



CLIMATE AND ENERGY

Climate Risk Preparedness and Adaptation

A GETTING STARTED GUIDE

Ariel Fabbro
Stephanie Bertels
Mahroo Shahbaz

Climate Risk Preparedness and Adaptation

A GETTING STARTED GUIDE

Prepared by Ariel Fabbro, Stephanie Bertels, and Mahroo Shahbaz.

This document is licensed under a [Creative Commons Attribution-ShareAlike 4.0 International License](https://creativecommons.org/licenses/by-sa/4.0/). You are free to share (copy and redistribute the material in any medium or format) or adapt (remix, transform, and build upon) the material with appropriate attribution. You must give appropriate credit, provide a link to the license, and indicate if changes were made. You may do so in any reasonable manner, but not in any way that suggests that the authors or The Embedding Project endorse you or your use of our work product.



Ariel Fabbro, Stephanie Bertels, and Mahroo Shahbaz. *Climate Risk Preparedness and Adaptation: A Getting Started Guide*. (Embedding Project, 2025).

DOI: 10.6084/m9.figshare.28764968

CONTENTS

1

2

3

4

5

6

ABOUT THIS SERIES

4

SETTING THE STAGE: CLIMATE RISK

5

KEY CONCEPTS – CLIMATE RISK AND CLIMATE ADAPTATION

10

KEY PLAYERS IN CLIMATE RISK AND ADAPTATION

12

COMMITTING TO TAKE ACTION – MID- AND LONG-TERM GOALS

13

HOW TO GET THERE – PROCESS-BASED INTERIM TARGETS

14

RESOURCES

19

ACKNOWLEDGEMENTS

22

ABOUT THIS SERIES

This guide is part of our series of Getting Started Guides that supports your company to develop an [embedded sustainability strategy](#). Each guide tackles a specific sustainability sub-issue and explores what your company needs to do to support the resilience of the environmental and social systems around you.

In each guide, we address relevant trends, system thresholds, key concepts, key actors, and key resources. We also offer guidance on how to address the impacts of decisions and activities in your operations and value chains as well as developing credible goals and outlining key corporate actions and internal targets that can help to provide clarity on the work ahead.

We recommend you read the first guide in the series, [Getting Started Guides: An Introduction](#), which explains our overall approach and the value of setting a clear strategy anchored in your company's most material issues. It also explains how you can leverage process-based interim targets to clearly outline and track the specific actions that your company needs to take to achieve its high-level goals.

A complete list of focus areas and sub-issues can be found in our guide [Scan: A Comprehensive List of Sustainability Issues for Companies](#).

This guidebook addresses **Climate Risk Preparedness and Adaptation**, which is part of the broader sustainability issue topic of Climate and Energy.

