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The use of credit risk weights for climate-related purposes.

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Executive Summary

The Reserve Bank of New Zealand's prudential framework includes a range of requirements to ensure banks are resilient in the face of shocks to support financial stability. Minimum capital requirements are a central component of this approach and are in the process of increasing following the 2019 Capital Review.[1]

As part of the prudential framework, banks must complete a number of processes in their calculation and management of regulatory capital. The use of risk weights, where the dollar value of an exposure is adjusted to reflect financial risk, is a central part of the prudential framework and is an independent function overseen by the Reserve Bank.

Risk weights are used for the purposes of ensuring banks accurately and appropriately manage their risk. Risk weights are not designed to encourage or discourage banks to undertake any particular type of lending to specific sectors or activities.

The aim of the approach to risk weights is for exposures with greater amounts of financial risks, including any risks related to climate change, to face a higher risk weight than those with lower financial risk (all else equal). This then results in higher capital requirements, driven by higher risk weights, for exposures with higher risk. As a result, risk weights are one of a wide range of factors that influence bank funding costs and ultimately the interest rates faced by borrowers.

Because higher risk weights attract higher capital requirements, when risks are accurately measured and reflected in a bank's risk weighted assets, the bank's balance sheet is in a stronger position to absorb losses. This makes the individual bank more resilient in a stress event and increases system-wide financial stability, as that individual bank is less likely to fail and therefore less likely to transmit the costs of failure across the rest of the inter-connected system. These contagion effects can have large economic costs. Accurately measuring and managing financial risks is therefore a vital part of promoting the stability of the banking system and supporting the financial stability objective.

Climate change and the associated physical and transition risks, collectively climate-related risks, pose risks to the stability of the financial system through various channels. To meet our financial stability objective, it is therefore important for us to take account of the current and future impacts of climate change. Our approach to climate-related risks is set out in our 2021 Climate Changed report.[2] That report lays out more detail about how and why climate is core to our mandate, the risks of climate change to our core functions and our climate change strategy. The topics covered in this article sit firmly within this wider approach.

There are mechanisms to incorporate climate-related risks within the approach to risk weights for credit risk, one type of financial risk, for both the internal ratings-based and standardised approaches. All of these are clearly linked to the level of credit risk to the bank arising from climate change, through the impact on a bank's likelihood of making a loss on their assets. Nevertheless, accurately including these climate-related risks into the credit risk weights that banks use is not straight-forward and up-to-date, comprehensive data is missing in several areas. We consider

[1] (2019, December 19). *Capital Review Decisions 2019*. Www.rbnz.govt.nz; Reserve Bank of New Zealand. https://www.rbnz.govt.nz/-/media/project/sites/rbnz/files/consultations/banks/review-capital-adequacy-framework-for-registered-banks/decisions/capital-review-decisions.pdf

[2] (2021, October 26). *Climate Changed 2021 and Beyond - The Reserve Bank Climate Change Report*]. Https://Www.rbnz.govt.nz/; Reserve Bank of New Zealand. https://www.rbnz.govt.nz/hub/publications/reports/2021/climate-changed-2021-and-beyond---the-reserve-bank-climate-change-report

enhancing climate-related risk capabilities along with the quality and availability of consistent data as priorities for banks to promote better management of climate-related risks.

The understanding of how climate-related risks impact financial risk, including credit risk, (and therefore capital requirements) is fast-evolving globally, and we will continue to evaluate the effectiveness of our approach. We will also continue working with our fellow Council of Financial Regulators members and international peers to keep abreast of developments and what constitutes best practice in this space. When considering any future changes to the approach to setting risk weights, we will ensure any changes are data-driven and explicitly linked to financial risk, rather than for the purposes of achieving other policy objectives unrelated to the management of financial risk.

We will also continue to employ the other tools available to us to help enable all prudentially regulated entities to manage climate-related risks to the financial system, noting our efforts comprise one part of the system-wide approach to addressing the current and potential impacts of climate change.

After setting out some background, this Bulletin is split into four main sections:

- providing an overview of the Reserve Bank's general approach to credit risk weights;
- explaining what climate-related risks are and their links to credit risks to individual banks and financial stability at a system-wide level;
- outlining how the Reserve Bank's credit risk weights framework currently incorporates climate-related risks within its general approach to credit risk; and
- outlining other tools that the Reserve Bank uses to help entities manage climate-related risks to financial stability.

Context

A key part of the Reserve Bank's legislative mandate is to protect and promote the stability of New Zealand's financial system (the **financial stability objective**).[3] This objective is framed within the overall purpose of the Reserve Bank of New Zealand Act 2021 (the **RBNZ Act**) – our foundational legislation – which is to 'promote the prosperity and wellbeing of New Zealanders and contribute to a sustainable and productive economy'.[4]

As set out in our Statement of Prudential Policy (**SoPP**), assessing prudentially regulated entities' (**entities**') material risks, and the financial system as a complex network of interconnected elements, is at the core of meeting our financial stability objective.[5] Material risks that an entity faces vary depending on its business model and strategy, but can include financial risks such as credit risk, operational risk, and market risk (among others).

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[3] *Reserve Bank of New Zealand Act 2021 No 31 (as at 01 September 2022), Public Act 9 Bank's objectives – New Zealand Legislation*. (n.d.). Www.legislation.govt.nz. https://www.legislation.govt.nz/act/public/2021/0031/latest/LMS287017.html

[4] *Reserve Bank of New Zealand Act 2021 No 31 (as at 01 September 2022), Public Act 3 Purposes – New Zealand Legislation*. (n.d.). Www.legislation.govt.nz. https://www.legislation.govt.nz/act/public/2021/0031/latest/LMS286982.html

[5] (2022, September 22). *Statement of Prudential Policy*. Www.rbnz.govt.nz; Reserve Bank of New Zealand. https://www.rbnz.govt.nz/-/media/project/sites/rbnz/files/regulation-and-supervision/statements-of-approaches/sopp-2022.pdf

Our prudential policies seek to protect and promote the stability of New Zealand's financial system and to avoid significant damage to the financial system that could result from the failure of an entity. A financial crisis could have significant and long-lasting implications for the real economy and the wellbeing of New Zealanders.

