

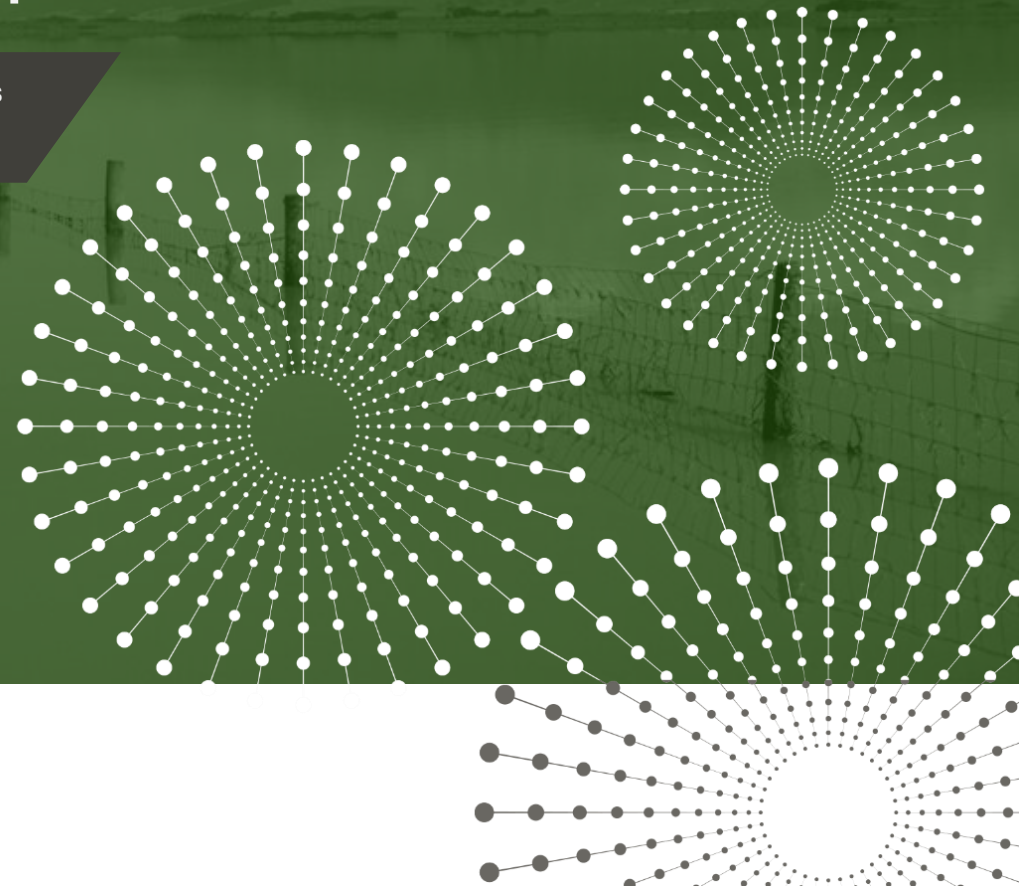


Climate-related risks, opportunities and impacts – Identification to quantification

An approach for identifying and assessing climate-related risks and opportunities and their associated anticipated impacts and anticipated financial impacts

DRAFT Staff guidance for feedback

August 2026



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Examples in this guidance

Any examples in this guidance are for illustrative purposes only. They are not exhaustive and should not be used as templates for disclosures.

Status and disclaimer

This guidance is neither mandatory nor binding on entities. It does not have the force of law, nor does it amend, or provide any binding interpretation of the Aotearoa New Zealand Climate Standards (**NZ CS**). Only the Courts can make binding interpretations of NZ CS under the Financial Reporting Act 2013.

Entities subject to NZ CS are not required to observe this guidance in order to comply with NZ CS. Nor does observance of this guidance necessarily mean compliance with NZ CS. NZ CS is the definitive statement of requirements.

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Introduction

This guidance sets out an approach for identifying and assessing climate-related risks and opportunities, and their associated anticipated impacts and anticipated financial impacts

This guidance outlines an approach entities could follow to identify and assess climate-related risks and opportunities (**CRROs**) and their associated anticipated impacts and anticipated financial impacts (**AFIs**), and to quantify those AFIs where appropriate.

This guidance focuses on underlying internal processes.¹ It builds on the XRB's earlier *Staff guidance: Anticipated financial impacts – Framing internal conversations* (July 2025) by setting out an approach for moving from CRRO identification to AFI quantification.

Identifying and quantifying AFIs depends on a robust CRRO identification and assessment process

Effective and decision-useful quantification of AFIs depends on robust identification and assessment of CRROs and their associated anticipated impacts. This guidance therefore covers the full approach from identification of CRROs to quantification of the associated AFIs, rather than focusing solely on quantifying AFIs.

This may repeat elements of the climate-related disclosure framework that some entities have been carrying out for several years. Entities should use the phases most relevant to their level of maturity.

Climate reporting entities are the primary audience

This guidance is intended to support climate reporting entities (**CREs**)² in meeting the requirements in the Aotearoa New Zealand Climate Standards (**NZ CS**) relating to the disclosure of CRROs and their associated anticipated impacts and AFIs.³

Other stakeholders, such as professional service providers, or entities preparing climate-related disclosures voluntarily or under other reporting frameworks may also find this guidance useful. However, entities applying other reporting standards should consider any relevant differences in disclosure requirements.⁴

This guidance may also be useful for entities that do not prepare climate-related disclosures but want to better understand their CRROs and their associated anticipated impacts and AFIs.

This guidance has been issued in draft to seek input from stakeholders

This guidance has been issued in draft to seek feedback from stakeholders on whether the approach is practical, proportionate, and useful. Please contact us at sustainability@xrb.govt.nz with any feedback.

The XRB expects to publish a final version of the guidance, updated to reflect any wider stakeholder feedback received, by the end of 2026.

¹ It does not provide guidance on how to disclose information required to comply with climate standards issued by the External Reporting Board (**XRB**). For guidance about the disclosure of these areas, see the XRB's *Climate-related Disclosures Staff Guidance – Guidance for All Sectors* (May 2023).

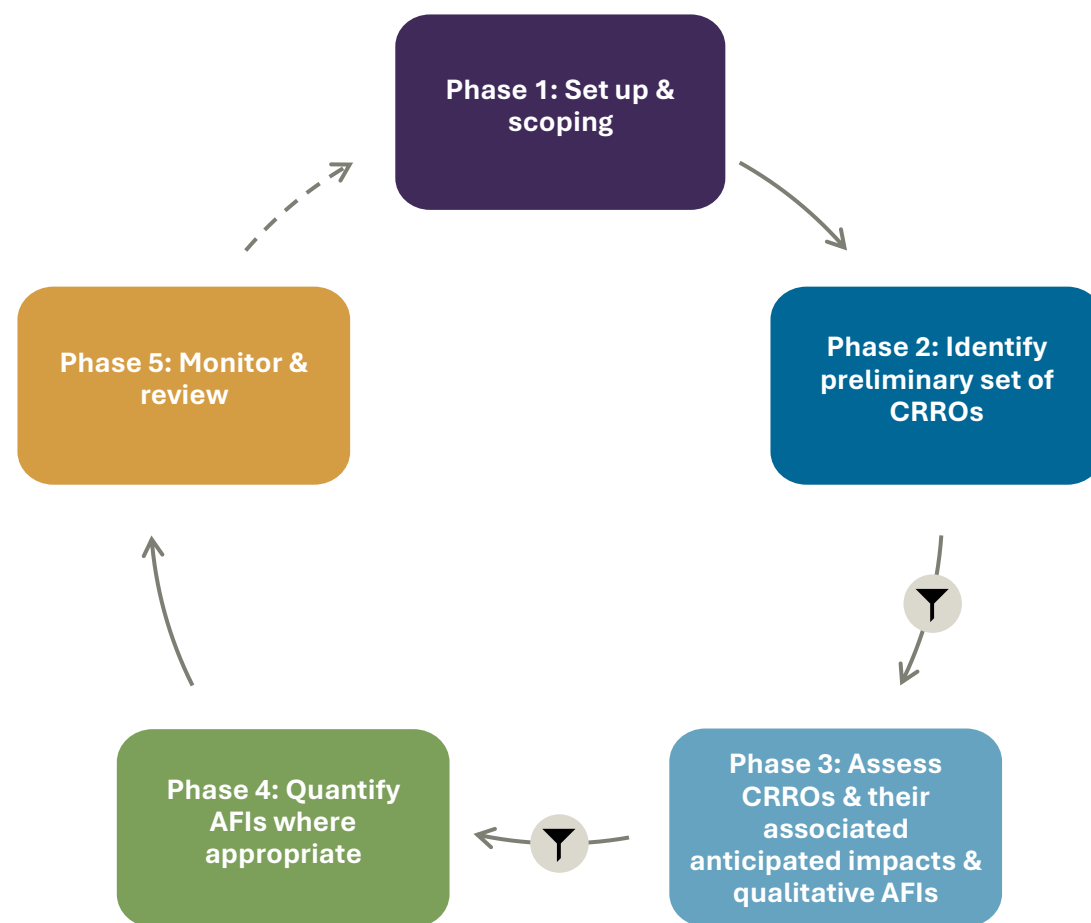
² Refer to Part 7A of the Financial Markets Conduct Act 2013 for the relevant legislative criteria for qualifying as a CRE.

³ Refer to paragraphs 11(c), 11(d), 14 and 15 of NZ CS 1 for the relevant disclosure requirements.

⁴ NZ CS 1 requires disclosure of anticipated impacts and AFIs before planned mitigation or adaptation actions. Other frameworks may require these to be assessed after such measures are considered. Any change in reporting standard in New Zealand relating to climate-related disclosures will result in this guidance being updated as relevant.

Approach

Figure 1: Overview of approach for identifying and assessing CRROs and their associated anticipated impacts and AFIs



Key:



Indicates a point where the entity applies judgement to determine which CRROs warrant progression to next phase. This does not require entities to discount or exclude CRROs. Rather, it supports a proportionate focus on more significant items while allowing other CRROs to be retained on a watchlist for future monitoring and reassessment.



How to use this approach

Treat the approach as integrated, iterative and flexible

This approach is structured as a series of phases for identifying and assessing CRROs, their associated anticipated impacts and qualitative AFIs, and, where appropriate, quantifying AFIs. Entities can apply the phases flexibly depending on their maturity and existing analysis. Some could solely focus on later phases, while others may benefit from using the whole approach.

The approach is inherently integrated and iterative, rather than linear. Insights generated in later phases may prompt entities to revisit and refine earlier judgements.