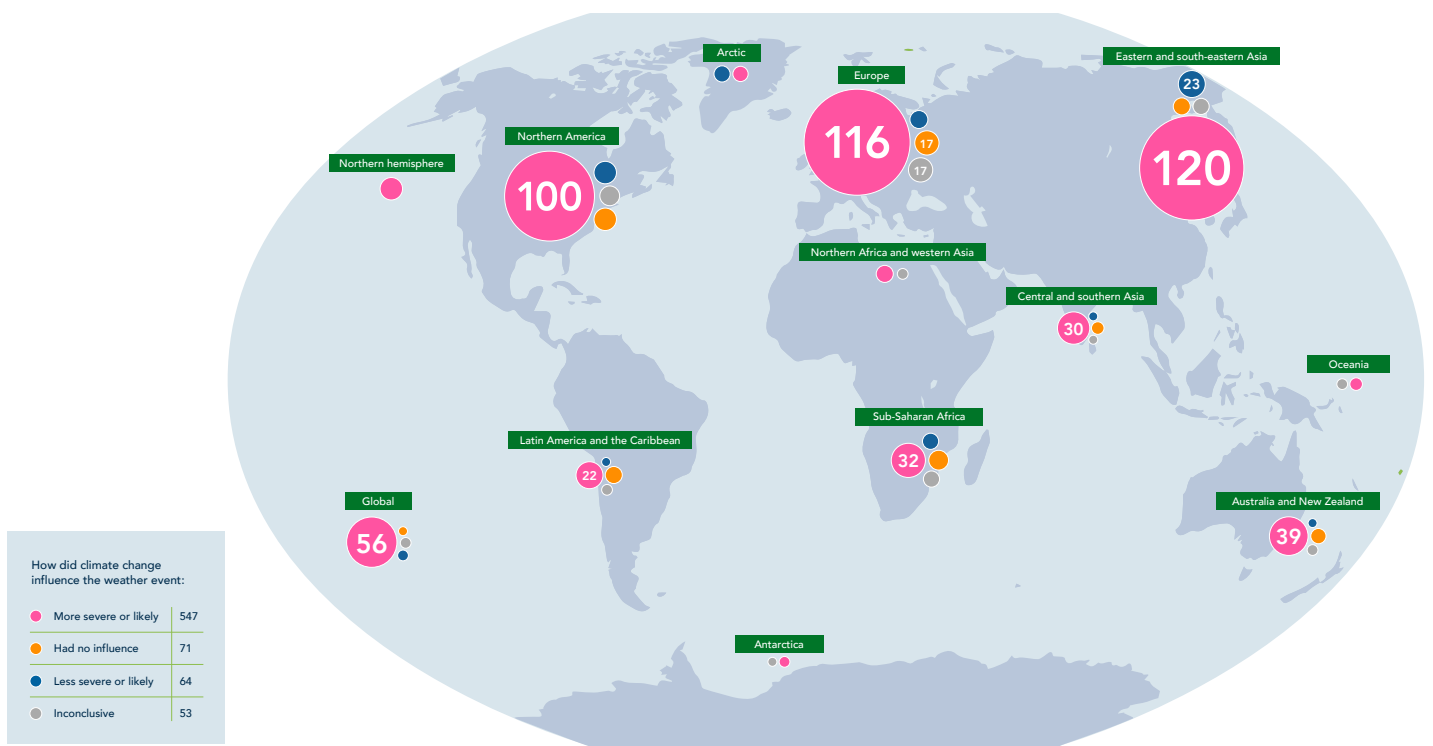
1

SETTING THE STAGE – CLIMATE RISK

Global heating (resulting from the increasing concentration of carbon dioxide and other greenhouse gases that trap heat in the earth's atmosphere), is destabilising the Earth's climate system with severe environmental, social, and economic consequences. In the short-term to mid-term, we will experience impacts related to sudden onset [extreme weather events](#) like floods, droughts, heatwaves, fires, and windstorms, that are

[increasing in intensity](#) and frequency. Over the mid- to long-term, additional impacts will derive from slow onset processes like sea level rise, glacier loss, forest dieback, and desertification. Together, these changes threaten the environmental foundations of our social and economic systems – for instance, heating threatens [disastrous habitat loss](#) for insects, plants, and animals that we rely on for food, fibre, and more.

Impact of climate change on extreme weather



Adapted from [Carbon Brief](#)

THE RISK TO HUMAN WELLBEING

The magnitude of these impacts, and their implications for society, can be difficult to fully comprehend. On our current trajectory toward [3°C warming](#) this century, [up to three-quarters of humans](#) will be exposed to life-threatening combinations of heat and humidity. Many regions will suffer [month-long heat waves](#) combined with surging energy demand for cooling. Adding to the public health risk, rising temperatures are set to increase the prevalence of [tropical viruses](#), like Dengue, Yellow fever, and Zika, within and beyond historical areas of transmission.

Climate-related [food insecurity](#) has been identified as one of the most worrying concerns. In some regions, climate impacts have already reduced agriculture productivity by [30%](#), with equatorial regions in particular expected to see declining yields as growing conditions become unfavorable. While higher-latitude regions may increase yields due to a longer growing season and by shifting production poleward, extreme weather is increasing the risk of crop failures across all regions. Of particular concern is the risk of [multiple breadbasket failures](#), which refers to the potential of two or more significant grain producing regions suffering crop failure simultaneously. While the current risk for this is near zero, it is estimated that, based on the current global emissions trajectory, this risk will rise to [nearly 50%](#) during the 2040s.

Acute climate impacts such as heat stress and flooding also pose threats to livestock, while chronic impacts like sea level rise threaten flooding in [low lying crop land and fertile river deltas](#), as well as damage to coastal spawning grounds that fisheries rely on. In addition, climate warming is driving the [poleward spread](#) of agricultural [diseases and pests](#). This combination of environmental stressors makes food availability and nutrition a systemic risk that could lead to widespread social and political unrest.

Climate change is also driving mass migration and displacement. [More people today are displaced by extreme weather than conflict](#) – a number that increased by [41%](#) between 2008 and 2022. While these have tended to be [short term internal displacements](#), as climate impacts intensify, this will change. Many future climate migrants will be forced to move permanently beyond borders as the equatorial land area projected to become too hot for humans to live (mean annual temperature greater than 29°C) increases from less than [1% today to 19% by 2070](#). The wide-ranging implications of permanent mass migration include changes in demand and supply of food, energy, housing, and labour, as well as significant social and political implications.

Climate stress also exacerbates conflict by compounding existing environmental and socio-economic challenges. For instance, the 19 countries with the highest number of ecological threats are among the [least peaceful](#). At a national level, disputes over climate-affected resources, such as [water](#), can contribute to geopolitical instability – for example, climate change played a significant role in the drought that [contributed to the Arab Spring](#).

THE RISK TO ECONOMIES

Our economic system is highly vulnerable to climate risk. Increasing extreme weather events damage company assets, disrupt operations, and undermine worker health and productivity. Research indicates that every [1°C increase in global temperature leads to a 12% decline in global GDP](#). Recent studies find that our business-as-usual trajectory toward 3°C warming this century implies severe economic contraction [comparable to entering the Great Depression indefinitely](#). The National Bureau of Economic Research estimates [economic output will decline by 46% by 2100](#), the Institute and Faculty of Actuaries (IFoA) projects a [50% reduction in GDP between 2070 and 2090](#), and the Boston Consulting Group (BCG) suggests that [one-third of global GDP is at risk by 2100](#).

The global supply chains companies rely on are especially vulnerable to disruptions. More frequent and more intense heatwaves, flooding, and hurricanes are disrupting the production of raw commodities in key areas; sea level rise is altering coastal infrastructure and functions, including ports; and wildfires are increasingly compromising essential transportation routes. These and [many other scenarios](#) put supply chains at risk of [huge losses](#) that will be felt over the long-term. Companies will need to implement future-proof strategies and adaptation measures to build resilience and buffer impacts.

