Process-Based Approach to climate change adaptation and resilience Substantial Contribution criteria

Green Activity

1. This set of criteria provides a Process-Based Approach (PBA) for the determination of Substantial Contribution for economic activities under the environmental objective of adaptation and resilience (A&R) in the Aotearoa New Zealand Sustainable Finance Taxonomy (NZ Taxonomy). The criteria serve as guidance for the user of the NZ Taxonomy or a third party (e.g., a consultant) to structure and/or review an A&R process (see **Appendix 1**) and can be used in conjunction with the accompanying spreadsheet of automatically eligible measures (entitled 'Whitelist of climate change adaptation and resilience measures for agriculture and forestry'). The PBA includes two types of Substantial Contribution to the A&R objective: adapted activities (paragraphs 1-6) and enabling activities (paragraph 7).

   To clarify, only the cost of the adaptation solutions is eligible for resilience financing, not the cost of the entire asset or economic activity within which it is implemented. This is because resilience financing is specifically intended to support actions that directly contribute to reducing climate risk. As the broader asset or economic activity may have other purposes beyond enhancing resilience, only the expenses directly related to the adapting measure are considered eligible. In contrast, the cost of an entire enabling activity can be eligible for resilience finance, as an enabling activity by definition enhances the climate resilience of other activities or systems, hence the entire activity is eligible.

2. In order for an economic activity to be considered 'adapted', the activity must have implemented physical and/or non-physical solutions ('adaptation solutions') that substantially reduce the most important physical climate risks that are deemed significant to that economic activity.

3. To determine those risks, the physical climate hazards that are significant to the economic activity must have been identified from the non-exclusive list in Appendix 2, by performing a robust climate hazard, exposure and vulnerability assessment with the following steps:

   a. A screening should be conducted to identify the physical climate hazards, including those from the non-exclusive list in Appendix 2, that may affect the performance of the economic activity during its expected lifetime, taking both likelihood and the potential for adverse consequences into account.

   b. Where the economic activity is found to be at risk from one or more physical climate hazards, a climate risk and vulnerability assessment is conducted to assess the significance (considering both likelihood and consequence) of these hazards on the economic activity, alongside potential changes in the exposure and vulnerability of the economic activity over the same time horizon.

   c. To undertake point (b) above, it is recommended that the users of the NZ Taxonomy follow the guidance for physical climate risk assessment (CRA) provided by the Ministry for the Environment (MfE) entitled A guide to local climate change risk assessments ('the Guide'). The Guide is not mandatory, and Appendix 3 provides further guidance documents and useful links for conducting physical CRA. Small and medium-sized enterprises (SMEs) are not expected to conduct all the governance and consultation mechanisms described in the Guide, but they should see it as a reference and follow the principles that are set out in it.

   d. An assessment of adaptation solutions that can reduce the exposure and/or vulnerability of the economic activity to the identified physical climate hazards should be conducted. The CRA might not involve a scenario analysis as required under the climate-related disclosure regimes, but it should consider a range of potential changes to climate-related hazards and drivers.

      i. To maintain alignment with the NZ Taxonomy, a physical climate risk assessment must be conducted at least every five years, or more frequently where there are significant changes in business or in the assumptions underpinning the assessment (such as changes in the activity boundaries, scenarios or climate events). Documented evidence of such assessments must be kept available and dated by the user of the NZ Taxonomy. Assessments prepared under the Aotearoa New Zealand Climate Standards (NZ CS) are accepted under the Taxonomy.

e. The risk assessment needs to consider the potential range of changes in climate hazards predicted by different climate models for any given emissions scenario, not just the average outcome.

4. The CRA is proportionate to the scale of the activity and its expected lifespan, such that:

   a. For economic activities with an expected lifespan of less than 10 years, the assessment is performed considering historical but recent climate variability trends and, where possible, decadal climate forecasts at an appropriate spatial and temporal scale.

   b. For all other economic activities, the assessment is performed using the highest-available resolution, state-of-the-art climate projections across the existing range of future climate scenarios consistent with the expected lifetime of the economic activity, including, at least, 10-year to 30-year climate projection scenarios for major investments.