This approach is one way, not the only way

The phases in this approach are intended to provide outputs that can support disclosures on CRROs and their associated anticipated impacts and AFIs. Each phase recommends methods, tools or processes to develop those outputs but should not be interpreted as prescribing the only manner for doing so.

Entities should use the methods, tools, and processes that are most relevant and proportionate to their circumstances, as well as those that align with their existing risk management frameworks.

Where entities use alternative methods, tools, or processes, it may be useful to consider whether they support the objective of the relevant phase and are capable of producing broadly similar outputs. This is likely to be most relevant in Phases 2 – 4, where there are multiple and varied ways of identifying and assessing CRROs and their associated anticipated impacts and AFIs.

In practice, identifying and assessing CRROs can be complex. The purpose of this guidance is not to simplify that complexity away, but to

provide a practical framework for approaching it in a structured and proportionate manner.

This approach is about the underlying analysis, not the disclosure itself

This approach focuses on the internal processes used to identify and assess CRROs and their associated anticipated impacts and AFIs. Its purpose is to help entities generate, organise and assess information to support decision-making and disclosure.

It is not a guide to determining what should be disclosed, nor does it establish disclosure thresholds or materiality judgements. Decisions about what information should ultimately be disclosed require consideration of the relevant reporting requirements.

It is not anticipated that all information generated, collected, or analysed through this approach will ultimately be included in an entity's external climate-related disclosures. In many cases, the analysis undertaken will extend beyond what is disclosed. However, that information may form part of the records used to inform and support disclosures.

Further guidance – Disclosures

- **XRB *Climate-related Disclosures Staff Guidance – Guidance for All Sectors* (May 2023):** Provides guidance on how to disclose information in accordance with NZ CS. Section 7 (Strategy) may be particularly useful when considering how information generated through this approach could be reflected in climate-related disclosures.

Apply judgement throughout the approach

The approach includes points where entities apply judgement about which CRROs warrant progression through subsequent phases.

Not every identified CRRO will require the same level of assessment and analysis. The purpose of these decision points is to support a proportionate approach by helping entities focus time, resources, and management attention on the CRROs where further work is likely to be most valuable.

The nature of these decisions changes as understanding develops through the approach. In the earlier phases, entities are unlikely to have a complete understanding of each CRRO. Decisions are therefore based on available information, professional judgement, and whether a CRRO appears sufficiently relevant, plausible, or consequential to warrant further assessment. As understanding of a CRRO improves, entities may develop a clearer view of the associated anticipated impacts and AFIs that could arise.

A decision not to take a CRRO forward in a current assessment cycle does not necessarily mean it will always remain less relevant. Changes in business activities, strategy, climate-related exposures, external conditions, available information, or analytical capability may increase its relevance in future assessments. Entities may therefore choose to retain some CRROs on a watchlist and revisit them as part of ongoing monitoring and review.

These decision points are intended to support proportionate internal analysis. They are not materiality judgements for disclosure purposes.⁵ Determining what information is material for primary users, and therefore disclosed in climate-related disclosures, is a separate process.

Apply this approach proportionately

Entities do not need to apply every phase with the same depth or frequency. The level of analysis should reflect the nature of the CRROs being assessed, the entity's circumstances, existing processes, available

information, and the expected value of further analysis. For some entities, a targeted refresh of selected phases may be appropriate, while others may undertake a more comprehensive reassessment.

Scenario analysis is connected to and can support this approach

Scenario analysis, required under many climate reporting frameworks including NZ CS,⁶ helps entities identify CRROs and assess strategic resilience under different plausible futures.

Scenario analysis is therefore connected to, and can support, the approach set out in this guidance by:

- being used as an input when identifying CRROs
- testing how CRROs may evolve across time horizons and under different conditions
- informing assumptions used in impact pathway development and quantification.

Further guidance - Scenario analysis

- **XRB Staff Guidance – Entity Scenario Development (September 2023)**: Provides a reference point for entities as they plan and progress their climate-related scenario analysis process.
- **Financial Markets Authority (FMA) Information Sheet: Climate-related Disclosures – Scenario analysis (October 2023)**: Details the FMA's compliance expectations for scenario analysis disclosures made in accordance with NZ CS.

⁵ Refer to [paragraphs 27 – 39 of NZ CS 3](#) for more information about the materiality in the context of disclosures made in accordance with NZ CS.

⁶ Refer to paragraphs [11\(b\)](#) and [13](#) of NZ CS 1 and [paragraph 51](#) of NZ CS 3 for the scenario analysis disclosure requirements in NZ CS.

Phase 1 Set up and scoping



Objective

Establish the foundational inputs needed to identify and assess CRROs and their associated anticipated impacts and AFIs in subsequent phases.



Suggested outputs

- Clarity on roles, responsibilities, and governance.
- High-level understanding of the entity's value chain.
- Defined time horizons.

1.1 Establish a cross-functional project team and set roles

This approach is best served with input from multiple functions and with clear accountabilities.

1. **Identify functions:** Several internal functions may need to be involved, e.g. strategy, finance, risk, operations, asset management, procurement, sustainability and legal.
2. **Build a shared understanding of CRROs:** Ensure participants have a foundational understanding of climate change and how it could impact the entity.
3. **Clarify roles:** Clarify the role each function will play, e.g. data owner, subject-matter input, risk owner, decision owner, review/challenge.
4. **Consider external engagement:** Where value chain dependencies are important, consider targeted engagement with key external stakeholders, e.g. critical suppliers, major customers, insurers, lenders, and infrastructure providers.
5. **Establish governance and decision-making arrangements:** Identify the executive sponsors, decision-makers, or oversight group needed to support the approach, and clarify how key judgements, trade-offs, and escalation points will be considered.

Early involvement of finance teams may be particularly useful. Finance functions can help identify how CRROs connect to financial performance, financial position, cash flows, planning cycles, and existing financial information.

External expertise may also be useful. This could include addressing capability constraints, accessing specialist expertise, or providing independent challenge.

Further guidance – External expertise

- **FMA *Climate-related disclosures regime and the use of third-party providers* (June 2023):** Provides key considerations when engaging external climate-related services.
- **CFRF / GARP Risk Institute *A Risk Professional's Guide to Physical Climate Risk Assessment* (October 2025):** Provides practical guidance on considerations when selecting and working with external providers of climate hazard data, modelling, and risk assessment services. While aimed at financial institutions, many of the key learnings will be relevant to all entities.

1.2 Understand the value chain

Understanding the entity's value chain helps identify the activities, relationships, resources, people and communities on which it relies to create and preserve value, and where CRROs may arise or be amplified.

A practical way to do this is to develop a high-level value chain map showing upstream activities, own operations, downstream activities, and key external environments that support the business model.

The objective is not to map everything, but to reduce blind spots and identify key dependencies, concentrations and connections.

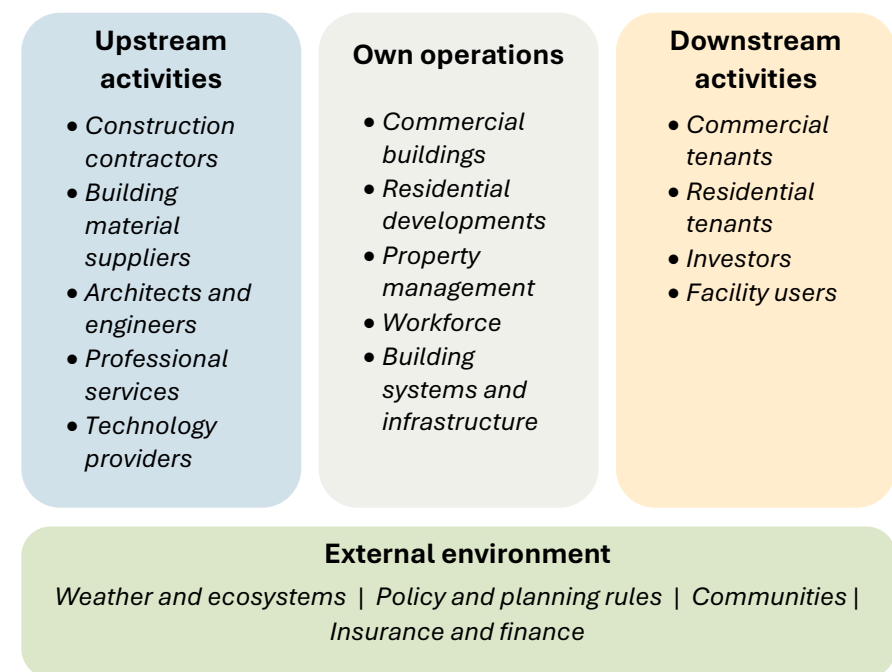
A practical way to develop a value chain map is to:

- **Include the main parts of the value chain:** Map upstream activities, own operations, downstream activities, and key external environments that support the business model.
- **Identify key people and community dependencies:** Consider whether the entity relies on particular workforce groups, critical skills, contractors, local communities, customers, or other stakeholders whose exposure or vulnerability could influence resilience.
- **Identify key dependencies and concentrations:** Highlight the suppliers, infrastructure, systems, assets, or relationships the entity relies on, including areas where reliance is concentrated and substitutes are limited.
- **Identify the main drivers of value:** Identify the parts of the value chain that are most important to how the entity creates or preserves value.
- **Group activities at a meaningful level:** Group activities at a level of detail useful for identifying CRROs, rather than attempting to capture every individual component.

- **Indicate where the entity has control or influence:** Where useful, distinguish between areas under direct control, shared influence, or limited influence, particularly where this may affect the entity's ability to respond to CRROs or quantify AFIs.

Existing value chain mapping and related scoping work undertaken for scenario analysis could provide a useful starting point.

Figure 2: Example of a simple value chain map for a property owner and developer



1.3 Define time horizons

Time horizons provide a consistent basis for understanding how CRROs, their associated anticipated impacts, and AFIs may change over time.

In defining short-, medium- and long-term time horizons, consider:

- **Ordinary business timeframes:** Consider asset lives, strategic and capital planning cycles, customer or supplier contract terms, and refinancing or funding periods.
- **Extended climate-relevant timeframes:** Consider longer-term horizons where CRROs – particularly physical risks – may unfold beyond typical business planning cycles.

Entities may choose to use time horizons that are broadly consistent with those used in scenario analysis, or they may choose different horizons for this approach. Using similar horizons may make it easier to compare insights and carry them through the approach. Entities may use different horizons where the purpose of the analysis differs.

Entities could also consider different time horizons for transition and physical risks.

Link to NZ CS disclosure requirements

This may support CREs in preparing disclosures about how they define short-, medium-, and long-term time horizons, and how those definitions are linked to their strategic planning horizons and capital deployment plans, as required by [paragraph 14\(a\) of NZ CS 1](#).