THE NEED FOR CLIMATE JUSTICE IN RISK PREPAREDNESS AND ADAPTATION

Climate impacts affect everyone, but they are not felt equally around the world. Shifting weather patterns, declining food production, and other climate-related crises intensify historic and ongoing patterns of inequities and social crisis. Unfortunately, the countries and communities that have contributed the least to the problem, and with the least resources to adapt, will likely face the greatest risks and economic impacts.



Adapted from [IPCC](#)

As the [International Monetary Fund aptly highlights](#), “In the poorest economies, a large part of the population depends directly on activities that may be the most affected by climate change, notably, the agricultural, forestry, and fisheries sectors. [...] Rising temperatures are exacerbating preexisting disparities in access to clean water and affordable food. Most of the time, the poorest populations do not benefit from insurance mechanisms or have access to basic health services, making them particularly vulnerable to any shock hitting their assets and income streams.”

Across the globe, inequality within communities also exacerbates the impacts of climate risks, with those who already face historical and ongoing injustices disproportionately facing greater impacts. [Women](#), [people with disabilities](#), [low-income communities](#), [Indigenous Peoples](#), and [communities of colour](#) are particularly vulnerable, with impacts often compounding due to a lack of access to resources to effectively assess and adapt to climate impacts.

THE URGENCY FOR CLIMATE ADAPTATION

Climate adaptation, which involves taking proactive action to reduce our collective vulnerability to climate impacts across environmental, social, and economic systems, is essential. However, to date, private sector attention has primarily focused on preventing climate impacts through mitigation efforts, such as reducing greenhouse gas emissions. While decarbonisation is crucial to slowing the rate of global heating, it is only half of the equation. Robust investment in climate adaptation and resilience are necessary because these impacts are already underway and we cannot count on mitigation efforts to [reverse the warming trend](#).

There are three key reasons for this. First, we are not decarbonising quickly enough. Despite decades of commitments to take action, we have yet to begin a trend of reducing absolute emissions globally. While renewable energy production is expanding, [it is not happening fast enough](#). Instead, it is being added on top of [continued fossil fuel expansion](#).

Second, climate inertia and natural variability means that even if we achieve a substantial reduction in greenhouse gas emissions, we are unlikely to see warming stop until [after 2050](#), and it could take [centuries](#) for temperatures to meaningfully decline. There are a number of reasons for this. Most significantly, up to now, the oceans have [masked global heating](#) by absorbing [90%](#) of the excess heat in the atmosphere and [30%](#) of human caused carbon emissions. However, the oceans are becoming saturated with dissolved carbon which is both [slowing the continued uptake](#) of CO₂ and leading to higher [outgassing](#) of carbon back into the atmosphere. In addition, the massive store of thermal energy in the oceans has not disappeared. It is [building up in the deep ocean](#) and can be released [back into the atmosphere](#) through phenomena such as El Nino.

Third, complex natural feedbacks in the Earth system can drive continued heating even without human caused emissions. Five major feedback loops (or “tipping elements”) are currently possible, they include the [loss of the Greenland and West Antarctic ice sheet](#), [loss of Barents Sea ice](#), [dethawing of Boreal permafrost](#), [Boreal forest die back](#), and [collapse of major ocean currents like the North Atlantic subpolar gyre](#). If, for example, the Boreal permafrost begins thawing rapidly, it would release large amounts of methane and carbon into the atmosphere, [enhancing the greenhouse effect](#), leading to additional thawing. When one feedback loop is triggered, it may trigger others, causing a chain reaction of accelerating heating.

As a result, communities, governments, and businesses need to brace themselves for climate impacts that may be more severe than commonly understood.

Business Risks

Physical risks	Transition risks	Legal risks
• Damage to business assets • Impacts on employee health • Supply chain disruption	• Policy changes • Disclosure requirements • Technology changes • Market risks	• Litigation and fines • Impacts on reputation

Adapted from [Taskforce on Climate-related Financial Disclosure](#)

Despite wide-ranging and costly impacts, [80%](#) of companies lack a comprehensive plan for climate adaptation. This is a considerable strategic gap because proactive investments in adaptation have much lower costs than the consequences of being exposed to climate impacts - for example, the [Global Commission on Adaptation](#) estimates that the rate of return on investments in resilience is very high, with the benefits outweighing the costs by a factor of 2:1 to 10:1.

The scale of climate disruption that is already [baked in](#) based on historical emissions cannot be ignored.

Businesses must develop a detailed understanding of the urgency and magnitude of the climate impacts they will face to reduce risk exposure and buffer against the quickly approaching climate shifts. They will need to undertake climate scenario planning to understand their risks and opportunities and make investments that foster supply chain resiliency. Companies will also need to contribute to local climate adaptation efforts that support the resiliency of the social systems and structures that underpin their own work, from supporting local disaster risk preparedness to engaging with regional and national adaptation plans. The time for action is now.

Note: Sustainability issues are generally systemic issues, because they are deeply interconnected and rooted in complex environmental, social, and economic systems. In these guides, a system threshold is defined as the point at which the resilience of an environmental, social, or economic system becomes compromised. This occurs when the total impacts imposed on the system exceed its capacity to assimilate those impacts.

SYSTEM THRESHOLD

Scientists have identified 16 tipping elements in Earth's climate system, such as rapid glacier melt, forest dieback, and thawing permafrost. Once triggered they will become self-perpetuating, creating feedback loops that drive warming far beyond human caused emissions. The resulting climate system destabilisation would be disastrous to life forms adapted to our current climactic conditions.