Climate change and the associated physical and transition risks, collectively climate-related risks, pose risks to the stability of the financial system through various channels. To meet our financial stability objective, it is therefore important for us to take account of the current and future impacts of climate change. Our approach to climate-related risks is set out in our 2021 Climate Changed report.[6] That report lays out more detail about how and why climate is core to our mandate, the risks of climate change to our core functions and our climate change strategy.

One of our key functions is acting as prudential regulator and supervisor of the banking sector under the Banking (Prudential Supervision) Act 1989 (the **BPSA**), which involves setting banks' capital requirements and monitoring their compliance with those requirements, among other activities. All banks' assets are exposed to financial risk (the risk that a bank does not receive back the full value of its asset) and the amount of financial risk for each asset determines the risk weight used in the prudential capital framework. We are required to act consistently with our financial stability objective when performing this function.[7][8]

In 2019, we published our final decisions from the Capital Review,[9] which focused on improving the quality and quantity of capital that banks are required to have. These decisions included high-level changes to our approach to risk weighting for bank exposures and changes to the calculation of risk-weighted assets for domestic-systemically important banks (**D-SIBs**) – the largest banks in New Zealand. The 2019 capital reforms are now being progressively phased in, with implementation of the new capital requirements due to be completed in 2028.

We consulted extensively during the Capital Review and a number of implementation issues were raised in feedback. While the new capital framework is being implemented, we have been considering these topics raised during consultation. This has included considering changes to parts of our approach to risk weighting for bank exposures, which we reviewed between September 2022 and June 2023.[10]

Though the Capital Review consultation and the further consultation on the risk weights framework did not include specifically consider climate-related risks, some stakeholders raised the possibility of amending the risk weights framework to change the way that climate-related risks are incorporated. Suggestions included that we:

- internationally pioneer the development of a new standardised risk weighting approach that incorporates the impact of climate-related risks on credit risk; and

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[6] 2021, October 26). *Climate Changed 2021 and Beyond - The Reserve Bank Climate Change Report*. Https://Www.rbnz.govt.nz/; Reserve Bank of New Zealand. https://www.rbnz.govt.nz/hub/publications/reports/2021/climate-changed-2021-and-beyond---the-reserve-bank-climate-change-report

[7] *Reserve Bank of New Zealand Act 2021 No 31 (as at 01 September 2022), Public Act 10 Bank's functions – New Zealand Legislation*. (n.d.). Www.legislation.govt.nz. https://www.legislation.govt.nz/act/public/2021/0031/latest/LMS287018.html

[8] *Banking (Prudential Supervision) Act 1989 No 157 (as at 1 July 2022), Public Act Part 5 Registration of banks and prudential supervision of registered banks – New Zealand legislation*. (n.d.). Www.legislation.govt.nz. https://www.legislation.govt.nz/act/public/1989/0157/latest/DLM200324.html

[9] (2019, December 19). *Capital Review Decisions 2019*. Www.rbnz.govt.nz; Reserve Bank of New Zealand. https://www.rbnz.govt.nz/-/media/project/sites/rbnz/files/consultations/banks/review-capital-adequacy-framework-for-registered-banks/decisions/capital-review-decisions.pdf

[10] (2022, September 29). *Risk weights* [Review of *Risk weights*]. Www.rbnz.govt.nz; Reserve Bank of New Zealand. https://www.rbnz.govt.nz/have-your-say/risk-weights#omnibus

- provide risk weight discounts for lending targeted at reducing carbon emissions.

The concept of using risk weights to incentivise or penalise lending to specific sectors, such as encouraging lending to carbon-emissions reducing sectors or discouraging lending to carbon-emitting sectors, is a topic of interest, both in New Zealand and globally.

Based on the views expressed by some stakeholders and the growing level of international interest in risk weights as a way of managing climate-related risks, we consider it useful to communicate our current view on this topic.

Risk weights

We have three 'pillars' of banking regulation; market discipline, self-discipline, and regulatory discipline

Our approach to prudential regulation, including the supervision of banks, consists of three components which we sometimes call 'pillars':[11]

1. Market discipline refers to how market participants influence an entity's behaviour and risk-taking. They use their influence by changing the cost or amount of funding they are willing to give to an entity based on financial and other information about that entity. This motivates entities to manage their risks appropriately.

2. Self-discipline refers to an entity's own processes and risk management frameworks. These are mainly the responsibility of its directors and senior managers.

3. Regulatory discipline means the imposing of requirements on entities, which is necessary to improve the effectiveness of market and self-discipline.

Minimum capital requirements and supervisory review are two parts of the regulatory discipline pillar. It is important to note that in the future, as we transition to the new regime under the Deposit Takers Act 2023 (DTA), the regulatory discipline pillar will be strengthened through the addition of enhanced supervisory and enforcement powers. However, this article considers the requirements made under the BPSA which are currently in effect and the associated supervisory and enforcement powers.

These two components of our regulatory approach, together with the influence of market discipline and self-discipline, form the basis of a high-level strategy to ensure that banks' capital is sufficient to meet their obligations and absorb unexpected losses.

This Bulletin article focuses on the role of credit risk weights within the minimum capital requirements that underpin our approach to prudential regulation of banks, specifically in the context of climate-related risks. Supervisory review also has a vital role to play and is discussed later in this article.

[11] (2022, February 28). *Protecting and promoting the stability of New Zealand's financial system* [Review of *Protecting and promoting the stability of New Zealand's financial system*]. Www.rbnz.govt.nz; Reserve Bank of New Zealand. https://www.rbnz.govt.nz/financial-stability/our-approach-to-ensuring-financial-stability

Our minimum capital requirements support financial stability

In the Capital Review, capital requirements were increased to make the banking system safer for all New Zealanders, and to ensure bank owners have a meaningful stake in their businesses. More capital in the banking system reduces the likelihood of a bank failure and better enables banks to weather economic volatility and maintain good, long-term, customer outcomes.

Capital held against risk creates resilience and minimum capital requirements measure how resilient we expect banks to be, regardless of what level of risk they hold. Minimum capital requirements are calculated for three major components of financial risk that a bank faces: credit, operational and market risk. Internationally, this fits under 'Pillar 1' of the Basel Accords, where Pillar 1 is represented by minimum capital requirements, Pillar 2 by supervisory review and Pillar 3 by enhanced market discipline.