Phase 2 Identify preliminary set of CRROs



Objective

To identify a broad, structured register of potential CRROs and decide which items to take forward to Phase 3.

Be systematic without becoming over-engineered: Identify enough to reduce blind spots, then apply judgment to determine items that warrant further analysis.



Suggested outputs

- A structured register of potential CRROs across the value chain.
- Consistent descriptors for each CRRO to support later assessment.
- A record of which CRROs are taken forward, monitored, or set aside, and the basis for those decisions.

2.1 Identify and document a preliminary set of CRROs

The identification of CRROs can be complex and iterative. The purpose of this phase is to identify information for further assessment, rather than develop a complete understanding of each CRRO.

2.1.1 Use a range of methods to identify CRROs

Using a range of methods can help reduce blind spots and build a broader preliminary register of potential CRROs. These could include:

- **Value chain analysis:** Use the value chain map developed in [Phase 1.2](#) to work systematically across upstream activities, own operations, downstream activities, and key external environments. Ask where CRROs could arise, be transmitted, or be felt.
- **Climate-related scenario analysis:** Use scenario analysis outputs and insights to identify CRROs that may arise under different plausible futures.
- **Existing enterprise risk management processes:** Use existing risk identification processes, such as risk workshops and risk register reviews, to identify CRROs.
- **Prior period impacts and resilience information:** Consider past climate-related or climate-influenced impacts and resilience assessments to identify recurring risks, operational vulnerabilities, critical dependencies, and emerging opportunities.
- **Horizon scanning:** Identify emerging developments in policy, law, technology, markets, science, macroeconomic conditions, and societal expectations that may give rise to future CRROs.
- **Peer, sector and industry review:** Review disclosures, guidance, reports and analyses from comparable entities, regulators, industry bodies and other relevant organisations to identify common climate-related issues and challenge whether the entity's own list is complete.
- **Targeted engagement:** Use targeted engagement with internal subject-matter experts and relevant external stakeholders to identify dependencies, constraints, vulnerabilities, and opportunity pathways. This may include insights from existing stakeholder engagement or investor relations processes.

2.1.2 Draw on relevant sources of information

The methods used to identify CRROs should be informed by a range of internal and external sources. These could include:

- **Internal strategy and planning materials:** Strategy papers, business plans, capital planning, asset management information, transition or adaptation plans, and relevant board or governance papers to identify planned changes that may create or alter CRROs.
- **Internal risk and operational information:** Risk registers, incident reports, business continuity reviews, insurance information, and operational performance data.
- **Supplier and customer information:** Procurement data, supplier risk assessments, customer concentration analysis, contract information, and market feedback.
- **National and regional risk assessments:** Publicly available and location-relevant hazard data, regional risk assessments, and transition outlooks. For physical risks, these sources can provide an important starting point for identifying potentially relevant climate hazards.
- **Sector and industry guidance:** Sector reports, industry analyses, and published research.
- **External market, policy, and technology information:** Information on policy developments, legal change, market trends, technological developments, and scientific insights.
- **Stakeholder engagement and investor relations information:** Outputs from stakeholder engagement, investor relations, customer engagement, and interactions with lenders or insurers.

When using external information sources, entities should consider whether the information is fit for purpose, including any limitations

relating to spatial resolution, use of downscaling, time horizon, underlying assumptions, uncertainty, or intended use.

Further guidance – Sources of physical climate hazards

- **Climate Change Commission [Full Assessment: 2026 National Climate Change Risk Assessment for Aotearoa New Zealand \(April 2026\)](#):** Identifies and assesses the most significant physical climate-related risks facing New Zealand.
- **FMA [Aotearoa New Zealand publicly available information sources about climate hazards \(May 2026\)](#):** Provides links to examples of New Zealand publicly available information sources about climate hazards.

2.2 Determine CRROs that warrant further analysis



Once a preliminary register has been developed, entities may find it useful to pause and consider whether all preliminary CRROs identified warrant further assessment in later phases.

At this stage, entities are unlikely to have a complete understanding of each CRRO. Information about exposure, vulnerability, anticipated impacts, AFIs, and significance will be developed through later phases.

The purpose is to apply judgement about which CRROs appear sufficiently relevant, plausible, or consequential to warrant further assessment.

Some entities may identify a relatively small number of CRROs such that all items can reasonably be taken forward. Others may have the capability and appetite to assess all items in more detail. In those cases, a separate screening step may add limited value. For other entities, particularly where the initial register is broad, some early prioritisation may help focus time and resources on the CRROs most deserving of further assessment.

Phase 3 Assess CRROs and their associated anticipated impacts and qualitative AFIs



Objective

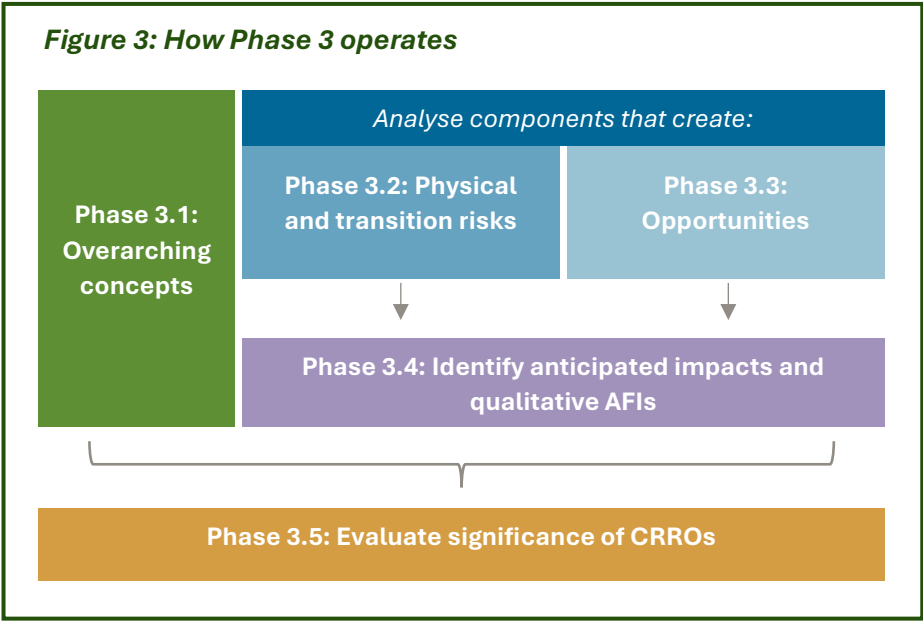
Phase 3 builds an entity-specific understanding of CRROs. It analyses the components that create CRROs, identifies their associated anticipated impacts and qualitative AFIs, and evaluates which CRROs are significant.



Suggested outputs

- An entity-specific understanding of the CRROs identified in Phase 2.
- Clearly articulated impact pathways linking CRROs to anticipated impacts and qualitative AFIs.
- An assessment of the significance of each CRRO.

Phase 3 first analyses the components that create CRROs. It then identifies the anticipated impacts and qualitative AFIs that could result and brings this analysis together to assess the significance of each CRRO. This assessment enables clarity about which CRROs to move forward to Phase 4. This is demonstrated in Figure 3 below.



3.1 Overarching concepts to consider when analysing CRROs and their associated anticipated impacts and AFIs

3.1.1 CRROs and their impacts can vary across time horizons

Analyse and assess each CRRO and its associated anticipated impacts and qualitative AFIs across the short-, medium-, and long-term time horizons defined in [Phase 1.3](#), rather than at a single point in time. The nature, significance and impacts of a CRRO may change over time as both external conditions and the characteristics of the entity change.

Scenario analysis can help inform this assessment by highlighting how risks, opportunities and their impacts may evolve across different plausible futures and time horizons.

3.1.2 Focus on impacts occurring for the entity

CRROs may impact specific assets, activities, suppliers, customers, employees or other parts of the value chain. However, the significance of those impacts depends on what they mean for the entity as a whole.

For example, a climate-related disruption affecting a supplier may have limited implications where alternative suppliers are readily available. However, the same disruption could have significant impacts if the supplier provides a critical input with few substitutes.

The objective of the assessment is therefore not simply to identify what is affected and how, but to understand how those impacts could ultimately affect the entity's strategy, business model, resilience, financial performance, financial position or cash flows.⁷

3.1.3 Look beyond direct impacts

When assessing a CRRO, do not focus only on the impacts that arise directly from the risk or opportunity itself. CRROs can impact an entity through interactions across its value chain and external environment.

A useful starting point is to consider both direct and indirect impacts.

- **Direct impacts** arise immediately because of the CRRO itself. Examples could include physical damage to assets, operational disruption, increased operating costs, reduced productivity, or changes in demand for products or services.
- **Indirect impacts** arise as the direct impacts are transmitted through other parts of the value chain or external environment. Examples could include supplier disruption, changes in customer behaviour, reduced insurance availability, changing market conditions, or disruptions affecting critical workforce, transport or infrastructure systems.

The objective is not to consider every possible indirect impact. Rather, it is to develop a reasonable understanding of the pathways through which a CRRO could ultimately affect the entity.

3.1.4 Consider dependencies, concentrations and interactions

The significance of a CRRO is often shaped by critical dependencies, concentrations and interactions rather than the CRRO alone. When assessing CRROs, consider whether impacts depend on:

- critical assets, suppliers, customers, infrastructure, workforce groups or communities
- concentrations of assets, activities, suppliers, customers or financing sources
- dependencies for which substitutes are limited or unavailable
- relationships that are important to how the entity creates or preserves value.

CRROs and their impacts may also interact with one another. Multiple risks or opportunities may occur at the same time, several individually modest impacts may combine to create a significant overall effect, or risks and opportunities may reinforce, amplify, offset or otherwise influence one another.

The objective is not to consider every interaction or dependency. Rather, it is to identify the concentrations, dependencies and interactions most likely to influence how a CRRO affects the entity.

Further guidance on overarching factors when assessing CRROs

- **Chatham House *Climate change risk assessment 2021* (September 2021):** Entities may find this report useful for understanding how climate-related risks can interact, cascade, and intensify over time.
- **New Zealand Society of Actuaries (NZSA) *White paper: Identifying and quantifying anticipated financial impacts of climate-related risks and opportunities* (March 2026):** Sections 3 and 4 include practical discussion of the nature of CRROs, including that CRROs have first-order, second-order and cascading effects and the concept of interdependence.

⁷ This concept is consistent with the NZ CS definition of “impacts”. Appendix A of NZ CS 1 defines “impacts” as “The effects (also referred to as consequences or outcomes) of climate change occurring for an entity. These effects will, in turn, depend on the impacts of climate change on the broader socioeconomic and ecological systems an entity operates within (including an entity’s value chain)”.