The 2015 Paris Agreement aims to limit warming to 1.5°C above pre-industrial levels. At current warming levels 5 tipping elements are possible, but none are likely. If Earth maintains a long-term average temperature above the 1.5°C limit, 4 of these possible tipping elements will become likely, and 5 more will become possible. With the last ten years being the hottest on record, and 2024 being the first to exceed 1.5°C, we are closing in on the Paris Agreement threshold far ahead of expectations. While a single year does not break the agreement, there is now a 47% chance that the 5-year average from 2024-2028 exceeds the 1.5°C limit. This is dangerous territory where every additional 0.1°C degree of warming greatly increases the risk of triggering tipping points and the speed at which they unfold.

Companies cannot continue to rely on the ability of climate systems to recover from the stresses and shocks placed upon them through business-as-usual scenarios. They will need to understand the risks that climate change poses for environmental, social, and economic systems, and develop and appropriately resource strategies to proactively adapt to these impacts.

KEY TOPICS ASSOCIATED WITH CLIMATE RISK AND ADAPTATION

- Scenario-planning
- Climate risk assessments
- Climate adaptation planning
- Investments into resilient company, supplier, community, and public infrastructure
- Flood prevention and defense
- Early warning systems
- Drought-resistant plants
- Ecosystem restoration
- Supply chain climate resiliency
- Disaster contingency and emergency response plans (co-designed with community stakeholders)
- Reducing the impacts of climate-related disasters
- Supporting regional and national adaptation plans
- Climate justice in adaptation and risk preparedness

2

KEY CONCEPTS – CLIMATE RISK AND CLIMATE ADAPTATION

The Taskforce on Climate-Related Financial Disclosures (TCFD) divides **climate-related risks** into two major categories: (1) risks related to the transition to a lower-carbon economy and (2) risks related to the physical impacts of climate change. More detail on what types of risks to consider and what they entail can be found [here](#). The World Economic Forum also offers definitions for 34 global risks in Table A.1 of the [Global Risks Report 2024](#).

Climate adaptation, as described by the Intergovernmental Panel on Climate Change (IPCC), [refers](#) to “the process of adjustment to actual or expected climate and its effects. In human systems, adaptation seeks to moderate or avoid harm or exploit beneficial opportunities. In some natural systems, human intervention may facilitate adjustment to expected climate and its effects.”

As the [Global Centre for Adaptation \(GCA\)](#) notes, climate adaptation means “taking action to prepare for and adjust to the current and projected impacts of climate change.” The [GCA](#) also highlights the different adaptation pathways for food systems, infrastructure, water and urban areas, locally led adaptation, and climate finance.

Companies will need to pursue both climate mitigation and climate adaptation to tackle the climate crisis – and while these terms are complementary, they can refer to vastly different approaches, practices, and actions. The image below highlights some of the different approaches that are encapsulated under each term. For more information on climate mitigation, refer to **Climate Mitigation (Decarbonisation and Carbon Removal): A Getting Started Guide**.

Mitigation

eliminate & sequester greenhouse gas (GHG) emissions

renewable energy

eliminating waste

energy conservation
& efficiency

carbon
sequestration

sustainable
transportation

sustainable land use
& soil health

Adaptation

safeguard against current and future hazards

infrastructure upgrades

emergency
planning

safeguards against
extreme heat

sea level rise &
flood protection

addressing
air quality

water stewardship

more resilient
agricultural species

wildfire prevention
& preparedness

designing for high winds

Resilience, [as defined by the IPCC](#), is “the ability of a social, ecological, or socio-ecological system and its components to anticipate, reduce, accommodate, or recover from the effects of a hazardous event or trend in a timely and efficient manner.” Broadly, it refers to the capacity of a system to absorb shocks and stresses, such as the ones posed by climate change – the definition is often extended to the ability of company operations to anticipate, address, and adapt to climate risks.

Climate justice, [as defined by the UN Development Programme \(UNDP\)](#), “means putting equity and human rights at the core of decision-making and action on climate change.” The term has evolved over time, and often refers to “the unequal historical responsibility that countries and communities bear in relation to the climate crisis. It suggests that the countries, industries, businesses, and people that have become wealthy from emitting large amounts of greenhouse gases have a responsibility to help those affected by climate change, particularly the most vulnerable countries and communities, who often are the ones that have contributed the least to the crisis.”

Additional terms and definitions:

Adaptation assessment: [The practice](#) of identifying options to adapt to climate change and evaluating them in terms of criteria such as availability, benefits, costs, effectiveness, efficiency, and feasibility.

Climate Risk Management (CRM): [A systemic framework](#) that seeks to anticipate, avoid and prevent all types of climate risks as well as to absorb remaining impacts from extreme weather events and slow-onset changes. It integrates the two research strands of Climate Change Adaptation (CCA) and Disaster Risk Reduction (DRR) into a sustainable development framework.

Adaptive Capacity: [The ability](#) of systems, institutions, humans, and other organisms to adjust to potential damage, to take advantage of opportunities, or to respond to consequences.

Physical Climate Risk: [Threats to life](#), livelihoods, health and wellbeing, infrastructure and services, business operations, social, cultural and economic assets, ecosystems and species from potential impacts of climate change.