Capital requirements are set at a level to ensure that the financial system could withstand the impacts of a 1-in-200-year financial crisis. This was done by assessing the likely cost of such an event using capital modelling analytical approaches, as a method for calibrating our preferred level of bank resilience.

The new capital requirements mean that, by 2028, the four D-SIBs will need a total capital ratio of 18% of risk-weighted assets (RWAs), while other locally incorporated banks will need to have a total capital ratio of 16%.[12]

Our approach to risk weights is linked to managing risks to financial stability

As part of the prudential framework, banks must complete a number of processes in their calculation and management of regulatory capital. The use of risk weights, where the dollar value of an exposure is adjusted to reflect financial risk, is a central part of the prudential framework and is an independent function overseen by the Reserve Bank. Credit risk weights are used to generate a 'credit risk weighted asset', which reflects the credit risk that the lending bank is not repaid in full and makes a loss on its exposure.

Banks are required to hold a minimum percentage of capital against these risk-weighted exposures. Higher risk exposures mean a bank will need more capital — money provided by the owners (shareholders) of a bank. This capital is available to absorb losses and reduces the likelihood of bank failures if a bank experiences losses on its asset portfolio.

The relationship between higher risk weights and higher capital requirements means that when risks are accurately measured and reflected in a bank's risk weighted assets, the bank's balance sheet is better placed to absorb losses. This increases the resilience of individual banks and also increases system-wide financial stability. A more resilient individual bank is less likely to fail and therefore less likely to transmit the costs of failure across the rest of the inter-connected system. These contagion effects can have large economic costs. Therefore, accurately measuring and managing financial risks is integral to promoting the stability of the banking system and supporting the financial stability objective.

[12] (2022, February 28). *Requirements for domestic systemically important banks*. Www.rbnz.govt.nz; Reserve Bank of New Zealand. https://www.rbnz.govt.nz/regulation-and-supervision/oversight-of-banks/standards-and-requirements-for-banks/requirements-for-domestic-systemically-important-banks

New Zealand's four largest banks, classified as D-SIBs, are all accredited to use internal models to calculate risk weighted assets for credit risk, though they must seek the Reserve Bank's approval for their models. Other banks must use the standardised approach to calculate credit risks, which prescribes risk weights based on the characteristics of the assets. The requirements for both D-SIBs and other banks are contained in the Reserve Bank's *Banking Prudential Requirements* (BPRs).[13]

There are several key considerations that underpin the risk weights framework and we published a detailed list of those during our recent Risk Weights Omnibus consultation.[14] We published that list to bring consistency to the way that any potential changes to the approach to risk weights are considered over time and across topics, including any consideration of climate-related risks..

The risk weights framework is not designed to encourage or discourage banks to undertake any particular type of lending to any specific sectors. It is designed so that risks associated with any lending that a bank does undertake are accurately reflected in the prudential framework, which is the best way to manage the risks to financial stability.

The framework is also designed to support the purposes of promoting the maintenance of a sound and efficient financial system and avoiding significant damage to the financial system that could result from the failure of a registered bank.[15] This requires the setting of risk weights to always link to a bank's management of financial risk.

The risk weight is just one factor that influences lending decisions and pricing

It is important to place the role of risk weights within the wider context of the range of factors that can affect bank lending decisions and pricing.

Risk weights are one factor that affect the pricing of loans. In general, lower risk weights mean that banks would be able to offer lending at a lower cost to borrowers due to a lower weighted-average cost of funding. However, other factors are also important, such as movements in banks' debt funding costs and their operating costs. Banks' own business strategies and risk appetites will also affect their decisions about who to lend to.

In Table 1 below we have shown the impact of different risk weights in a stylised lending example. While this example does show that a lower risk weight leads to a lower interest rate, the total impact is relatively small even when the change in risk weights is large. Table 1 shows two hypothetical loans: one with a 70% risk weight and one with a 90% risk weight. All other features of the loans are the same.

Table 1: Example of the impact of different risk weights

		70% risk weight	90% risk weight
Capital ratio	A	12%	
Cost of capital	B	10%	

[13] (2022, February 28). *Banking Prudential Requirements*. Www.rbnz.govt.nz; Reserve Bank of New Zealand. https://www.rbnz.govt.nz/regulation-and-supervision/oversight-of-banks/standards-and-requirements-for-banks/banking-prudential-requirements

[14] (2022, September 29). *Risk Weights Omnibus Consultation Paper*. Www.rbnz.govt.nz; Reserve Bank of New Zealand. https://www.rbnz.govt.nz/-/media/project/sites/rbnz/files/consultations/banks/risk-weights/risk-weights-omnibus-consultation-paper.pdf

[15] *Banking (Prudential Supervision) Act 1989 No 157 (as at 1 July 2022), Public Act 74 Conditions of Registration – New Zealand legislation*. (n.d.). Www.legislation.govt.nz. https://www.legislation.govt.nz/act/public/1989/0157/latest/DLM200360.html

		70% risk weight	90% risk weight
Tax rate	C	28%	
Required return	B/(1-C) = D	13.9%	
Cost of debt	E	4%	
Loan value	F	100	
Risk weight	**G**	**70%**	**90%**
RWA value	F*G = H	70	90
Capital funding	A*H = I	8.4	10.8
Debt funding	F-I = J	91.6	89.2
Weighted cost	**(D*I+E*J)/F = K**	**4.83%**	**5.07%**

In the example, moving from a 90% risk weight to a 70% risk weight (a large change in risk weights) reduces the weighted cost to the bank by about 0.2%-0.3%. This shows that while risk weights are a relevant factor for a bank's cost of funding, even relatively large changes in risk weights have limited overall impacts. This is due to the small component of the loan that is funded by capital, compared with the component funded by debt.

Climate-related risks

Climate-related risks can be classified as 'physical' and 'transition' risks

Climate-related risks are defined in the Aotearoa New Zealand Climate Standards as the potential negative impacts of climate change on an entity. Climate-related risks can be classified as physical risks and transition risks.[16]

'Physical risks' are those related to the physical impacts of climate change. Physical risks emanating from climate change can be event-driven (acute) such as increased severity of extreme weather events. They can also relate to longer-term shifts (chronic) in precipitation and temperature and increased variability in weather patterns, such as sea level rise. We experienced two acute events in New Zealand in early 2023 with the Auckland Anniversary floods and Cyclone Gabrielle, both of which have been partially attributed to climate change.[17] [18]

'Transition risks' are those related to the transition to a low-emissions, climate-resilient global and domestic economy, such as policy, legal, technology, market and reputation changes associated with the mitigation and adaptation requirements relating to climate change. An example of transition risks is changing consumer preferences towards certain products and sectors, for instance a shift away from high carbon-emitting vehicles towards hybrid and electric vehicles.