3.2 Analyse the components that create climate-related risks

One way to understand climate-related risks is through an analysis of 1) the *source of potential harm* 2) *exposure* and 3) *vulnerability*.

Understanding these components together helps entities develop a clearer and more complete understanding of the risk itself. These terms are explained in Figure 4.

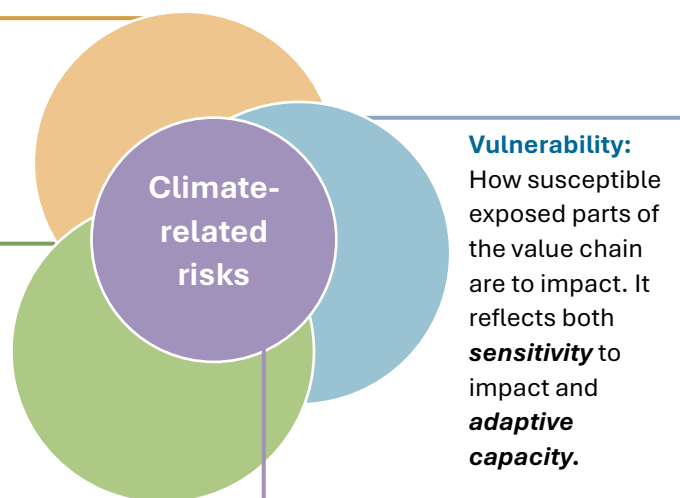
Figure 4: Components of a climate-related risk

Source of potential harm:

- For **Physical risks** this refers to **hazards**, including acute hazards (e.g. cyclones) and chronic hazards (e.g. sea level rise).
- For **Transition risks** this refers to **drivers** related to the transition to a low-emissions, climate-resilient economy (e.g. policy changes).

Exposure:

The parts of the value chain that could be affected if the hazard or driver occurs (e.g. a facility in a floodplain or an asset subject to regulation).



Vulnerability:

How susceptible exposed parts of the value chain are to impact. It reflects both **sensitivity** to impact and **adaptive capacity**.

A **risk** arises where a **vulnerable** part of the value chain is **exposed** to the **source of potential harm**.

This framework is most commonly associated with physical climate risk assessments, where a climate hazard is the source of potential harm. However, it can also be used to analyse transition risks. In this context, a transition driver is considered in place of a physical hazard and therefore the umbrella term ‘source of potential harm’ is used to refer to both hazards and drivers.

Apply this approach proportionately. Start with the parts of the value chain most likely to matter, and use grouping, sampling or other practical methods where a fully granular assessment is not feasible.

Scenario analysis can help inform this analysis by highlighting how hazards, transition drivers, exposures, and vulnerabilities may evolve across different plausible futures.

3.2.1 Identify and analyse the source of potential harm

Start by clearly identifying the specific climate hazard or transition driver, drawing on available information and analysis. This involves refining any high-level descriptions from [Phase 2](#) into an entity-specific understanding of what is creating the potential harm.

The climate hazard or transition driver is not the risk itself. Rather, it is the *source of potential harm* that may give rise to a risk once exposure and vulnerability are considered.

Gather relevant information about the climate hazard or transition driver and how it may evolve over time. Consider where and when it may become relevant to the entity, and whether it could become more or less severe across the time horizons defined in [Phase 1.3](#).

Also consider whether the climate hazard or transition driver could interact with other hazards or drivers. Multiple factors occurring together or in sequence may increase the severity or complexity of resulting impacts.

This analysis may draw on a combination of climate model outputs, hazard data, geospatial information, engineering information, scientific

research, policy analysis, market information, legal precedents or pending cases, technology assessments and entity-specific operational data. Entities should consider whether those information sources are appropriate for the purpose of the assessment and understand any significant limitations or uncertainties associated with them. For physical risks this includes limitations relating to spatial resolution, time horizon, assumptions, uncertainty or intended use.

3.2.2 Map exposure across the value chain

Identify the parts of the value chain that could be impacted if the climate hazard or driver occurs. The objective is to understand what is exposed and the extent of that exposure across the value chain.

When assessing exposure, consider what could be affected, where exposure exists, and whether exposure is concentrated in particular locations, activities, relationships or dependencies. Also consider the extent to which those exposed parts of the value chain are important to how the entity creates or preserves value.

Exposure may not be limited to the directly affected part of the value chain. Consider whether impacts could extend through other parts of the value chain or wider external environment.

Exposure may also change over time. Changes in business activities, locations, assets, customers, suppliers, infrastructure, markets or other parts of the value chain may increase or reduce exposure across the time horizons defined in [Phase 1.3](#).

3.2.3 Analyse vulnerability

Analyse vulnerability by considering both the *sensitivity* of exposed parts of the value chain and the entity's *adaptive capacity*.

- **Sensitivity** refers to the characteristics of exposed parts of the value chain that influence how strongly they may be affected by a climate hazard or transition driver.

Sensitivity may be higher or lower depending on the nature of the exposed part of the value chain and its existing characteristics. For example, a facility elevated above expected flood levels may be less sensitive to flooding than a similar facility located at ground level. Similarly, a building that already exceeds energy performance standards may be less sensitive to increasing energy-efficiency regulation than a building requiring significant upgrades.

- **Adaptive capacity** refers to the ability of exposed parts of the value chain, or the entity itself, to respond to, recover from, or adapt to impacts. For example, adaptive capacity may be stronger where a facility has established flood response procedures.

Both sensitivity and adaptive capacity may change over time as exposed parts of the value chain, external conditions, and adaptation measures evolve.

Vulnerability reflects the combined effect of sensitivity and adaptive capacity. An exposed part of the value chain may be highly sensitive to a climate hazard or transition driver, but have strong adaptive capacity that reduces overall vulnerability. Conversely, a part of the value chain with relatively low sensitivity may still be highly vulnerable if adaptive capacity is limited.

Adaptive capacity in the context of NZ CS

In the context of NZ CS, climate-related risks and their associated impacts and AFIs should be assessed before the effects of any planned future mitigation or adaptation actions are considered.⁸

⁸⁸ [BC30](#), [BC 31](#) and [BC 32](#) of NZ CS 1 note that an entity's disclosure of the AFIs of CRROs should be made before an entity's planned responses to climate change is included. It also notes that the effect an entity's transition planning (i.e. planned but not implemented actions) could have on reducing AFIs could be disclosed separately if material.

Entities should therefore take care not to assume the successful implementation of future measures when assessing adaptive capacity for the purposes of supporting climate-related disclosures made in accordance with NZ CS. In contrast, existing measures, controls, and adaptation responses that are already implemented and operating may reduce vulnerability and should be considered as part of the assessment.

Entities may nevertheless find it useful for internal decision-making, strategy, resilience planning, or transition planning purposes to separately consider how planned future actions could alter vulnerability and reduce risk over time. Where this is undertaken, it may be useful to distinguish that analysis from the assessment used to support NZ CS disclosures.

3.2.4 Form an entity-specific understanding of the risk

Bringing together the analysis of the source of harm (climate hazards or transition drivers), exposure and vulnerability should help entities develop an entity-specific understanding of the risk itself. The objective is to understand how and why the risk arises for the entity, which parts of the value chain are affected, and the factors that increase or reduce the severity of potential impacts.

In some cases, this analysis may indicate that a risk is less relevant than initially thought. For example, exposure may be limited or vulnerability may be low. In these circumstances, entities may determine that further analysis is not warranted and instead retain the risk for monitoring and future reassessment.

Further guidance on understanding physical climate-related risks

- **FMA *Climate-related Disclosures: Insights from our reviews 2026 (May 2026)***: Includes observations and practical examples relevant to understanding physical climate-related risks through the components of hazard, exposure and vulnerability.

Example 1 – Physical risk: Extreme heat affecting construction activity

A construction company operates across several regions where extreme hot days are expected to become more frequent and severe.

*The **hazard** is more frequent or prolonged extreme heat, particularly where temperatures exceed thresholds for safe or productive outdoor work.*

*To map **exposure**, the company identifies the parts of its value chain that could be affected by those conditions. For example, around 40% of annual revenue comes from outdoor civil construction projects delivered during warmer months. The company also identifies connected workers, subcontractors, plant and equipment, material deliveries, and project schedules.*

*To assess **vulnerability**, the company considers both:*

- **Sensitivity:** *The company determines that exposure is highly sensitive because outdoor construction activities are directly affected by extreme heat. Productivity may decline as temperatures increase, work may need to be paused when safe operating thresholds are exceeded, and some activities can only be undertaken in specific weather conditions. The company also notes that many exposed activities take place outdoors and are therefore difficult to fully shield from extreme heat.*
- **Adaptive capacity:** *The company assesses that adaptive capacity is relatively strong because it has already implemented controls including heat management plans, adjusted working hours, worker rest protocols, access to cooling facilities, weather monitoring processes, contingency arrangements, and contractual provisions for weather-related delays. Adaptive capacity remains lower where labour shortages, subcontractor constraints, or contractual requirements limit the effectiveness of these measures.*

Bringing these factors together, the company concludes that extreme heat represents a climate-related risk. The risk arises because a significant part of its operations is exposed to increasing heat hazards and remains vulnerable despite existing adaptation measures. While adaptive capacity reduces vulnerability, it does not eliminate it entirely. The company therefore decides the risk warrants further assessment.

Example 2 – Transition risk: Policy and market change affecting lending exposure

A bank has commercial lending exposure to customers that may be affected by tighter emissions policy and changing market expectations.

*The **driver** is transition pressure from tighter emissions policy, changing customer preferences, and increasing demand for lower-emissions products and services.*

*To map **exposure**, the bank identifies the parts of its lending portfolio that could be affected by those changes. Around 25% of total lending is to customers in emissions-intensive sectors. The bank also identifies relevant loan types, collateral, sector concentrations, and loan durations.*

*To assess **vulnerability**, the bank considers both:*

- **Sensitivity:** *The bank assesses how significantly transition pressures could affect exposed borrowers. Sensitivity is higher where borrowers are heavily reliant on emissions-intensive activities, face high transition costs, or have limited ability to adapt their business models.*
- **Adaptive capacity:** *The bank assesses the ability of both borrowers and the bank itself to respond to transition pressures. Adaptive capacity may be stronger where borrowers have existing capabilities, operational flexibility, access to capital, implemented transition measures, or established processes that support adaptation to transition pressures. The bank may also have adaptive capacity through its existing ability to adjust lending settings, manage concentrations, engage with borrowers, or redirect future lending towards more resilient activities.*

Bringing these factors together, the bank concludes that transition-related changes in policy, markets, and technology could increase credit risk within parts of its lending portfolio. The risk arises because a portion of the portfolio is exposed to activities that may be affected by transition drivers, and some borrowers may be vulnerable to those changes despite existing capabilities and adaptation measures. The bank therefore decides the risk warrants further assessment.