Transition Risk: [Transition risks](#) are those associated with the pace and extent at which an organisation manages and adapts to the internal and external pace of change to reduce greenhouse gas emissions and transition to renewable energy. Transitioning requires policy and legal, technology, and market changes to address mitigation and adaptation requirements related to climate change.

3

KEY PLAYERS IN CLIMATE RISK AND CLIMATE ADAPTATION

[The Intergovernmental Panel on Climate Change \(IPCC\)](#) is the leading actor in advancing scientific knowledge about climate change caused by human activities, its impacts and future risks, and actions for adaptation and mitigation.

The High-Level Climate Champions for Climate Action launched the [Race to Resilience campaign](#), which aims to catalyse action to build the resilience of four billion people by 2030.

[Global Center on Adaptation \(GCA\)](#) is an international organisation working to accelerate action on adapting to climate change. They support adaptation solutions at the international and the local levels, partnering with the public and the private sector.

[weADAPT](#) is one of the world's leading and longest-running collaborative platforms for climate change adaptation.

[Corporate Climate Resilience Pathways Initiative](#) is a pioneering multi-year initiative to establish a robust business framework that enables companies to build climate resilience, disclose corporate actions, and track leadership and impact.

The [Task Force on Climate-related Financial Disclosures](#) helped drive consistent, voluntary disclosures by companies with respect to climate-related business risks and opportunities. As of 2023, the monitoring of progress on climate-related disclosures has been taken over by the [IFRS Foundation](#).

4

COMMITTING TO TAKE ACTION – MID- AND LONG-TERM GOALS

Committing to take action on **Climate Risk Preparedness and Adaptation** can include addressing many of the key topics listed above. The mid- and long-term commitments that your organisation elects to make should be based on your identified priorities, areas of greatest risk and potential impact, and your capacity to undertake the work required. It is important to note that this

section does not provide all the possible mid- and long-term goals related to this issue, but rather a sample of the goals that were most frequently adopted by companies in our research.

Common mid- and long-term goals and/or commitments on **Climate Risk Preparedness and Adaptation** include variations of the following:

Long-term goal: Identify, assess, characterise, and manage climate-related risks in operations and value chains.

- Integrate and mainstream climate-related risks into our risk assessment, management, and decision-making processes by 20[XX].
- Train our employees on evaluating climate-related risks and opportunities.

Long-term goal: Support climate adaptation and resilience across our operations and value chains and within the communities where we operate.

- Understand and evaluate opportunities to offer adaptation products, solutions, and/or services.
- Integrate climate resilience into company strategy and governance processes.
- Lend, invest, and/or facilitate \$[X] towards climate adaptation initiatives, projects, activities, and/or research by 20[XX].
- Lend technical expertise to local adaption initiatives and/or projects.
- Collaborate on transformative multi-stakeholder initiatives and/or projects that build community and/or environmental resilience.
- Help communities adapt to climate change and build resilience through advocacy and investments.

Long-term goal: Build and support a resilient supply chain.

- Ensure the long-term availability of key supply chain inputs by 20[XX].
- Adapt to the impacts of climate change by investing \$[X] in diverse adaptation measures across our value chain by 20[XX].

5

HOW TO GET THERE – PROCESS-BASED INTERIM TARGETS

Note: The following proposed timelines are only for guidance and are based on the pace outlined by other companies. The timeframe for actions and work for each step needs to be embedded in your organisational context, which may require different time allocations.

The sequence outlined below assumes that your company has significant climate risks within its direct operations, and that you will begin by learning and taking action on an operational level prior to engaging with your value chain. Whereas companies with limited direct climate risks, where the majority of their climate risks and adaptation needs reside within their value chain, may (and likely should) opt to engage with value chain partners at a much earlier stage.

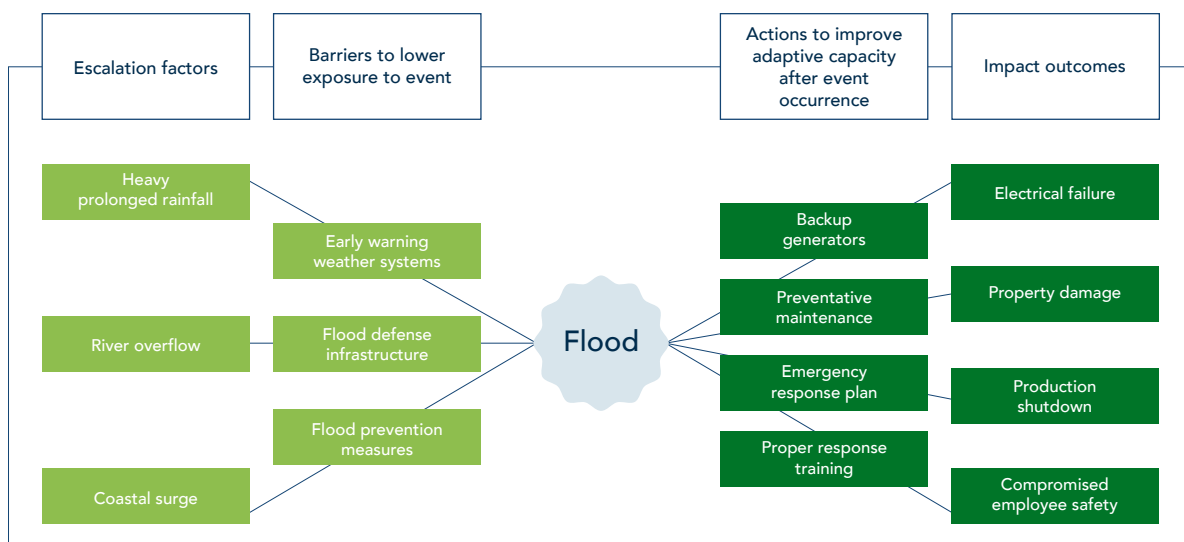
YEAR 1: UNDERSTAND THE CLIMATE RISKS AND ADAPTATION NEEDS IN THE REGIONS WHERE YOU OPERATE