[16] *Aotearoa New Zealand Climate Standard 1 Climate-related Disclosures (NZ CS 1)*. (2022). https://www.xrb.govt.nz/dmsdocument/4770
[17] Rowley, J. (2023, February 2). *Auckland suffers wettest month in history*. NIWA. https://niwa.co.nz/news/auckland-suffers-wettest-month-in-history
[18] *In the wake of Gabrielle*. (2023, June 20). NIWA. https://niwa.co.nz/publications/water-and-atmosphere/water-atmosphere-29-june-2023/in-the-wake-of-gabrielle#:~:text=The%20rapid%20nature%20of%20the

Climate-related risks also have several unique elements that distinguish them from other kinds of risk. These elements include:

- The **non-linear** nature of many climate-related risks, social cascading effects triggered by climate change, and climate-related and economic tipping points, leading to impacts that may not be easily mitigated or reversed;
- The potential for **irreversible** changes in climate, leading to impacts that may not be easily mitigated or reversed;
- The **far-reaching** impact that climate-related risks pose to all parts of the financial system (including different business types, geographical locations and economic sectors) as well as the potential for risks to manifest across multiple lines of business at the same time, potentially disrupting financial stability;
- The **uncertain and extended** time horizon over which climate-related risks may materialise (which is likely to extend beyond typical business planning cycles and investment processes); and
- The **unprecedented** nature of climate change, meaning that traditional risk assessment methods that rely solely on historical data have the potential to systematically underestimate or even entirely fail to predict the impacts of climate-related risks. This is because of the complex dynamics of interconnected lines of business, non-linear and unprecedented levels of disruption, and compounding of risk when multiple impacts collide (or multiple climate and non-climate impacts).

Climate-related risks pose a direct challenge to financial stability

Climate change and the associated physical and transition risks pose risks to the stability of the financial system through various channels.

Climate-related risks can have a compounding effect on the range of financial risks that entities face including credit risk, for example through a potential increase in defaults on loans by businesses and households that are affected by adverse climate events and the potential for assets used as collateral to decline in value. To understand how climate change compounds other financial risks, please see our draft guidance on managing climate-related risks.[19]

For the banking system specifically, climate change impacts the value of assets used as collateral for lending. Banks make lending decisions using the current value of assets (for example houses or farmland) as collateral. If current values do not fully reflect the risks of climate change, then assets considered to be at 'high risk' of being affected by climate-related events could decline in value, leaving banks with less protection than expected against borrower default. These credit losses would be further exacerbated if 'high risk' assets become underinsured or uninsurable.[20]

Additionally, climate change can impact the incomes borrowers use to repay loans from banks. For example, a transition to a low-carbon economy might reduce some borrowers' capacity to generate sufficient income to service and repay their debts. This could occur as firms in carbon-intensive

[19] (2023, March 29). *Managing climate-related risks - Guidance for regulated entities*. Www.rbnz.govt.nz; Reserve Bank of New Zealand. https://www.rbnz.govt.nz/-/media/project/sites/rbnz/files/consultations/managing-climate-related-risks/guidance-managing-climate-related-risk.pdf

[20] Bellrose, K., Norman, D., & Royters, M. (2021). Climate Change Risks to Australian Banks | Bulletin – September 2021. *Www.rba.gov.au*. https://www.rba.gov.au/publications/bulletin/2021/sep/climate-change-risks-to-australian-banks.html#fn1

industries face higher operating costs (for example, the costs of acquiring New Zealand Emissions Trading Scheme credits) or due to reduced demand for certain goods and services, reducing their profitability.[21]

For some New Zealand banks, a significant exposure is the agricultural sector, which in addition to being at risk of flooding and droughts also accounts for around half of the nation's emissions.[22] The treatment of the sector in policies to reduce emissions is uncertain and could be impacted by domestic and international developments such as carbon border adjustment mechanisms and changing market preference. In addition, further regulatory costs may negatively impact profitability across the agricultural sector – particularly in dairy. This may affect farmers' ability to repay existing loans to banks (particularly when compounded with other financial stress, including from physical risks) and, in turn, the probability of default.[23]

In addition to these idiosyncratic factors, it is possible that some types of exposures may increase or reduce climate-related risks for New Zealand's financial system. For example, exposures that reduce New Zealand's emissions may make the long-term transition path to a lower emissions economy less challenging, reducing the risk of sharp adjustments in economic activity, and thereby reducing the risks to financial institutions. The reverse situation could hold true for exposures that increase New Zealand's emissions. International thinking about this, along with the assessment of information needs to validate such analysis and the identification of possible regulatory tools, is very much at an early stage, and we are continuing to consider these approaches.

Credit risk weights for climate-related risks

Climate-related risks can be incorporated into our credit risk weight framework in a number of ways

There are mechanisms to incorporate climate-related risks within the approach to risk weights for credit risk for both the internal ratings-based and standardised approaches, as we outline below. All of these are clearly linked to the level of financial risk to the bank arising from climate change. Nevertheless, accurately including these climate-related risks is not straight-forward, and up-to-date, comprehensive data is missing in several areas.

Internal ratings-based approach

As mentioned earlier in the article, there is flexibility within the current capital adequacy framework for banks accredited to use their own model to incorporate climate-related risks into their internal estimates of risk-weighted assets for certain asset classes.[24] Four D-SIB banks are currently approved to use their own models and, together, they make up the majority of the New Zealand banking sector (accounting for approximately 85% of total system-wide risk-weighted assets as at June 2023). Under the internal ratings based (IRB) approach, banks can use internal models to estimate the probability of default (PD), loss given default (LGD) and exposure at default (EAD). These estimates are then used to calculate the loss distribution, separated into expected losses (which are largely

[21] *The Implications of Climate Change for Financial Stability*. (2020). https://www.fsb.org/wp-content/uploads/P231120.pdf

[22] *Greenhouse gas emissions (industry and household): Year ended 2021 | Stats NZ*. (n.d.). Www.stats.govt.nz. https://www.stats.govt.nz/information-releases/greenhouse-gas-emissions-industry-and-household-year-ended-2021/

[23] (2023, November 1). *Financial Stability Report November 2023*. Https://Www.rbnz.govt.nz/; Reserve Bank of New Zealand. https://www.rbnz.govt.nz/hub/publications/financial-stability-report/2023/nov-2023/financial-stability-report-november-2023

[24] These include corporate and retail exposures (excluding reverse residential mortgage loans).

covered through banks' loan provisioning), and unexpected losses, which are covered through banks' capital as reflected in credit risk. IRB banks must seek the Reserve Bank's approval to use internal models to calculate RWA.