3.3 Analyse components that create climate-related opportunities

One way entities may understand climate-related opportunities is through an analysis of 1) *sources of possible value creation*, 2) *where value could be created* and 3) *the entity's readiness to capture that value*.

Broad themes such as decarbonisation or improving resilience may point to potential opportunities, but they usually require further assessment to understand where they arise, how value could be created, and whether the entity is positioned to capture it. Similarly, a risk management or mitigation action may support an opportunity, but is not necessarily an opportunity in itself unless it creates value for the entity.

Scenario analysis can help inform this assessment by highlighting how opportunity conditions may evolve across plausible futures.

3.3.1 Identify and analyse the sources of possible value creation

Start by identifying the conditions that could create value for the entity. These conditions may arise from changes in climate, policy, regulation, technology, markets, customer preferences, financing conditions, or other external factors associated with climate change and the transition to a low-emissions, climate-resilient economy. The conditions themselves are not the opportunity. Rather, they create the circumstances in which value may be created.

Consider how these conditions may evolve over time and whether they may strengthen, weaken, emerge or disappear across the time horizons defined in [Phase 1.3](#).

3.3.2 Map where value could be created across the value chain

Value may be created through products, services, assets, operations, customers, suppliers, markets, financing relationships, or other parts of the value chain.

When assessing where value could be created, consider which parts of the value chain could benefit from the opportunity conditions, how value could be created, and whether those opportunities are concentrated in particular activities, products, services, customers, or markets. Consider also how those opportunities may evolve across the time horizons defined in [Phase 1.3](#).

3.3.3 Analyse readiness to capture opportunity

Assess whether the entity is realistically positioned to capture the value identified. This includes testing what would need to be true, who would need to act, and whether the entity has the capability, capacity and resources to execute.

When assessing readiness, consider whether the entity has the capability, resources, systems, governance, and funding needed to capture the opportunity. Also consider any dependencies on customers, suppliers, infrastructure, policy settings, market conditions, or third parties, as well as operational, financial, strategic, or regulatory constraints that may affect the entity's ability to realise value. This may include considering whether products, services, operations, or business models can be adapted, scaled, or modified to respond to the opportunity.

Readiness may be stronger or weaker depending on the nature of the opportunity and the circumstances of the entity. For example, readiness may be stronger where an entity has access to capital, relevant expertise, established customer relationships, technological capability, delivery capacity, or credible plans to execute. Readiness may be lower where significant dependencies, capability gaps, funding constraints, or external barriers exist.

3.3.4 Form an entity-specific understanding of the opportunity

Bringing together the analysis of the sources of possible value creation, where value could be created across the value chain, and the entity's

readiness to capture that value should help entities develop an entity-specific understanding of the opportunity itself. The objective is to understand how and why the opportunity arises for the entity, where value could be created across the value chain, and the factors that increase or reduce the entity's ability to capture that value.

In some cases, this analysis may indicate that an opportunity is less relevant than initially thought. In these circumstances, entities may determine that further analysis is not warranted and instead retain the opportunity for monitoring and future reassessment.

Example 3 – Climate-related opportunity: Energy-efficiency

An entity owns and manages a portfolio of commercial buildings.

*To **identify and analyse conditions that could create value**, the entity considers increasing tenant demand for lower-emissions premises, rising energy costs, financing incentives for energy-efficiency projects, and market expectations for more energy-efficient buildings.*

*The entity then **maps where the opportunity may arise across its portfolio**, including buildings with the greatest upgrade potential and tenant segments most likely to value efficiency improvements. It determines that benefits could arise through increased tenant demand, stronger tenant retention, improved rental competitiveness, lower operating costs, and reduced exposure to future regulatory or market changes.*

*To **analyse readiness**, the entity considers whether it has the capability, resources, financing, supplier capacity, and lease arrangements needed to deliver upgrades. It also considers constraints such as funding availability, tenant uptake, competing capital priorities, and supplier capacity.*

Bringing these factors together, the entity concludes that increasing demand for more energy-efficient buildings represents a climate-related opportunity. The opportunity arises because changing market conditions are creating potential value and the entity has the capability, resources, and operational capacity needed to capture it. While some delivery constraints exist, they are not considered sufficient to prevent the opportunity from being realised. The entity therefore decides the opportunity warrants further assessment.

3.4 Identify anticipated impacts and qualitative AFIs

The analysis undertaken in Phases [3.2](#) and [3.3](#) should provide an understanding of how CRROs arise. However, this is only part of the assessment. Entities also need to understand how the CRRO could impact the entity if it materialised and the financial impacts that could result.

The objective is not to identify every possible impact that could arise. Rather, entities should focus on the impacts and AFIs that could reasonably be expected to occur if the CRRO materialised, based on the information available and the entity's circumstances.

Some of this thinking may already have begun to emerge during the analysis undertaken in Phases [3.2](#) and [3.3](#). Where this is the case, the purpose of this phase is to formalise and further develop that understanding.

Developing an **impact pathway** is one way of bringing together the analysis undertaken in Phases [3.2](#) and [3.3](#) and translating that understanding into anticipated impacts and qualitative AFIs.

An impact pathway is a structured representation of how a CRRO could affect the entity. It links:

- the source of potential harm or value creation
- the exposed parts of the value chain
- the anticipated operational and strategic impacts that could arise
- the qualitative AFIs that could result.

Figure 5: Impact pathway



Scenario analysis may support this assessment by helping entities consider how impact pathways could differ across plausible futures. Different scenarios may influence the timing, severity, duration or nature of impacts and the financial impacts that could result.

3.4.1 Confirm the source of potential impact

The starting point for an impact pathway is the information identified through the analysis undertaken in Phases [3.2](#) and [3.3](#). For risks, this will be the hazard or driver identified in [Phase 3.2.1](#). For opportunities, this will be the conditions creating value identified in [Phase 3.3.1](#).

3.4.2 Identify value chain points of impact

Identify the parts of the value chain that could be affected if the CRRO materialised. Value chain points of impact may include assets, operations, suppliers, customers, employees, contractors, communities, infrastructure or other parts of the value chain.

For risks, this should build directly on the exposure analysis undertaken in [Phase 3.2.2](#). For opportunities, this should build directly on the analysis of where value could be created undertaken in [Phase 3.3.2](#).

3.4.3 Specify operational and strategic impacts

Using the value chain points of impact identified, consider how the CRRO could impact the entity operationally and strategically.

For risks, this assessment should build on the vulnerability analysis undertaken in [Phase 3.2.3](#). For opportunities, it should build on the readiness assessment undertaken in [Phase 3.3.3](#).

- **Operational impacts** may include effects on assets, operations, suppliers, customers, employees, contractors, infrastructure, products or services

- **Strategic impacts** may include effects on the entity's business model, competitive position, growth plans, resilience, capital allocation decisions or ability to create and preserve value over time.

When specifying impacts, draw on the considerations discussed in [Phase 3.1](#), including how impacts may change over time and be influenced by dependencies, concentrations and interactions.

3.4.4 Identify qualitative AFIs

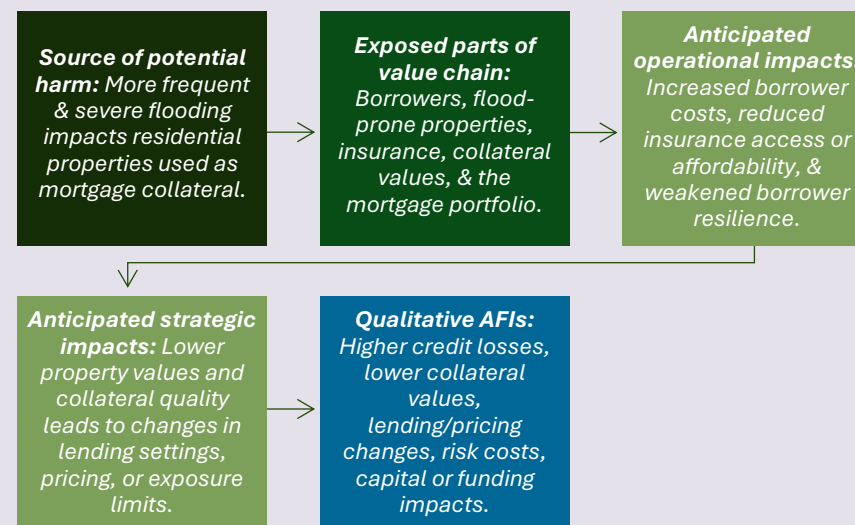
Consider how the operational and strategic impacts identified could impact the entity's financial performance, financial position and cash flows. At this stage, the objective is to understand AFIs qualitatively rather than quantitatively.

A practical way to do this is to consider which financial statement line items could be affected and in what direction. At a minimum, consider whether revenue, operating expenditure, or capital expenditure could be affected. For example:

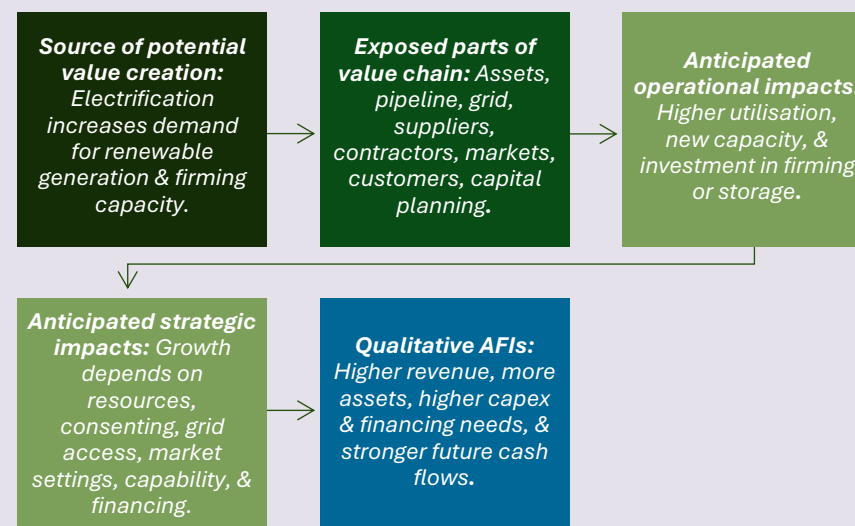
- **revenue** may be affected through changes in volume, price, product mix, utilisation, customer demand or market share
- **operating expenditure** may be affected through changes in input costs, compliance costs, insurance costs, maintenance requirements or productivity
- **capital expenditure** may be affected through adaptation investment, asset replacement, resilience measures, or investment in new opportunities.