Begin by learning about core concepts associated with climate risk; the interlinkages between climate change and environmental, social, and economic systems; the relevant limits and thresholds that safeguard resilience; and climate adaptation – for example, this can include exploring how increased probabilities for extreme weather events will impact food production or public health, and possible adaptation measures. Next, build an understanding

of what climate risks are most prominent in the regions where you operate and what actions will be needed to adapt to current and future scenarios. Then, begin to deepen your understanding of how these localised climate risks can ultimately impact your operations.

Developing a contextual understanding of these concepts will help you understand the strategic connections between how your operational activities impact, and could be impacted by, climate risk and your potential role in supporting adaptation efforts.

Exploring climate risks and adaptation strategies



Adapted from [World Business Council for Sustainable Development](#)

YEAR 1: SCREEN OPERATIONS AND ASSETS FOR SPECIFIC CLIMATE RISKS

Conduct a climate change risk assessment at the enterprise level, incorporating asset-level data and supply chain data, as appropriate. The assessment should identify and analyse risks related to governance, strategy, risk management, and metrics and targets.

A key component of a climate change risk assessment is to undertake a scenario analysis that explores different possible futures under different time horizons (short-, medium-, and long-term). Best practice includes at least two scenarios. The first explores a high-emissions scenario to identify increasing physical and social risks stemming from higher global average temperatures. The second explores a low-emissions scenario consistent with the Paris Agreement that includes strong climate policy and rapid decarbonisation.

Use this scenario work to better understand what challenges your company may face, reflect on your current strategy, and identify areas for improvement to ensure that you are prepared. Consider the severity of long-term impacts, such as water stress and biodiversity loss, across direct operations and assets, and translate that into identifying interventions that will be needed to effectively mitigate the most severe impacts. Explore Embedding Project's blog post [Scenario Planning Made Simple: An 8-Step Method](#) for further guidance.

For example, for many land-based and agriculture businesses, the largest long-term risks often concern water stress and extreme weather events that impact the viability of food production. The impacts of biodiversity loss on food systems are

also emerging as a point of focus. Transition risks such as increasing pressures from consumers to address climate change and policy changes are often the most prevalent short-term risks.

CASE STUDY: Unilever makes use of scenario analyses to understand the potential financial impacts of climate change

[Unilever's Climate Transition Action Plan](#) identifies climate as a principal business risk. Following TCFD recommendations, the company details the risks and opportunities arising from climate change, the potential impact on their business, and the actions they are taking to respond. This included conducting high-level scenario analyses on the potential impacts of climate change to help adapt their strategies and financial planning. You can see their full TCFD disclosure statement on page 48 of their 2023 annual report [here](#).

CASE STUDY: Con Edison conducts a climate change vulnerability study

Recognising the risk extreme weather events posed to their company, [Con Edison](#) conducted a robust [Climate Change Vulnerability Study](#) – an “an extensive review of [their] infrastructure, design specifications, procedures, and the upgrades [they] needed to make to protect [...] equipment and customers.” The company notes that “[g]aining a better understanding of projected climate change across [their] service area has helped [them] better identify system vulnerabilities, prioritize investments, and strengthen [...] infrastructure.”

Examples of process-based targets for Year 1:

- By 20[XX], we will learn about climate risks and adaptation needs where we operate.
- By 20[XX], we will develop a system to regularly identify and assess emerging climate risks to our business.
- By 20[XX], we will conduct high-level scenario analyses on the potential impacts of climate change to help consider and adapt strategies and financial planning.
- By 20[XX], we will carry out climate-related risk assessments, where appropriate, at site level, supplier level, and project level (including stress testing operations and value chains under worst case climate scenario).

YEAR 2: EMBED CLIMATE RISK INTO DECISION-MAKING AND RISK MANAGEMENT PROCESSES

There is no one-size-fits-all for managing climate-related risks – each organisation will be impacted by its local context and complexity of operations. Identify how your current business model and strategy interlink with climate risks and begin

the work to build climate-related risks into your governance and accountability structures already in place. Integrate climate risks into current risk management systems, frameworks, and policies. Identify if there is capacity or capability building that needs to happen to embed climate risk into key decision-making processes.

Examples of process-based targets for Year 2:

- By 20[XX], we will develop an action plan to embed climate risk into key decision-making and risk management processes.
- By 20[XX], we will develop climate risk registers for key business areas to ensure documentation of all identified physical and transition risks to our business.
- By 20[XX], we will have quantified the expected future costs to the business due to climate-related impacts allowing decision makers to understand the trade-offs of delaying action.
- By 20[XX], we will implement a process for regularly presenting climate risks to key decision-makers for discussion.

YEAR 3: DEVELOP ADAPTATION PLANS WITH STRATEGIES TO ADDRESS SPECIFIC CLIMATE RISKS AND OPPORTUNITIES

Use the information gathered on climate risks to align adaptation efforts to your organisation's needs. Consider what changes to your organisation's offerings or processes are necessary to adapt to future climate scenarios. For example, many consumer goods companies are pursuing innovation to ensure product lines are suitable for water-scarce locations.

