’s economy and financial system" (Reserve Bank, 2018). The report also stated that the Reserve Bank had a "strong interest" in climate change, because understanding, quantifying, and managing risk is critical to many of its core functions. This branch also includes a consideration of the impacts of climate risk on inflation, labour markets, capital and immigration flows, house prices, insurance firms, and New Zealand farms. This is a holistic approach recognising that climate change is likely to have on the entire economy, particularly in the long term. The Reserve Bank will also explore options for incorporating climate risk into stress testing processes. However, they have not committed to how the outcomes of this research will be used, or a timeframe within which this analysis will be completed, as research is still in the early stages.

The third branch of the Climate Change Strategy is to provide leadership as an institution on this issue. Leadership in this sense is not about driving the transition to a low-carbon economy, but rather acting proactively and collaborating with others to build understanding and develop best practice. This collaboration can occur within the financial sector, with other New Zealand agencies, and on the international stage. The Reserve Bank has joined the Sustainable Insurance Forum and the NGFS in order to take an active role in improving engagement and identifying best practice.

At this stage it is appropriate for the Reserve Bank to focus on information-gathering and analysis to inform future policy-making, in order to ensure that the Reserve Bank has an adequate understanding of the financial risks that climate change poses in the New Zealand context. At this stage the Reserve Bank is collecting information that will inform a planned, coordinated response and ensure that targets set are realistic and relevant to the New Zealand context. Opportunities identified in this paper may either facilitate the Reserve Bank’s current information-gathering, or inform future decision-making.
## Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>APRA</td>
<td>Australian Prudential Regulation Authority, Australia's prudential regulator.</td>
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<tr>
<td>BoE</td>
<td>Bank of England, the United Kingdom's central bank.</td>
</tr>
<tr>
<td>DNB</td>
<td>De Nederlandsche Bank, the Netherlands’ central bank and prudential regulator.</td>
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<tr>
<td>FSR</td>
<td>Financial Stability Report, issued by the Reserve Bank on a biannual basis.</td>
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<tr>
<td>MAS</td>
<td>Monetary Authority of Singapore, Singapore’s central bank and prudential regulator.</td>
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<tr>
<td>MBIE</td>
<td>Ministry of Business, Innovation and Employment.</td>
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<tr>
<td>MfE</td>
<td>Ministry for the Environment.</td>
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<tr>
<td>NGFS</td>
<td>Network for Greening the Financial System, an international forum for central banks and financial supervisors to share best practice on managing climate risk.</td>
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<tr>
<td>PBOC</td>
<td>People’s Bank of China.</td>
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<tr>
<td>PRA</td>
<td>Prudential Regulation Authority, the United Kingdom's prudential regulator.</td>
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<tr>
<td>TCFD</td>
<td>Taskforce on Climate-related Financial Disclosures, a body developing voluntary, consistent, climate-related financial disclosures for use by companies.</td>
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Reference list