5. The climate projections and assessment of risks should be based on best practice and available guidance, also taking into account the state-of-the-art science for risk analysis and related methodologies in line with the most recent Intergovernmental Panel on Climate Change (IPCC) reports, scientific peer-reviewed publications and robust and credible models (see Appendix 3 for examples). It is recommended that the user of the NZ Taxonomy should do the following:

   a. Adopt the high-emissions scenario SSP3-7.0 as the minimum emissions scenario for climate projections and associated risk assessment.

   b. Use climate projections from a range of different climate models as a basis for the assessment of the hazards to which the economic activity might be exposed. For guidance, the National Institute of Water and Atmospheric Research (NIWA) provides a publicly available and reputable source of downscaled data for climate projections for New Zealand. Specifically, NIWA provides six individual model results for any given emissions scenario. Other climate projections of comparable detail that have been documented in the scientific literature can also be used.

   c. Develop a general socio-economic narrative to describe changes in exposure and vulnerability, as well as concurrent pressures from transition risks on the economic activity. For guidance, the External Reporting Board (XRB) hosts on its website examples of specific socio-economic scenarios that can inform the narrative.

   d. If the organisation is an SME, it can follow a streamlined approach for the PBA; it is not expected to use either a minimum emissions scenario or a climate scenario for physical CRA. ClimateWise provides a useful guidance document (containing templates, checklists and integration of Māori perspectives) on how SMEs can identify and manage climate-related risks, including:

      i. the process for the identification of climate-related risks and opportunities facing the business

      ii. the methodology for assessing, rating and prioritising the identified risks, to understand their significance and the focus of the SME's adaptation efforts

      iii. guidance on the design of an adaptation plan specifically tailored for SMEs

      iv. the process for reviewing and monitoring the adaptation plan.

6. The adaptation solutions implemented:

   a. must not knowingly or reasonably foreseeably cause or contribute to maladaptation and not to adversely affect adaptation efforts and the level of resilience to physical climate hazards of other people, indigenous biodiversity, habitat connectivity or ecosystem processes, cultural heritage, assets and other economic activities over time

   b. should comply with the Do No Significant Harm (DNSH) criteria of the NZ Taxonomy

   c. must prioritise Nature-based solutions or rely on Blue or Green infrastructure to the extent possible

   d. should consider local, sectoral, regional or national adaptation plans and strategies, including risk assessments conducted by regional district councils, and avoid or explain any material inconsistencies

   e. should be monitored and measured against activity-specific and predefined indicators (see Appendix 4), with remedial action considered where those indicators are not met

f. in the context of Aotearoa New Zealand, must recognise the status of Te Tiriti o Waitangi and the role of iwi, hapū and Māori landowners as Tiriti partners and rights-holders in the identification, assessment and implementation of climate adaptation measures. CRAs and adaptation solutions should incorporate:

   i. Mātauranga Māori (Māori knowledge and values), where appropriate and with consent

   ii. relevant iwi and hapū climate strategies, adaptation plans or governance processes

   iii. engagement that reflects tikanga (custom), whakapapa (relational accountability) and mana whakahaere (authority of place).

The impact of adaptation measures on Māori land, cultural heritage and freshwater taonga should also be considered, to ensure consistency with relevant Treaty settlements, iwi management plans and statutory acknowledgements.

7. Should demonstrate, through an assessment of current and future climate hazards (including uncertainty and based on robust data) that the enabling activity (see Appendix 5 for examples) provides a technology, product, service, information or practice (or promotes their uses), with one of the following primary objectives:

   a. increasing the level of resilience to physical climate hazards of other people, nature, cultural heritage, assets and other economic activities

   b. contributing to the adaptation efforts of other people, nature, cultural heritage, assets and other economic activities.

Definitions for the Process-Based Approach to climate change adaptation and resilience Substantial Contribution criteria

Activities

Economic activity (Source: adapted from Eurostat)

An 'economic activity' takes place when resources such as capital goods, labour, manufacturing techniques or intermediary products are combined to produce specific goods or services. Thus, an economic activity is characterised by an input of resources, a production process and an output of products (goods or services).

An activity, as defined here, may consist of one simple process (e.g., weaving) or cover a whole range of sub-processes, each mentioned in different categories of a given relevant classification system (e.g., the manufacturing of a car consists of specific activities such as casting, forging, welding, assembling and painting). If the production process is organised as an integrated series of elementary activities within the same classification system, the whole combination is regarded as one activity.