Depending on the pathway, it may also be relevant to consider effects on asset values, impairments, provisions, bad debts, working capital requirements, financing requirements or the cost of capital.

Example 4 – Simple impact pathway: Flooding affecting a bank's mortgage lending portfolio



Example 5 – Simple impact pathway: Electrification increasing demand for renewable electricity



3.5 Evaluate CRROs

The analysis undertaken in Phases [3.2](#), [3.3](#) and [3.4](#) provides an understanding of each CRRO, including how it arises, how it could impact the entity, and the qualitative AFIs that could result. The purpose now is to evaluate the significance of each CRRO based on that analysis.

Entities should determine what significance means in their circumstances and how it will be assessed. In doing so, they may consider the extent to which a CRRO could affect the entity's strategy, business model, resilience, financial performance, financial position, cash flows, or ability to create and preserve value over time.

The anticipated impacts and qualitative AFIs identified in [Phase 3.4](#) provide an important basis for this evaluation. However, entities may also consider other factors relevant to their circumstances, such as strategic relevance, dependencies, concentrations, interactions with other CRROs, risk appetite, or the potential for impacts to emerge or intensify over time.

There is no single way to undertake this evaluation. Entities could use existing enterprise risk management processes, bespoke climate-related assessment approaches, qualitative judgement, scoring methodologies, risk matrices, or a combination of these or other approaches. The most appropriate method will depend on the nature of the CRROs being assessed and the entity's circumstances.

A CRRO does not need to be certain, imminent, or quantifiable to be considered significant. Significance is ultimately a matter of judgement, informed by the entity's understanding of the CRRO and the anticipated impacts reasonably expected.

3.5.1 Consider factors that may influence significance

When evaluating significance, entities may find it useful to consider factors such as:

- the scale, nature, timing, and duration of anticipated impacts and qualitative AFIs
- the extent to which impacts affect critical assets, operations, relationships, or other key dependencies
- concentrations, dependencies, or interactions that may amplify impacts, including where impacts could compound or cascade
- strategic relevance to the entity and the extent to which impacts could affect its business model, resilience, financial performance, financial position, cash flows, or ability to create and preserve value.

For many climate-related risks, particularly physical risks, assigning traditional likelihood ratings may be challenging. Future impacts often depend on uncertain timing, severity, and external conditions, and historical experience may not be a reliable guide to future outcomes. In these circumstances, understanding the relevant hazards, exposure, vulnerability, anticipated impacts and qualitative AFIs may provide a more useful basis for evaluation than relying solely on traditional likelihood and consequence assessments.

For some transition risks and opportunities, entities may find it useful to consider the plausibility of future developments, market responses, regulatory outcomes, or the conditions required for value creation. Plausibility focuses on whether a future development could reasonably occur, rather than requiring an assessment of its probability.

Uncertainty should not automatically reduce the significance of a CRRO. In some cases, considerable uncertainty may exist alongside potentially significant impacts. The objective is to understand and evaluate the

CRRO based on available information and professional judgement, rather than requiring certainty about future outcomes. Similarly, low-probability but potentially high-impact outcomes should not be screened out solely because they appear unlikely.

3.5.2 Determine which CRROs warrant further analysis



The outcome of this phase is a decision about which CRROs are significant and warrant progression to [Phase 4](#) where the entity considers whether the associated AFIs can and should be quantified.

Some entities may identify a relatively small number of CRROs and conclude that all are significant. Others may determine that only a subset of CRROs are significant.

A CRRO that is not evaluated as significant may still be monitored and revisited as part of ongoing review processes. Changes in business activities, strategy, climate-related exposures, external conditions, available information, or analytical capability may alter the significance of a CRRO over time.

3.5.3 Evaluating CRRO significance does not automatically determine disclosure materiality

A judgement about whether a CRRO is significant for the purposes of this internal approach is not the same as a materiality judgement for disclosure purposes. A CRRO that is evaluated as not being significant may still be material for disclosure purposes.

In practice, there will often be overlap between the outcomes of this internal significance assessment and disclosure materiality judgements. For many entities, the CRROs identified as significant through this approach are likely to form an important basis for determining which CRROs are disclosed. However, entities should avoid assuming that a

CRRO is automatically material or immaterial for disclosure purposes solely because of the outcome of this internal significance assessment.

Disclosure decisions require a separate judgement about what information could reasonably be expected to influence decisions that primary users make on the basis of an entity's climate-related disclosures.⁹

Link to NZ CS disclosure requirements



The identification, analysis and evaluation of CRROs may provide a foundation for disclosures about the CRROs the entity has identified over the short, medium, and long term, as required by paragraphs [11\(c\)](#) and [14](#) of NZ CS 1.

The analysis of anticipated impacts may provide the foundation for disclosures about the anticipated impacts of CRROs required by paragraph [15\(a\)](#) of NZ CS 1.

For some CRROs, it may also support disclosure of AFIs, required by paragraphs [15\(b\) – \(c\)](#) of NZ CS 1, on a qualitative basis, where quantification is not currently feasible (note quantification feasibility is determined in [Phase 4.1](#)).

⁹ Refer to [paragraphs 27 – 39 of NZ CS 3](#) for more information about the materiality in the context of disclosures made in accordance with NZ CS.

Phase 4 Quantify AFIs where appropriate



Objective

To assess whether to quantify AFIs at this stage and, where appropriate, to quantify them.

Quantification is not about predicting the future with precision, but instead about translating credible analysis into quantified insight while remaining transparent about uncertainty.



Suggested outputs

- A decision for each CRRO on whether to proceed with AFI quantification at this stage
- Quantified AFIs for CRROs where appropriate
- For CRROs where AFIs are not quantified, identified triggers for reassessment

4.1 Assess readiness to quantify AFIs

Not all AFIs of CRROs can or should be quantified. NZ CS recognises this by requiring entities to explain why quantitative AFIs have not been disclosed where they are unable to provide them.¹⁰ This subphase helps entities assess whether quantification is currently appropriate.

Entities will need to apply judgement when deciding whether to quantify AFIs as part of the current assessment. Some AFIs may be ready for quantification using simple or more sophisticated approaches, depending on the circumstances. Relevant data, suitable methods, and appropriate capability may already exist, and the expected insight is proportionate to the effort, cost, complexity, and uncertainty involved.

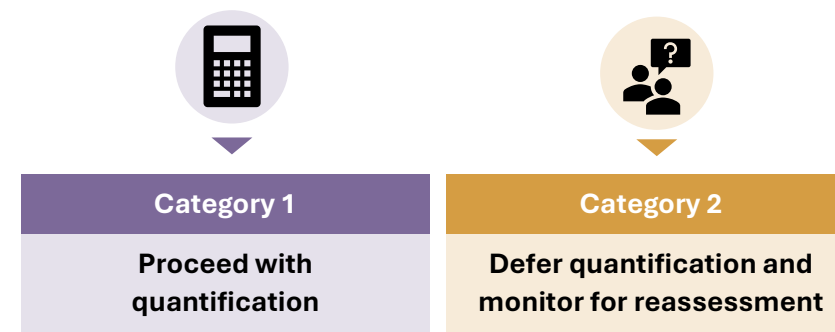
In other cases, it may be appropriate to defer quantification. This may be because the potential insight would be useful, but quantification is not yet possible. For example, because relevant data is limited, assumptions are unstable, or methods and capability need to mature.

It may also be because quantification is technically possible, but the likely incremental insight beyond the qualitative assessment is limited relative to the effort, cost, complexity, or uncertainty involved.

This phase supports that judgement by helping entities decide whether to proceed with quantification or defer quantification and monitor for reassessment.

Categorise each CRRO into the categories detailed in Figure 6.

Figure 6: Quantification readiness categories



¹⁰ Refer to paragraph 15(d) of NZ CS 1.

- **Data availability and quality:** Is there sufficient information, including available data, reasonable proxies, and assumptions to support a reasonable estimate across the relevant parts of the value chain and time horizons? Consider information collected as part of earlier phases.
- **Overall uncertainty and stability of assumptions:** Are uncertainty or unstable assumptions likely to limit meaningful insight, including where outcomes depend on external factors, long time horizons, cascading impacts, or limited control?
- **Attribution feasibility:** Can the climate-related component of impact be reasonably distinguished from business-as-usual change, including where impacts are indirect, higher-order, or shaped by multiple interacting drivers?
- **Methodological fit:** Is there a credible method for quantifying the AFI? Consider the nature of the impact pathway, relevant time horizons, external dependencies, and how much control or influence the entity has over where the impact arises.
- **Decision-usefulness and proportionality:** Would quantification provide meaningful insight for internal decision-making or external disclosure purposes? Is the likely value of that insight proportionate to the effort, cost, and complexity involved?

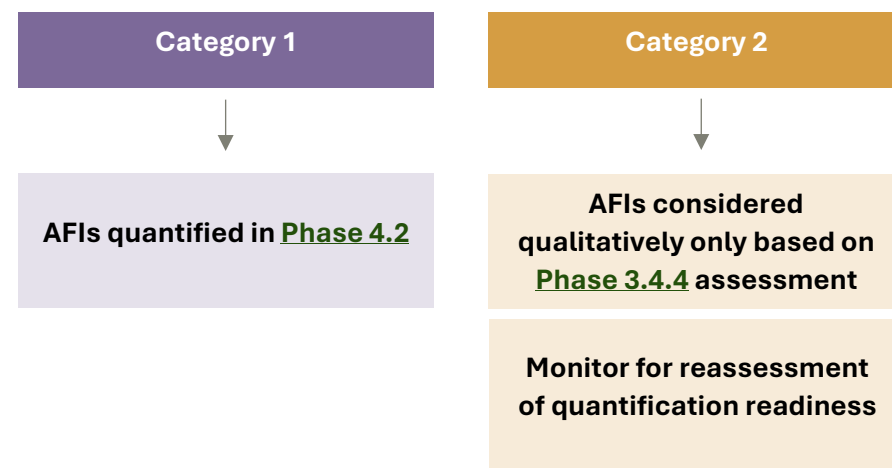
Quantification readiness may differ across components of the same CRRO. Entities may quantify the parts that are credible and decision-useful, while keeping other components qualitative and monitoring them for future reassessment.

Quantification readiness may also differ across time horizons. For some CRROs, AFIs may be capable of being quantified over certain time horizons but not others. For example, an entity may have sufficient data, more stable assumptions, and a clearer understanding of impact pathways in the short term, while longer-term estimates remain highly

uncertain or speculative. In these circumstances, entities may choose to quantify AFIs for some time horizons while retaining a qualitative assessment for others.