In IRB modelling, the PD associated with a credit exposure is presented in annual terms, but it is estimated based on the risk of default for that exposure over the long run.

IRB banks have the opportunity to incorporate climate-related risks into their approach. Near-term climate-related risks that manifest over the lifetime of the loan, which impact on the potential loss, should ideally be incorporated into the credit risk weight.

For residential properties, the value of the property for regulatory capital purposes is set at the time the loan is originated and is only modified following a credit event. This is discussed in more detail in the discussion of the standardised approach below. Physical risks that can reduce the value of coastal properties (such as more severe projections of sea-level rises) could affect the LGD. The exact way this arises through a change in the value of a property following a credit event is discussed in the section covering the standardised approach.

Transition risks that increase the cost of doing business (for example, emissions pricing) or demand in certain industries (for example, fossil fuels) may impact the PD of corporate lending. If IRB banks accurately account for these climate-related risks in their calculation of risk weighted assets, minimum capital requirements should contain sufficient resilience against these risks.

However, even if climate-related risks are all accurately incorporated into risk weights, it would not capture the slow-burning risks that may manifest in the long term, because the time horizon would be outside the maturity of these exposures. Therefore, long-term climate-related risks that pose a gradual challenge to financial stability would not necessarily be reflected in credit risk modelling.

We are also aware that banks face some challenges in incorporating climate-related risks into their internal models in practice (we also face many of the same challenges). In the past, we have indicated that there are no obstacles to including climate change variables in models as long as it can be shown that they are a meaningful risk differentiator.[25] We recognise the difficulties with relying solely on historical data in demonstrating this at present, particularly given:

- the unprecedented and non-linear nature of climate change impacting upon the availability of reliable and consistent data over a sufficient time horizon; and
- the uncertainties surrounding the timing and nature of the transition to a low-emissions, climate resilient economy, and how the risks associated with a given emissions pathway will spread through the economy and financial system.

In line with our current approach to all modelling, we encourage banks to consider how they can best use a combination of qualitative and quantitative approaches, and the role of forward-looking data, in their efforts to better understand the potential nature and scale of these impacts. We also

[25] Reserve Bank officials quoted in this article: Mandow, N. (2020, December 6). *Banks can no longer ignore climate risk*. Newsroom. https://newsroom.co.nz/2020/12/06/banks-can-no-longer-ignore-climate-change-risk/

recognise that banks should have access to better quality historical and forward-looking data in the near future as a result of the new Aotearoa New Zealand Climate Standards.[26]

Standardised approach

Under the standardised approach, for retail exposures, the risk-weighting categories for residential mortgages depend on loan-to-value ratios (LVRs) (in addition to asset classification and lender's mortgage insurance arrangements). For non-retail exposures, credit ratings from independent credit rating agencies are used as a basis for determining risk weights.[27] Both the retail and non-retail approaches factor climate-related risks in some way.

For all residential mortgages (standard or reverse), the risk weight is directly related to its LVR at the time the loan is originated (whereby LVR = [loan value / property value] x 100). Therefore, the extent to which climate change, and the response to it, impacts upon property values can have a knock-on effect on risk-weights. This effect can increase or reduce risk weights, depending on what happens to property values. Our requirements are that banks use property values at the time of origination. The origination date is the time that a loan is committed to by the bank. In practice banks are also likely to reset the origination date if there is a credit event of some sort, such as a loan top-up, extension of the duration of the loan, or some other event that alters the borrowers risk profile in a significant way. In some circumstances a bank may also consider the loss of insurance on the property to be a credit event. The process for undertaking such steps is not directly specified in our requirements and is carried out by banks in accordance with their internal risk management processes.

For example, if a home in a vulnerable location is flooded in a climate change-induced severe weather event then the property value could subsequently fall. As a result of the flood, the insurer may withdraw the provision of building insurance which could exacerbate the fall in property value (especially if another insurer cannot be found). This could qualify as a credit event, perhaps in cases where absence of insurance requires a renegotiation of lending arrangements. That could prompt a new origination and valuation, and, assuming the loan remains the same size, would likely result in the LVR and subsequently the risk weight of the mortgage on the affected property increasing. At the same time, demand for houses in less vulnerable locations (which maintain their building insurance) could increase which would likely push up their property values. This would likely reduce the LVR when the property is next revalued for the purpose of regulatory capital following a credit event (again, assuming a constant loan size). If this is sufficient to push that mortgage into a different LVR range then the risk weight of that mortgage could fall as a result.

For non-residential mortgage exposures, there are five defined exposure classes for which we require banks to assign ratings grades: claims on sovereigns and central banks, claims on public sector entities, multilateral development banks and other international organisations, claims on banks, and claims on corporates. The independent credit rating agencies that we require banks to use for determining the rating grade to be used for risk-weighting a credit risk exposure within those five classes are Standard & Poor's, Moody's Investor Services, Fitch Ratings, and AM Best (for credit risk exposures to New Zealand licensed insurers only). All four of those organisations incorporate

[26] *Aotearoa New Zealand Climate Standards» XRB*. (n.d.). Www.xrb.govt.nz. https://www.xrb.govt.nz/standards/climate-related-disclosures/aotearoa-new-zealand-climate-standards/