The NZ Taxonomy has adopted the Australian and New Zealand Standard Industrial Classification (ANZSIC) as its classification system for economic activities.

Adapted activity

An 'adapted activity' is one that has undergone a process of adaptation that results in it being able to perform better and be more resilient in a changing climate. A contribution to adaptation occurs via the application of adaptation solutions to an activity. Examples are a water supply system that has been made resilient to droughts, or a building that has been retrofitted to cope with heat stress.

Enabling activity

'Enabling activities' enhance the climate resilience of other activities or systems. Those activities provide, produce or deliver technologies, products, services, information sets or practices specifically aimed at reducing climate vulnerability for the adopter or other beneficiaries. A contribution to adaptation may occur from enabling activities that have a primary objective other than climate change adaptation, provided that the enabling activity makes a substantial contribution to climate change adaptation. For example, the manufacturing of leak detection equipment improves the resilience of water distribution networks by preventing water loss and maintaining a reliable supply even under climate stress.

Adaptation solutions

Measure (Source: the Climate Bonds Resilience Taxonomy Methodology)

A 'measure' is a specific intervention within an asset, activity or entity. Examples are the installation of new equipment within a production facility, the implementation of new technologies or practices, and operational changes within a facility.

Adapting measure

An 'adapting measure' refers to a specific action or intervention taken within an activity to make it more climate resilient. The term 'adapting' is used because the measure improves the adaptive capacity and, thus, the resilience of the overall activity within which it is implemented. Examples include installing leak detection equipment and systems in residential buildings to cope with water stress, upgrading crop storage facilities to adapt to heat stress, or installing early-warning systems for floods in ports.

Enabling measure

An 'enabling measure' refers to a specific intervention implemented within an economic activity with the primary intention of enhancing the resilience of one or more other economic activities or systems. Unlike adapting measures, which concentrate on increasing the resilience of an activity that has been identified as being at risk from climate change, enabling measures aim to strengthen the resilience of other interconnected activities or systems. An example is extending a water supply system to support a water-stressed community. The primary focus here is not on making the entire water supply system more resilient, but rather on improving water access and resilience for communities (the system) that are currently underserved and vulnerable to water stress.

Adaptation and resilience process (see Appendix 1)

Physical climate risk assessment

A physical climate risk assessment is a process used to identify, analyse and evaluate the risks of climate change on physical assets, infrastructure and operations. These assessments help organisations understand the way climate-related hazards (see Appendix 2), such as extreme weather events (acute risks) and long-term shifts in climate patterns (chronic risks), could affect their business, property or investments over time. The assessment forms part of the broader A&R process.

Maladaptation

These are actions that may lead to an increased risk of adverse climate-related outcomes, such as indirectly increased greenhouse gas (GHG) emissions, increased or shifted vulnerability to climate change, and more inequitable outcomes or diminished welfare, whether now or in the future. Usually, maladaptation is an unintended consequence. Examples are setting up an irrigation project that can increase food security for some but decrease water availability for small farmers downstream, negatively affecting their livelihoods or building seawalls that can block natural drainage, causing flooding in other areas.

Hazards

These are physical climate-related events or trends (acute or chronic) that may potentially occur, causing negative impacts within the investment's boundaries of assessment (see Appendix 2).

Exposure

This refers to the presence within the boundaries of assessment of people, natural systems and economic or other assets in places and settings that could be adversely affected by hazards.

Vulnerability

This covers the propensity or predisposition of people, natural systems and economic, social, cultural or other assets to be adversely affected and their ability to recover (or not).