Placing a CRRO in one of these categories helps determine what happens next. In the current period, the treatment is detailed in Figure 7.

Figure 7: Outcome of quantification readiness assessment



A caution on uncertainty

Uncertainty is inherent in climate-related analysis, particularly over longer time horizons. The presence of uncertainty does not, on its own, mean quantification should be deferred.

The key consideration is whether the resulting information provides meaningful insight despite the uncertainty involved.

4.1.1 Monitor Category 2 CRROs for reassessment of quantification readiness

CRROs for which quantification is deferred should not be set aside entirely. The reasons for deferring quantification may differ and could shape the entity's approach to reassessment.

Where quantification is currently feasible but not considered sufficiently decision-useful relative to the effort, cost, complexity, or uncertainty involved, entities should periodically reassess whether changes in business circumstances, stakeholder needs, strategic relevance, or expected insight mean that quantification would add sufficient value relative to the effort, cost, complexity, or uncertainty involved.

Where quantification is not currently feasible, entities should identify the factors limiting quantification and consider how these could be addressed over time. This may include improving data quality and availability, refining impact pathways, increasing internal capability, developing methodologies, or reducing key sources of uncertainty.

Monitoring and improvement activities can be integrated into existing processes such as risk reviews, scenario analysis updates, capital planning cycles, or capability development programmes. As circumstances change, entities may reassess whether quantification has become credible, proportionate and decision-useful.

Link to NZ CS disclosure requirements

For Category 2 CRROs, the Phase 4.1 analysis could provide the foundation for why the entity is unable to disclose quantified AFIs as required by paragraph [15\(d\)](#) of NZ CS 1.



Example 6 – Simple quantification readiness assessment

Industry	CRRO	Anticipated impacts & qualitative AFI	Quantification readiness considerations	Category
Utilities	Physical risk: Increased storm frequency damaging generation assets.	- More outages, asset damage, repair costs, and capital replacement spend. - Cash flows may be affected by timing of repairs and insurance recoveries.	- Asset location, fault, maintenance cost, and hazard data are available. - The storm → damage → cost pathway is well understood. - Existing asset management models can support reasonable estimates and testing of key assumptions. - Quantification is likely to support maintenance and capital planning.	Category 1 - Proceed with quantification
Real estate / construction	Opportunity: Increased demand for lower-emissions commercial buildings.	- Higher tenant demand could improve occupancy, rental income, tenant retention, and asset values. - Retrofit investment may also reduce operating costs.	- Building energy data, retrofit costs, leasing information and market benchmarks are available. - The key drivers of costs and benefits are reasonably well understood, making quantification feasible and potentially useful for investment decisions.	Category 1 - Proceed with quantification
Logistics	Transition risk: Reputational damage from slow progress reducing freight emissions.	Weaker customer trust or competitiveness in tender processes could reduce revenue, margins, fleet utilisation, customer retention, or future tender success.	- Customer and tender data may provide indicators, but the climate-related component of any future revenue impact cannot currently be distinguished from other factors such as price, service quality, capacity, contractual arrangements, and market conditions. - Quantification is therefore not currently possible on a sufficiently credible basis. - It may become feasible if customer feedback, procurement criteria, tender outcomes, or market evidence establish a clearer connection between emissions performance and commercial outcomes.	Category 2 - Defer quantification and monitor for reassessment
Banking	Opportunity: Emerging demand for green lending products.	Higher uptake could increase lending volumes, fee income, interest income, and customer growth.	- Product-level lending and customer data are available, so the bank could model possible revenue upside. - However, the product set is small, demand is emerging, and outputs would rely on uncertain assumptions about uptake, pricing, and market growth. - Existing qualitative analysis is sufficient for current planning purposes and quantification is unlikely to provide meaningful additional insight relative to the effort, cost, complexity and uncertainty involved.	Category 2 - Defer quantification and monitor for reassessment

4.2 Quantify anticipated financial impacts

For CRROs placed in Category 1, the objective is not to predict the future with precision, but to translate credible impact pathways into quantified financial insight while being transparent about uncertainty.

The approach in this section is one practical way to approach quantification. Entities may use other methods, tools, or external expertise where these are better suited to their circumstances. Where external support is used, this section may help frame discussions about scope, methods, data, assumptions, and outputs.

Quantification is not an all-or-nothing exercise. There is no single method that will suit every CRRO. Entities should start simple and use transparent assumptions. Build sophistication over time as maturity and capability develop, or where greater complexity improves decision-usefulness.

In some cases, ranges, sensitivities, or directional estimates may be more useful than outputs that appear precise but are based on weak or highly uncertain assumptions. The objective is to provide decision-useful insight, with the level of precision reflecting the nature of the uncertainty involved, rather than implying a degree of certainty the analysis cannot support.

Quantifying AFIs is not the same as determining whether those impacts will be recognised in the financial statements. References to financial performance, financial position, and cash flows are intended to help entities think about the different ways CRROs may have financial impacts. Climate statements and financial statements serve different purposes, so differences between them are expected.

Quantification in this phase is intended to estimate AFIs before planned mitigation or adaptation actions are considered, consistent with the NZ CS disclosure lens. Where entities also assess response-adjusted AFIs, keep the two views distinguishable.

The approach described below in Phases 4.2.1–4.2.4 has been informed by *[White paper: Identifying and quantifying anticipated financial impacts of climate-related risks and opportunities](#)* prepared by the NZSA. Reference to that paper alongside this guidance may be useful.

4.2.1 Translate impact pathways into calculation pathways

Translate the impact pathways developed in [Phase 3.4](#) into calculation pathways for Category 1 CRROs. A calculation pathway makes explicit what is being estimated, which variables and assumptions matter, how they relate to one another, and how the result links to a relevant financial metric or line item. The aim is to establish a clear and proportionate basis for estimation that can be understood, reviewed, and challenged.

For each Category 1 CRRO, the calculation pathway would typically make clear the:

- **AFI being estimated** and the relevant financial metric or line item(s) affected, e.g. revenue, operating costs, capital expenditure, asset values, provisions, cash flows, or financing costs
- **Main variables, drivers, and exposed parts of the value chain** relevant to the estimate, e.g. the assets, sites, activities, contracts, portfolios, market segments, or counterparties to which those drivers apply
- **Key assumptions and sensitivities** that shape the estimate, including, e.g. assumptions about vulnerability, response, recovery, pass-through, substitution, or third-party reliance
- **Calculation logic** that links the impact pathway to the AFI, i.e. how the consequences are translated into an AFI
- **Form of output** to be generated, such as a point estimate, range, sensitivity, or scenario-based result, and the relevant time horizon or horizons over which the AFI is expected to arise.

Scenario analysis may inform calculation pathways by providing a structured basis for assumptions about how impacts could unfold under different conditions, including where those assumptions are sensitive to particular drivers or external dependencies.

4.2.2 Select an appropriate quantification approach

The appropriate quantification approach will depend on the nature of the AFI, the complexity of the pathway, the availability and quality of data, the level of uncertainty, and the entity's analytical capability. The objective is not to select the most sophisticated approach available, but one that is fit for purpose and proportionate.

The entity may also need to decide whether a discounted or undiscounted basis is more appropriate, depending on the purpose of the analysis and its usual finance practice.

Models are one way to implement a quantification approach

A model is a simplified representation of a system and can help implement the calculation pathway in a structured way. For the purpose of quantifying AFIs, a model may range from a simple spreadsheet-based approach using a small number of assumptions and parameters to a more sophisticated simulation model.

Entities are likely to benefit from starting with relatively simple approaches and introducing greater sophistication over time as confidence, capability, and understanding improve.

For many entities, a spreadsheet-based approach using a small number of transparent assumptions may provide a robust and proportionate starting point. Such approaches can incorporate inputs from more complex sources, including climate hazard data, climate model outputs, location specific information, or specialist assessments where relevant.

4.2.3 Gather data and assumptions

The aim is to assemble inputs that are sufficiently relevant, reliable, and fit for purpose for the AFI being estimated. This includes where different inputs or assumptions may be needed across time horizons.

Data and assumptions may draw on a mix of internal information, external inputs, expert judgement, and existing scenario analysis outputs. These inputs can help estimate how conditions may evolve over time and can be translated into assumptions used in the quantification approach.

For physical risks, assumptions may draw on climate hazard data, climate model outputs, location specific information, or specialist assessments. For some physical risks, climate model outputs may first need to be translated into relevant hazard metrics or indicators before they can be linked to operational or financial impacts.

For transition risks, assumptions may draw on policy pathways, market projections, technology trends, or economic forecasts.

Information gathered during earlier phases will often provide a useful foundation for quantification. Assumptions used in quantification should remain consistent with the earlier assessment of the CRRO and the impact pathway developed in [Phase 3](#), while being refined where necessary.

Scenario analysis does not need to be repeated at this stage. However, previously developed scenarios may provide a useful source of assumptions and can support sensitivity analysis by showing how AFIs may vary under different plausible futures. Where scenario analysis informs quantification, the scenarios used should be treated as a key assumption.

Inputs may include:

- **Internal information:** Operational metrics, asset data, cost structures, volumes, pricing, contracts, and historical performance

- **External inputs:** Climate hazard data, market or policy projections, economic assumptions, and scenario variables
- **Expert judgement:** Forward-looking assumptions are required, or impacts depend on management or third-party responses.

At this stage, pay particular attention to which assumptions drive the estimate, where judgement is doing the most work, where data limitations create material uncertainty, and whether assumptions are aligned with those used elsewhere in the analysis.

4.2.4 Execute quantification approach and generate quantified AFIs

In practice, this may involve iteration rather than a single linear calculation. Quantification may reveal that additional data is needed, assumptions require refinement, or the calculation pathway or method should be adjusted. This is a normal part of developing a credible and decision-useful estimate. The aim is not to delay until uncertainty is resolved, but to apply a proportionate approach and strengthen the analysis over time.

Results may be expressed in different forms depending on the nature of the CRRO, the level of uncertainty, and the intended use of the information. Outputs may take the form of point estimates, ranges, sensitivities, scenario-based results, or order-of-magnitude estimates. Where uncertainty is high, entities may use ranges, sensitivities, or scenario-based results to reflect how AFIs vary under different assumptions, scenarios, climate model outputs, or other key inputs.

AFIs may be presented separately by time horizon, cumulatively across time horizons, or both. Where appropriate, related CRROs may also be aggregated where this provides a clearer representation of the overall anticipated financial impact and does not obscure meaningful differences between individual CRROs.

Outputs should be clearly linked to the relevant effects on financial performance, financial position, and cash flows, and, where relevant,

capital expenditure or capital allocation. They should also be linked to the time horizons over which impacts are reasonably expected to arise.