[27] (2021, July 1). *BPR131 Standardised Credit Risk RWAs*. Www.rbnz.govt.nz; Reserve Bank of New Zealand. https://www.rbnz.govt.nz/-/media/project/sites/rbnz/files/consultations/banks/review-capital-adequacy-framework-for-registered-banks/bpr-documents/bpr131-standardised-credit-risk-rwas.pdf

climate-related factors into their ratings assessments,[28] [29] [30] [31] which therefore has a follow-through effect on our risk weighting framework. If a ratings agency's climate-related assessment is material enough to change its overall rating of the exposure, then that will change the risk weight (increased for a rating downgrade and decreased for a rating upgrade). The exact size of the risk weight differential varies by defined exposure class.[32]

Topics for further consideration

We are aware that there are a range of views across stakeholders about how best to monitor and manage our approach. This includes thinking about how the capital framework addresses the impact of transition risk on banks' credit risk. Some stakeholders have suggested that transition risks may not be currently well-captured noting, for example, that the framework does not explicitly distinguish between two exposures with the same idiosyncratic credit risk but with different emissions profiles. While the impact of the different emissions profiles might vary depending on the specific loan, there could be wider transition implications including impacts on the overall amount of financial risk in the system that are not well-captured (for example the costs of offshore mitigation in order for New Zealand to meet its international commitment under the Paris Agreement to reduce net greenhouse gas emissions in 2030 by 50% below gross emission levels in 2005). This is an instance where new evidence will help us to consider our approach, while other such instances may also arise.

Other tools to manage climate-related risks

We use a number of other tools to enable banks to better manage climate-related risks within the financial system and each of those are described in this section. Our approach is broadly aligned with current leading practice across our international peers and what is recommended by the Network for Greening the Financial System (NGFS). The purpose of NGFS is to define and promote best practices to be implemented within and outside of its membership and to conduct or commission analytical work on green finance. As at the end of 2023, the NGFS consisted of 134 central bank and supervisor members (including the Reserve Bank) and 21 observers.[33] Our tools comprise part of the system-wide approach to managing climate-related risks across both the public and private sectors.

Our wider capital framework also helps address climate-related risks

Basel Pillar 1 Operational risk

Operational risk is another type of financial risk and is the risk of loss resulting from inadequate or failed internal processes, people and systems or from external events. The four D-SIBs' approach to

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[28] (2021, October 10). *General Criteria: Environmental, Social, And Governance Principles In Credit Ratings*. Https://Www.spglobal.com/Ratings/En/Index; S&P Global Ratings. https://disclosure.spglobal.com/ratings/en/regulatory/article/-/view/sourceId/12085396

29 *(2021, October 19). Cross-sector Rating Methodology: General Principles for Assessing Environmental, Social and Governance Risks Methodology.* Ratings.moodys.com; Moody's Investors Service. https://ratings.moodys.com/api/rmc-documents/74785

30 (2022, June 3). *ESG Score Methodology*. Sustainablefitch.com ; Sustainable Fitch. https://assets.ctfassets.net/03fbs7oah13w/5hWQ7R44kPRUDKNH16kBRx/6d14d4655f484cf5bd361558afea06bc/SUF_ESG_Score_Methodology_2022-06.pdf

31 Wong-Fupuy, C., & Raber, R. (2024, January 18). *Best's Credit Rating Methodology*. Https://Web.ambest.com/Home; AM Best. https://www3.ambest.com/ambv/ratingmethodology/OpenPDF.aspx?rc=250950&_ga=2.222424923.1789190757.1695683469-1556364228.1695683469&_gl=1*6pffr2*_ga*MTU1NjM2NDIyOC4xNjk1NjgzNDY5*_ga_VNWYD5N5NL*MTY5NTY4MzQ2OS4xLjEuMTY5NTY4MzUyMC4wLjAuMA..#page=28

[32] (2021, July 1). *BPR131 Standardised Credit Risk RWAs*. Www.rbnz.govt.nz; Reserve Bank of New Zealand. https://www.rbnz.govt.nz/-/media/project/sites/rbnz/files/consultations/banks/review-capital-adequacy-framework-for-registered-banks/bpr-documents/bpr131-standardised-credit-risk-rwas.pdf

[33] Banque de France. (2017). *NGFS*. Banque de France. https://www.ngfs.net/en

operational risk measurement must capture potentially severe low-frequency, high-impact, loss events.

They must be consistent with the operational loss event types that we specify in Part B of *BPR151*: *AMA Operational Risk*, and risk measures for different operational risk estimates must be added together for the purposes of calculating the overall minimum capital requirement.

The specified loss event types (which can be informed by scenario analysis that can include climate-related factors) include:

- 'Client, products, and business practices' which include losses from failure to meet a professional obligation or from the nature or design of a product (for example, model errors, which could arise from climate-related risks);
- 'Damage to physical assets' which include losses arising from loss or damage to physical assets from natural disaster or other events (for example, severe weather events); and
- 'Business disruption and system failures' which include losses arising from disruption of business or system failures (for example, outages following a severe weather event).

In addition, the extent that climate-related risks impact upon insurance provision has an impact on the mitigation part of the operational risk calculations. For example, subject to certain criteria being met, the recognition of the risk-mitigating effect from insurance in regulatory capital calculations can be up to 20% of the total regulatory operational risk capital charge.

Internal capital adequacy assessment process (ICAAP) requirements

Every New Zealand-incorporated bank is required to have an ICAAP that complies with *BPR100: Capital Adequacy*.[34] In its ICAAP, a bank must (1) identify and measure any other material risks; and (2) determine an internal capital allocation for each identified and measured other material risk.

'Other material risk' is defined as any material risk of the bank that is not explicitly captured in the calculation of total RWA. This is designed to ensure that a bank has adequate overall capital for all material risks that the bank faces. This means that banks can – and should already – identify and measure any material climate-related risks, including transition risks where relevant, that are not fully captured by the minimum capital requirements and allocate sufficient internal capital.