Nature-based solutions

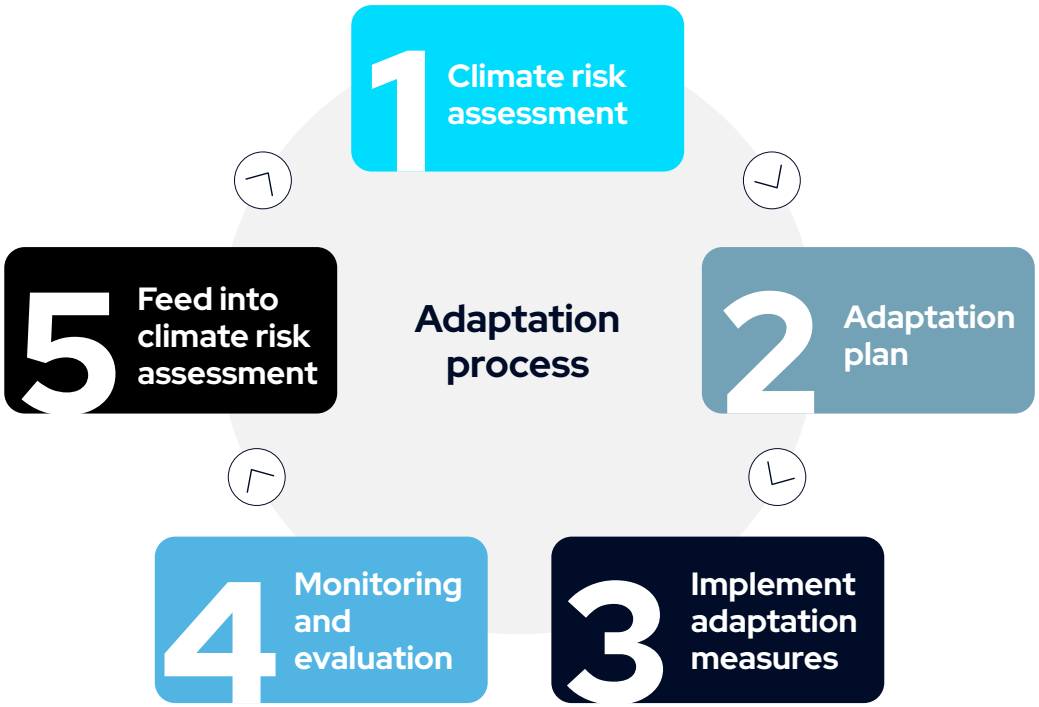
These are actions that aim to protect, conserve, restore and sustainably manage natural or modified terrestrial, freshwater, coastal and marine ecosystems, which address social, economic and environmental challenges effectively and adaptively, while simultaneously providing human wellbeing, ecosystem services, resilience and biodiversity benefits. Nature-based solutions can include both Green and Blue infrastructure. Examples are restoring coral reefs and mangrove forests to protect coastlines, using Green infrastructure like green roofs and urban trees to combat extreme heat, and agroforestry to improve soil health and water management.

Climate resilience

The capacity of social, economic, and environmental systems to cope with climate-related hazardous events, trends or disturbances, responding or reorganising in ways that maintain their essential function, identity, and structure, while also maintaining the capacity for adaptation, learning, and transformation.

Appendices for the Process-Based Approach to climate change adaptation and resilience Substantial Contribution criteria

Appendix 1 – Adaptation and resilience process



1. **Climate risk assessment**
   - Identify potential climate hazards (from Appendix 2) that are relevant to the activity's location and lifespan.
   - Evaluate significance of hazards + exposure + vulnerability.
   - Use appropriate climate projections (historical and/or future).
2. **Adaptation plan**
   - Identify A&R solutions to reduce hazard, exposure or vulnerability.
   - Ensure solutions are consistent with the best available science.
3. **Implement A&R solutions**
   - Check for maladaptation – ensure solutions do not harm others, lock in risk or reduce long-term resilience.
   - Favour Nature-based solutions or rely on Blue or Green infrastructure to the extent possible.
   - Cross-check against local adaptation strategies, iwi/hapū plans and Te Tiriti obligations.
4. **Monitoring and evaluation**
   - Track the performance of solutions using predefined indicators (see **Appendix 4**).
5. **Feed into climate risk assessment**
   - Plan for corrective actions if targets are not met due to unforeseen factors such as increased vulnerability, reduced capacity or ability to adapt, and to mitigate risks such as reduced human and/or financial resources.

Appendix 2 – Non-exclusive list of climate hazards

Adapted from the text of the EU Taxonomy Delegated Act, Appendix A (European Commission, June 2021).