Calculations, assumptions, and limitations should be documented in sufficient detail to support internal review, governance oversight, and comparability over time.

Apply judgement to ensure outputs remain coherent with the underlying impact and calculation pathways. Present results in a way that is transparent about uncertainty and decision-useful, without implying a level of precision the analysis cannot support.

4.2.5 Reflect on whether quantification affects earlier judgements

Quantification may reinforce or challenge earlier judgements about a CRRO's significance. Where it provides a materially new understanding, entities may find it useful to revisit the evaluation conducted in [Phase 3.5](#).

Link to NZ CS disclosure requirements

For Category 1 CRROs, the quantitative assessment of AFIs could form the basis of disclosure requirements in paragraphs [15\(b\) – \(c\)](#) of NZ CS 1.



Further guidance – Quantifying AFIs

- **NZSA *White paper: Identifying and quantifying anticipated financial impacts of climate-related risks and opportunities* (March 2026):** Provides detailed information about how entities can identify and quantify AFIs, including key considerations and the use of models.
- **KPMG / Chapter Zero New Zealand *Financial quantification: From climate risk to value creation* (March 2026):** Provides practical insights on current approaches to climate-related financial impacts and quantification and the value of undertaking this exercise.

Example 7 – Simple quantification of AFIs for flooding affecting a key distribution centre

An entity identifies flooding affecting a key distribution centre as a Category 1 CRRO. The distribution centre handles around 35% of the entity's annual sales and holds approximately 20% of its inventory at peak periods.

The entity's impact pathway indicates that flooding could disrupt inventory handling and customer deliveries, reduce sales, increase logistics costs and damage inventory.

Translate the impact pathway into a calculation pathway:

The entity estimates three AFIs: lost revenue, higher operating costs and inventory losses. It identifies the main variables needed for each estimate, including average daily sales, disruption duration, sales recovery, additional logistics costs, and the value of exposed inventory.

Select an appropriate quantification approach:

Because the anticipated impact arises through a discrete disruption event, the entity estimates the financial impacts of one plausible flood event causing a seven-day disruption at the distribution centre. Different approaches could be used where the objective is to estimate the effects of multiple events over time or under different future conditions.

Gather data and assumptions:

The entity uses internal data showing average daily sales of \$1.2 million, additional logistics costs of \$90,000 per day, and exposed inventory of \$6 million. It also assumes a seven-day disruption, 50% recovery of delayed sales, and 20% damage to exposed inventory. These assumptions are informed by internal operational data, site-specific flood information, business continuity planning, and professional judgement about how disruption could affect sales recovery and inventory damage under the selected event.

Execute quantification and generate quantified AFIs: *Using these assumptions, the entity estimates:*

- **Lost revenue:** \$1.2m daily sales × 7 days = \$8.4m gross disruption × 50% sales recovery → **\$4.2m revenue loss**
- **Higher operating costs:** \$90,000 per day × 7 days → **\$630,000**
- **Inventory losses:** \$6m exposed inventory × 20% damage → **\$1.2m**

*The total estimated AFI is approximately **\$6.0 million**. Although the disruption is short-term, it affects a critical distribution centre responsible for around 35% of annual sales, making it relevant for liquidity, contingency planning, and operational resilience. Any costs borne by the entity to remediate the damage to the distribution centre itself could also be included if material.*

The entity could undertake further sensitivity testing for disruption length, damage severity, and sales recovery to understand which assumptions have the greatest influence on the estimate and how the AFI may vary under different conditions. It could also consider whether insurance recoveries, changes in insurance availability or affordability, or longer-term site viability could materially affect the analysis. Where relevant, these matters may be assessed separately or incorporated into additional sensitivities or scenarios.

Example 8 – Simple quantification of AFIs for carbon pricing affecting a consumer goods manufacturer

An entity manufactures packaged food products and identifies rising carbon prices as a Category 1 CRRO. The affected product categories account for around 30% of annual revenue (~\$150m of \$500m total revenue) and have low margins, making them sensitive to cost increases and demand changes. The entity generates total operating profit of approximately \$50m.

The entity's impact pathway indicates that rising carbon costs could increase production costs, influence pricing, and affect demand.

Translate the impact pathway into a calculation pathway:

The entity decides to estimate two AFIs: higher operating costs and revenue impacts from pricing and demand changes.

Select an appropriate quantification approach:

While carbon prices could increase incrementally over time, the entity wants to understand how a material increase in carbon prices could affect its financial performance over the short to medium term. It therefore estimates the financial effects of a one-off increase in carbon prices from \$80 to \$130 per tonne.

Gather data and assumptions:

The entity uses annual emissions of approximately 180 ktCO₂ for the affected product categories and product category revenue of approximately \$150m. It assumes a carbon price increase of \$50 per tonne, 70% cost pass-through to customers, and a 3–5% reduction in demand due to higher prices. These assumptions are informed by internal emissions data, pricing and margin analysis, market information, and the policy pathway, scenario assumption, or planning assumption used for the assessment.

Execute quantification and generate quantified AFIs:

Using this data and assumptions, the entity estimates:

- **Increase in operating costs:** $180 \text{ kt} \times \$50 \rightarrow \sim \9m increase in operating costs
- **Offset from price pass-through:** $\sim \$9\text{m} \times 70\% \rightarrow \sim \6m recovered through pricing $\rightarrow$ residual $\sim \$3\text{m}$ cost impact on margins
- **Revenue impact from demand changes:** $\$150\text{m} \times 3\text{--}5\% \rightarrow \sim \$5\text{--}\$7\text{m}$ reduction in revenue

*These simplified estimates together indicate a **reduction in operating profit of \$8 – \$10m**, representing approximately 16% - 20% of current total operating profit.*

The entity could also test sensitivities for carbon price levels, emissions volumes, pass-through rates, and demand response to understand which assumptions have the greatest influence on the estimate and whether alternative assumptions would materially affect its understanding of the CRRO and its associated AFIs.

Phase 5 Monitor and review



Objective

To keep the analysis of CRROs, anticipated impacts, and AFIs current as conditions change, understanding improves, and capability matures.



Suggested outputs

- A defined approach for monitoring key changes and reassessment triggers
- A record of reassessment decisions, including items retained, progressed, or deprioritised

This exercise is relevant regardless of how many of the earlier phases an entity undertakes in a particular cycle. Monitoring and reviewing helps determine whether a targeted refresh of selected phases is sufficient or whether a broader reassessment is warranted.

5.1 Monitor changes in CRROs, impacts, and quantification readiness

CRROs, their associated anticipated impacts, and AFIs evolve over time as external conditions change. Monitoring helps to ensure earlier judgements about significance, pathways, and quantification remain appropriate.

Monitoring is most effective when anchored around clearly defined triggers, rather than treated as a constant full refresh. These triggers signal when reassessment may be warranted.

A practical monitoring process may cover changes in:

- **External environment:** Policy, technology, market demand, hazards, insurance, financing, infrastructure, and available information (e.g. climate model outputs, hazard assessments, and relevant scientific or technical research).

- **Internal conditions:** Strategy, assets, operating model, dependencies, controls, capital decision-making.
- **Analytical capability:** Data availability, modelling capability, quality of assumptions.

5.2 Review, refresh, and feed insights back into earlier phases

Reviewing rarely requires restarting the approach from [Phase 1](#). Instead, update the parts of the approach that are most affected by new information or changing conditions.

Monitoring may indicate that only limited changes have occurred since the previous assessment. In these circumstances, a targeted refresh may be sufficient to confirm that earlier judgements, assumptions, prioritisation decisions, and quantification conclusions remain appropriate. A more comprehensive reassessment may be warranted where there have been significant changes in business activities, strategy, climate-related exposures, external conditions, available information, or analytical capability.

The objective is not to necessarily repeat the entire approach each reporting period, but to focus effort on the parts of the analysis most affected by change.

For example:

- Changes in the business model or value chain may require updates to earlier scoping or identification work in Phases [1](#) and [2](#).
- New hazard information may require refinement of a [Phase 3.2](#) risk analysis.
- A change in strategic direction may alter the plausibility of a [Phase 3.4](#) pathway.
- Improved data may move a CRRO from Category 2 to Category 1 in [Phase 4.1](#).

The depth and frequency of review should be proportionate to the entity's circumstances and the nature of the CRROs involved.

Where monitoring indicates that conditions have changed or thresholds have been reached, entities may reassess earlier judgements and update their analysis accordingly.

Entities may also find it useful to periodically compare previous expectations with actual outcomes. This can help identify where assumptions remain appropriate, where new information suggests refinement is needed, and whether changes in data, methods, or modelling approaches are materially influencing results. Insights from this review can be used to improve future assessments and quantification.

Monitoring and review activities can often be integrated into existing enterprise risk management, strategic planning, financial planning, capital allocation, transition planning and reporting processes. Integration across sustainability, finance, strategy and risk functions may help ensure outputs remain decision-useful and embedded within core business processes.



Using the outputs of this approach in strategy, transition planning, and disclosures

This approach helps entities build a clearer, more decision-useful understanding of their CRROs, the associated anticipated impacts that could arise, and the AFIs that may follow. Its value lies not only in supporting climate-related disclosures, but also in strengthening internal prioritisation, strategy, resilience, and transition planning.

Used well, the outputs can support broader strategic thinking, including business model implications, capital allocation, and the identification of where change may be needed and which actions to prioritise over time. For many entities, the CRROs identified and the pathways developed can provide an important input into transition planning.

The approach should be applied proportionately and iteratively. Entities do not need complete information or sophisticated quantification to gain useful insight. What matters is having a structured basis for identifying the issues most likely to matter, understanding how they could affect the entity over time, and refining that analysis as data, capability, and experience develop.

Further guidance – Transition planning

For further support on transition planning, refer to the suite of XRB staff guidance on transition planning, including:

- **Sustainable Business Council / XRB Staff [Transition planning: Guidance for staff](#) (March 2025):** Practical guidance on coordinating, developing, and embedding transition planning as an operational work programme.
- **Institute of Directors / XRB Staff [Transition planning: A guide for directors](#) (October 2024):** Governance-focused guidance on overseeing credible transition planning as part of long-term strategy and resilience.
- **Sustainable Business Council / XRB Staff [Climate transition planning: A guide for executives](#) (December 2024):** Leadership-focused guidance on using strategy, planning, and change-management tools to support transition planning and execution.
- **Sustainable Business Council / XRB Staff [Climate transition planning: An overview – The why and what of climate transition planning for organisations across Aotearoa New Zealand](#) (December 2024):** Introductory guide explaining what climate transition planning is, why it matters, and how it can support long-term strategic direction.