Stress testing

As set out in our 2021 Climate Changed report,[35] we are progressively incorporating climate change into our stress-testing programme. In 2021, we introduced a climate-related risk component to our annual bank solvency stress test[36] and also into the inaugural general insurance industry test.[37] In 2022, we undertook a series of sensitivity analyses examining climate-related risks posed to large

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[34] (2021, October 1). *BPR100 Capital Adequacy*. Www.rbnz.govt.nz; Reserve Bank of New Zealand. https://www.rbnz.govt.nz/-/media/project/sites/rbnz/files/consultations/banks/review-capital-adequacy-framework-for-registered-banks/bpr-documents/bpr100-capital-adequacy-oct-21.pdf

[35] (2021, October 26). *Climate Changed 2021 and Beyond - The Reserve Bank Climate Change Report*]. Https://Www.rbnz.govt.nz/; Reserve Bank of New Zealand. https://www.rbnz.govt.nz/hub/publications/reports/2021/climate-changed-2021-and-beyond---the-reserve-bank-climate-change-report

[36] McDonald, C., Nicholls, K., Nguyen, C., McLeod, R., & Lu, B. (2021, December 7). *Outcomes of the 2021 Bank Stress Test*. Www.rbnz.govt.nz; Reserve Bank of New Zealand. https://www.rbnz.govt.nz/-/media/project/sites/rbnz/files/publications/bulletins/2021/rbb2021-84-03.pdf

[37] Nicholls, K., & Samarasekera, R. (2021, October 27). *Outcomes of the 2021 General Insurance Industry Stress Test* [Review of *Outcomes of the 2021 General Insurance Industry Stress Test*]. Www.rbnz.govt.nz; Reserve Bank of New Zealand. https://www.rbnz.govt.nz/-/media/project/sites/rbnz/files/publications/bulletins/2021/rbb2021-84-02.pdf

banks' systemically important loan exposures: residential mortgages (flooding) and the agricultural sector (drought and emissions pricing).[38]

We continue to further incorporate climate change into our stress testing regime. We are currently concluding a full climate change scenario-based industry stress test, which is a significant undertaking for both us and industry. The main purpose of the exercise is to improve banks' capability in managing climate-related risk, including the quantity and quality of forward-looking climate-related data. The stress test will also enable us to identify and understand any risks to financial stability, assist supervisors in understanding risks to participating banks and identify how banks may mitigate climate-related risks whilst supporting the transition to a lower greenhouse gas-emitting economy. The final scenario and instructions were issued to participating banks in May 2023, with the scenario published in August 2023.[39] The exercise is scheduled to be completed shortly.

We actively consider climate-related risks in our supervisory approach

As set out in our SoPP,[40] we take a risk-based, proportionate and consistent approach to our supervision activities. When assessing the prudential risks to regulated entities, supervisors will consider an entity's exposures to, and management of, climate-related risks. That risk assessment drives subsequent communications, engagements and information requests, amongst other supervisory activities.

We also undertook a series of meetings on climate-related risk management and disclosure (jointly held with the Financial Markets Authority (FMA)) with each of the 17 banks subject to mandatory climate disclosures taking place between November 2022 and March 2023, followed by a similar series of meetings with the insurance sector in the second half of 2023.

Additionally, in March 2023, we launched a voluntary survey for prudentially regulated climate-reporting entities, where each entity was asked to self-assess the status of its climate-related risk management and preparedness for climate-related disclosures. We published the results from that survey in August 2023.[41]

We are issuing guidance to help entities manage climate-related risks

In March 2023, we published our draft guidance[42] for managing climate-related risks, alongside a Consultation Paper[43] for public feedback. The guidance intends to provide all prudentially regulated entities with clear guidelines to develop and implement better practices in managing climate-related risks.

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[38] Newman, R., Adams-Kane, J., & Nicholls, K. (2023, March 27). *2022 Flood Risk Assessment for Residential Mortgages* [Review of *2022 Flood Risk Assessment for Residential Mortgages*]. Www.rbnz.govt.nz; Reserve Bank of New Zealand. https://www.rbnz.govt.nz/-/media/project/sites/rbnz/files/publications/bulletins/2023/rbb-2023-86-02.pdf

[39] (2023, August 10). *RBNZ releases "Too Little, Too Late" climate stress test scenario* [Review of *RBNZ releases "Too Little, Too Late" climate stress test scenario*]. Www.rbnz.govt.nz; Reserve Bank of New Zealand. https://www.rbnz.govt.nz/hub/news/2023/08/rbnz-releases-too-little-too-late-climate-resilience-stress-test-scenario#:~:text=The%202023%20Climate%20Stress%20Test,assessment%20of%20bank's%20residential%20mortgages

[40] (2022, September 22). *Statement of Prudential Policy*. Www.rbnz.govt.nz; Reserve Bank of New Zealand. https://www.rbnz.govt.nz/-/media/project/sites/rbnz/files/regulation-and-supervision/statements-of-approaches/sopp-2022.pdf

[41] (2023, August 23). *RBNZ releases results of industry climate survey* [Review of *RBNZ releases results of industry climate survey*]. Www.rbnz.govt.nz; Reserve Bank of New Zealand. https://www.rbnz.govt.nz/hub/news/2023/08/rbnz-releases-results-of-industry-climate-survey

[42] (2023, March 29). *Managing climate-related risks - Guidance for regulated entities*. Www.rbnz.govt.nz; Reserve Bank of New Zealand. https://www.rbnz.govt.nz/-/media/project/sites/rbnz/files/consultations/managing-climate-related-risks/guidance-managing-climate-related-risk.pdf

[43] (2023, March 29). *Managing climate-related risks - Guidance for regulated entities*. Www.rbnz.govt.nz; Reserve Bank of New Zealand. https://www.rbnz.govt.nz/-/media/project/sites/rbnz/files/consultations/managing-climate-related-risks/guidance-managing-climate-related-risk.pdf

The consultation period on the draft guidance concluded in June 2023. Having considered and acted accordingly on the feedback, the next iteration of the guidance is being revised and will be published shortly for all prudentially regulated entities to apply on a proportionate basis.

The guidance is designed to complement the new climate-related disclosure framework set out in the Financial Markets Conduct Act 2013, which has empowered the External Reporting Board to develop New Zealand's new disclosure standard – NZ CS1-3. Under this standard (monitored and enforced by the FMA), every Climate Reporting Entity (CRE) has to publish an annual Climate Statement for each financial year, beginning on or after 1 January 2023.

We act as a system leader to facilitate meaningful collaboration

We engage nationally and internationally on climate change to help close information gaps and mitigate risks as part of an aligned response. We are a member of the Council of Financial Regulators (CoFR) and chaired the CoFR Climate Working Group until early 2023. We remain an active participant of that group and continue to collaborate with the other CoFR agencies to deliver the group's intended outcomes, with climate-related risk one of CoFR's five agreed priority themes.[44] We also collaborate with New Zealand's public and private sectors on climate-related matters, for example Toitū Tahua – The Centre for Sustainable Finance, the Deep South National Science Challenge, the New Zealand Bankers' Association and the Insurance Council of NZ.