	Temperature-related	Wind-related	Water-related	Solid mass-related
Chronic	Changing temperature (air, freshwater, marine water), including extremes	Changing wind patterns	Changing precipitation patterns and types (rain, hail, snow/ice), and drought	Coastal erosion, inundation, recession, and drought
	Heat stress		Precipitation or hydrological variability	Soil degradation
	Temperature variability		Ocean acidification	Soil erosion
	Permafrost thawing		Saline intrusion	Solifluction
	Changing seasonality		Sea level rise	
	Changing distribution of pests and diseases		Water stress	
Acute	Heat wave	Cyclone, hurricane, typhoon	Drought and changes in aridity	Avalanche
	Cold wave/frost	Storm (including extratropical, convective, blizzards, dust, sand)	Heavy precipitation (storm, rain, hail, snow/ice)	Landslide
	Bushfire, grassfire, wildfire	Tornado	Flood (coastal, estuarine, fluvial, pluvial, groundwater)	Subsidence
			Storm surges (due to cyclones and non-cyclone East Coast lows)	
			Glacial lake outburst	

Appendix 3 – Non-exhaustive list of tools, scenarios and models for physical climate risk assessment

Further guidance for undertaking physical climate risk assessments

- Ministry for the Environment (2024), Coastal hazards and climate change guidance
- Ministry for the Environment (2020), National climate risk assessment for New Zealand
- National Institute of Water and Atmospheric Research, Risk and vulnerability assessments
- Harrington et al. (2025), On the procurement of physical risk assessments for climate-related disclosures: Guidance from a climate science perspective
- The Aotearoa Circle (2023), Agri adaptation roadmap
- External Reporting Board (2023), Staff guidance: Entity scenario development

Scenarios/projections to be used in physical climate risks assessments

- National Institute of Water and Atmospheric Research, Virtual Climate Station data and products (for current climate variability)
- National Institute of Water and Atmospheric Research, New Zealand climate projections dataset, with detailed projections for individual climate models
- National Institute of Water and Atmospheric Research (2024), Updated national climate projections for New Zealand
- External Reporting Board (2023), Sector-level scenario analysis
- The Aotearoa Circle, Climate scenarios
- Gibson et al. (2025), Downscaled CMIP6 future climate projections for New Zealand: Climatology and extremes

Tools/data to be used in physical climate risks assessments

- Climate Analytics, Climate impact explorer
- Ministry for the Environment (2024), Climate projections summary dashboard
- National Institute of Water and Atmospheric Research, Climate change adaptation toolbox
- National Institute of Water and Atmospheric Research, Extreme coastal flood maps for Aotearoa New Zealand
- Natural Hazards Commission, Natural hazards portal
- Land Information New Zealand (2024), Key datasets for resilience and climate change
- Building Performance (2024), Weather files for Aotearoa New Zealand

Additional references

- Food and Agriculture Organization of the United Nations (2017), Tracking adaptation in agricultural sectors: Climate change adaptation indicators
- Adaptation and Resilience Investor Collaborative (2024), Adaptation & resilience impact: A measurement framework for investors
- Ranger and Bernhofen (2024), Aligning finance with adaptation and resilience goals: Targets and metrics for financial institutions

Appendix 4 – Examples of adaptation and resilience indicators

- Deutsche Gesellschaft für Internationale Zusammenarbeit (2014), Repository of adaptation indicators: Real case examples from national Monitoring and Evaluation Systems
- Global Impact Investing Network, IRIS+ system
- United Nations Environment Programme, Land use finance impact hub

Appendix 5 – Examples of enabling activities

Investment	Type
Creation of data-sharing platforms and interfaces for data input–output	Data
Restoration of diverse native ecosystems to reduce monoculture vulnerability and support ecological resistance	Ecological
Wetland restoration and construction: Re-establishing and creating wetlands for flood attenuation, water purification and biodiversity habitat	Ecological
Indigenous riparian restoration: Planting appropriate local native species along waterways to stabilise banks, reduce erosion and shade streams in order to mitigate heat stress for aquatic life and create habitat corridors	Ecological
Indigenous afforestation for erosion control: Establishing or maintaining permanent native forest cover on highly erodible land to stabilise slopes, reduce sedimentation into rivers and provide biodiversity co-benefits	Ecological