CASE STUDY: Copenhagen Infrastructure Partners (CIP) builds a strategy for climate resilience

Facing risks from extreme weather events, [CIP worked with Swiss Re](#) to integrate climate-related risks into key decision-making procedures and build adaptation throughout new projects in the asset portfolio. The company now uses climate risk assessments during the project design phase, builds in considerations for climate adaption measures throughout the planning and construction process of new sites, and explores technological modifications for greater climate resilience.

Examples of process-based targets for Year 3:

- By 20[XX], we will develop an adaptation plan for priority climate risks considering factors such as likelihood, time horizon, and impact.
- By 20[XX], we will identify opportunities to develop new products or services that help customers prepare for or respond to climate impacts.

YEAR 4: UNDERSTAND CLIMATE RISK AND SUPPORT CLIMATE ADAPTATION INITIATIVES WITHIN YOUR VALUE CHAIN

Extend your learnings to your value chain. Engage with your suppliers to understand the different climate risks they face. This will often be a part of your screening and scenario analyses in Year 1 to establish a thorough risk profile. Explore options to support suppliers in their adaptation efforts through your procurement practices or other targeted initiatives.

CASE STUDY: Nestlé works to develop a drought resistant coffee variety

Built upon their net zero commitment and an understanding of mounting water stress in Central Africa that is impacting their supply chain, [Nestlé](#) has developed a new coffee variety that aims to deliver “up to 50% higher yields per plant under moderate to severe water stress.” The new variety is being trialled through Nestlé’s sustainable sourcing program and partnerships with local agricultural institutes and cooperatives within their supply chain.

YEAR 4: ENGAGE IN LOCAL CLIMATE ADAPTATION INITIATIVES

Take action to address priority climate risks in the regions where you operate. Engage and collaborate on regional or local climate adaptation initiatives, which can include co-developing disaster contingency, emergency response, and adaptation plans with governments and other organisations where possible; supporting resilient public infrastructure and ecosystem restoration through investments or grants; and lending expertise and sharing information for local climate risk identification and adaptation solutions.

Adaptation should be built upon a foundation of a just transition – avoid transferring risks or leaving workers and communities behind in your action plans and engagements.

CASE STUDY: Johnson & Johnson supports health equity in the face of climate impacts

Understanding the impact of rising temperatures on the health of vulnerable populations and its role in exacerbating health inequities, [Johnson & Johnson](#) began support for the Climate Health Equity for Community Clinics Program – a collaboration between AmeriCares and Harvard Chan C-CHANGE that aims to “bolster climate resilience in at least 100 free and charitable clinics and community health centers across the [United States] by 2025.”

CASE STUDY: AT&T shares climate data to help build resilience

Recognising that intensifying natural disasters would significantly impact their network; AT&T [began work to develop projections](#) of how climate change will increase extreme weather events and natural disasters across the United States. While initially focused on internal climate resilience, the company realised the need for this data for broader climate adaptation and resilience efforts in communities and organisations across the country. To fill this gap, AT&T expanded their forward-looking data to cover the majority of the country and [made the data publicly available](#) to inform further work and collaboration between the public, private, and nonprofit sectors.

Examples of process-based targets for Year 4:

- By 20[XX], we will develop an action plan to support climate adaptation efforts within our value chain.
- By 20[XX], we will buffer climate shocks to our supply chain and logistics networks by taking actions such as: sourcing inputs in closer proximity to manufacturing, avoiding reliance on geographically concentrated supply, weatherising distribution infrastructure, identifying alternative suppliers, reconfiguring logistics networks, and pivoting into alternative industries.
- By 20[XX], we will develop a regular external stakeholder engagement process to better understand how climate impacts affect our value chain and the communities we are embedded in.
- By 20[XX], we will undertake the priority actions identified in our climate adaptation plan.
- By 20[XX], we will set up infrastructure to protect raw material sourcing.
- By 20[XX], we will allocate [X] funds toward impactful adaptation projects.
- By 20[XX], we will implement early warning systems to prepare for acute climate disruptions.

RESOURCES

GUIDANCE

UNDERSTANDING CLIMATE RISKS

[Global Risks Report 2025](#) by the World Economic Forum offers insights on some of the most severe risks we may face over the next decade, including the fast-approaching tipping points for environmental systems.

Climate risk is complex: impacts will grow in frequency and severity, cascading in non-linear and life-threatening ways. Although the scale and pace of climate change impacts will differ depending on location, one constant is that regional “liveability” will eventually become compromised. The [Climate Risk and Response Report](#) from McKinsey Global Institute catalogues some of these unanticipated consequences and will help you to grow your understanding of the risks looming between 2020 - 2050.

[Understanding Physical Climate Risks and Opportunities](#) from the Institutional Investors Group on Climate Change (IIGCC) collates good practice for step-by-step physical risk assessment that can help you to better understand physical climate risks and opportunities and integrate this knowledge into your investment processes. This guidance provides practical advice on how you can begin to assess, analyse, measure, and manage the risks and opportunities presented by physical climate hazards.