Internationally, we learn from other NGFS members and participate in their ongoing work programmes including the Supervision workstream. We regularly engage with counterparts in other jurisdictions within and outside of our region who are also considering issues related to climate-related risks, for example the bank of England and the Australian Prudential Regulation Authority.

Our current approach aligns with existing international perspectives

A review of international perspectives on how current capital frameworks across the world incorporate climate-related risks shows that New Zealand is largely aligned with our prudential regulator peers. However, this is a topic being considered by a number of international organisations. We are following developments elsewhere closely, including considering the implications for New Zealand, noting that any changes to risk weights specifically must be data-driven and explicitly linked to financial risk. Some of the recent international analysis is summarised below.

European Banking Authority

In an October 2023 report on the role of environmental and social risks in the prudential framework of credit institutions and investment firms,[45] the European Banking Authority (EBA) recommended, among other things, targeted enhancement to accelerate the integration of climate-related risks across Basel Pillar 1. These included many initiatives that the Reserve Bank already has underway, including incorporation into stress testing programmes, encouraging inclusion as part of external credit assessments by credit rating agencies, encouraging inclusion when undertaking valuations of

[44] Regulators, C. of F. (n.d.). *Kaunihera Kaiwhakarite Ahumoni | Council of Financial Regulators*. Www.cofr.govt.nz. Retrieved February 15, 2024, from https://www.cofr.govt.nz/priority-themes/climate-related-risks.html#:~:text=Climate%20change%20has%20far%2Dreaching

[45] (2023, October 12). *The EBA recommends enhancements to the Pillar 1 framework to capture environmental and social risks* [Review of *The EBA recommends enhancements to the Pillar 1 framework to capture environmental and social risks*]. Https://Www.eba.europa.eu/Homepage; European Banking Authority. https://www.eba.europa.eu/publications-and-media/press-releases/eba-recommends-enhancements-pillar-1-framework-capture

immovable property collateral, and requiring institutions to identify whether factors constitute triggers of operational risk losses.

The report goes on to recognise the need for further work from a medium-longer term perspective, such as on the roles of scenario analysis and transition plans, the IRB and standardised approach, and concentration risk metrics.

Bank of England

In a March 2023 report on climate-related risks and the regulatory capital frameworks,[46] the Bank of England noted there are some key challenges that impact how climate-related risks are incorporated into regulatory capital frameworks. These challenges largely relate to the limitations around data availability and the accuracy of predictive models. In light of these challenges, the Bank of England concluded that while adjustments to risk weights may be justified, further work is required:

'*An adjustment to the RWA framework might be justified on a prudential basis where climate change affects the relative riskiness of assets. The challenges here are extensive as data and models remain limited. Further work is required to explore the correlations between risk and assets of varying greenhouse gas intensity or exposure to broader climate risks – and importantly how those risks might change over time*'.

Financial Stability Institute

In February 2022, the Financial Stability Institute (FSI) published a paper describing the regulatory challenges to incorporating climate-related risks into prudential frameworks, focusing on the extent to which it is possible to sufficiently cover such risks in minimum capital frameworks.[47]

In their paper, the FSI authors note physical and transition risks threaten the safety and soundness of individual banks and the stability of the financial system. They suggest that there is merit in expanding existing prudential regulatory frameworks to ensure that banks have adequate climate-related risk management processes in place that are consistent with their risk appetite, risk profile and operating environment. However, they concluded that existing prudential frameworks in most jurisdictions were likely to face a number of challenges to effectively covering climate-related risks.

Conclusion

To meet our financial stability objective, it is important for us to take account of the current and future impacts of climate change. One of our key functions is acting as prudential regulator and supervisor of the banking sector, which involves setting banks' capital requirements and monitoring their compliance with those requirements among other activities. These requirements help ensure that banks' balance sheets are better-placed to absorb losses, increasing the resilience of each bank and supporting system-wide financial stability. This helps protect the financial system, and the economy more widely from the wide-ranging impacts of bank failure.

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[46] (2023, March 13). *Bank of England report on climate-related risks and the regulatory capital frameworks* [Review of *Bank of England report on climate-related risks and the regulatory capital frameworks*]. Https://Www.bankofengland.co.uk/; Bank of England. https://www.bankofengland.co.uk/prudential-regulation/publication/2023/report-on-climate-related-risks-and-the-regulatory-capital-frameworks

[47] Coelho, R., & Restoy, F. (2022). *The regulatory response to climate risks: some challenges.* https://www.bis.org/fsi/fsibriefs16.pdf

Reviewing and assessing policy requirements as well as economic and financial developments is an on-going focus of the Reserve Bank to help achieve the financial stability objective. Climate-related risks are becoming more of a focus in New Zealand and around the world. Considering how these climate-related risks can affect New Zealand's financial system, and ensuring that these risks are managed appropriately, are therefore important to the Reserve Bank.

There are mechanisms to incorporate climate-related risks within the approach to risk weights for credit risk, for both the internal ratings-based and standardised approaches. All of these are clearly linked to the level of financial risk to a bank arising from climate change. Nevertheless, accurately including these climate-related risks is not straight-forward, and up-to-date, comprehensive data is missing in several areas. We consider enhancing climate-related risk capabilities along with the quality and availability of consistent data as priorities for banks to promote better management of climate-related risks.

Alongside these priority areas for banks, as a regulator we also continue to enhance and grow our own understanding of climate-related risks and continue to assess prudential frameworks with these risks in mind. As with any other risk, it is vital the prudential frameworks are flexible enough to address all types of financial risks to support financial stability.

The understanding of how climate-related risks impact financial risk (and therefore capital requirements) is fast-evolving globally, and we will continue to evaluate the effectiveness of our approach. The amount of available information is also increasing quickly, for example as a result of mandatory climate-related disclosures, and markets can move rapidly once a critical mass of information becomes available.

We will also continue working with our fellow CoFR members and international peers to keep abreast of developments and what constitutes best practice in this space. When considering any future changes to the approach to setting risk weights, we will ensure any changes are data-driven and explicitly linked to financial risk, rather than for the purposes of achieving other policy objectives unrelated to the management of financial risk.