UNDERSTANDING CLIMATE ADAPTATION

The [Adaptation Gap Report 2024: Come Hell and High Water](#) by the UN Environment Programme will help you understand trends in climate adaptation at both the global and regional levels. The report explores progress – and gaps - in planning, financing, and implementing adaptation actions, and can help you to better understand the kinds of efforts that your company can be supporting for broader systems change.

The [Climate Action Pathways](#), outlined by the UN’s Framework Convention on Climate Change, set out sectoral visions for achieving a 1.5° C resilient world in 2050. The pathways are a living document that provide an up-to-date road map of the interim actions and key impacts needed by 2025, 2030 and 2040 to achieve the 2050 vision.

[Climate Resilience Pathways: Catalyzing Private Sector Action](#) is a report from C2ES that makes the case for private sector investment in climate adaptation and resilience.

[Getting Locally Led Adaptation Right: Examples from Around the World](#) from the World Resources Institute (WRI) highlights examples of local adaptation done well and can help you to better understand the range of opportunities and challenges related to local adaptation efforts. WRI has also produced [eight principles](#) for locally led adaptation to help guide the adaptation community.

CLIMATE ADAPTATION IN OPERATIONS AND VALUE CHAINS

[How Climate Resilient is Your Company? Meeting a Rising Business Imperative](#) by Marsh & McLennan will help acquaint you with the intersection of resilience and climate adaptation. The document provides key definitions; identifies five major groups placing pressure on companies to assess, define, and enact strategies that enhance climate resilience; and provides a 3-step approach to assessing your company's climate resilience.

The [Business Leaders Guide to Climate Adaptation and Resilience](#) from the World Business Council for Sustainable Development (WBCSD) helps you to improve the resilience of your business against climate impacts. It explains the importance of climate adaptation; summarises the different roles business leaders have in implementing it; and outlines nine strategies for integrating climate adaptation and resilience into organisational strategy, governance, and operations.

The [SME Resilience Checklist](#) by Adaptation Scotland provides practical checklists for simple actions that businesses can take to protect their people, products and services, premises, processes and place. It includes both site level and broader businesses considerations that will be useful to businesses of all sizes.

[Just Transition for Climate Adaptation: A Business Brief](#) by UN Global Compact features a range of recommendations for businesses seeking to advance a just transition for climate adaptation and outlines the role that businesses play in supporting a just transition by including workers, suppliers, and communities in their climate risk management and adaptation approach.

MEASURING PROGRESS AND DISCLOSURE

The [TCFD](#) recommendations on climate-related financial disclosures were designed to solicit decision-useful, forward-looking information that can be included in mainstream financial filings. They include the recommendation that organisations describe the resilience of their strategy, taking into consideration different climate-related scenarios, where such information is material. Although these resources remain an invaluable source of guidance, having fulfilled its mandate, the TCFD has been disbanded and monitoring of the progress of corporate climate-related disclosures now rests with the [IFRS Foundation's ISSB](#).

[Understanding physical climate risks and opportunities](#) from the Institutional Investors Group on Climate Change collates good practice for step-by-step physical risk assessments. It can help you understand how to assess, analyse, measure, and manage physical climate risks.

TOOLS

The [Climate Adaptation Competency Framework](#) illustrates the depth and breadth of competencies required to manage and prepare for the impacts of climate change. It details the core competencies and behaviours that are most valuable for individuals, managers, and teams to possess and refine for leading, supporting, delivering, and implementing climate adaptation plans, strategies, policies, programs, and projects.

The [Climate Risk Assessment Method Search Engine \(CRAMSE\)](#) by the Global Programme on Risk Assessment and Management for Adaptation to Climate Change (Loss and Damage) offers a database encompassing more than 120 climate risk assessment methods. A wide range of filters, including hazards considered, economic sectors covered or the inclusion of non-economic Loss and Damage (NELD) can be applied to narrow searches.

This guidebook on [Climate Risk Assessment for Ecosystem-based Adaptation](#) is a good starting point if your organisation is seeking to preserve at-risk natural spaces from climate change impacts. The guide focuses on ecosystem-based adaptation, which involves the use of biodiversity and ecosystem services to help communities adapt to the negative effects of climate change and to reduce their risk to environmental hazards.

[Scenarios for Assessing Climate-Related Risks: New Short-Term Scenario Narratives](#) - and the accompanying visualisation tool - were created by UNEP Financial Initiative's Risk Centre to bridge the gap in short-term scenarios that explore near-term climate-related risks, economic volatility, and potential systemic vulnerabilities. They identify short-term scenario narratives that can help financial institutions and others understand the implications and drivers of a range of short-term macroeconomic, transition, and physical shocks, such as geopolitical tension, greenflation, climate migration, and extreme weather.

[The Assessment of climate-related risks: A 6-step methodology](#) developed by the Global Programme on Risk Assessment and Management for Adaptation to Climate Change (Loss & Damage) provides practitioners and decision-makers with a guidance on how to assess climate risks and how to translate the assessment into measures. Climate Risk Assessments aim to identify risk, assess the magnitude of impacts on people, assets and ecosystems, and ascertain the possible options for action.

[The BACLIAT vulnerability assessment](#) was originally developed with UK businesses. It is a workshop-based process to help you to quickly consider the potential impacts of future climate change on your organisation. It can be used as a standalone tool, or as a step in a risk-based framework.

Explore more curated resources on Climate Risk Preparedness and Adaptation [here](#).

ACKNOWLEDGEMENTS

This research was supported by
Social Sciences and Humanities Research Council of Canada (SSHRC)



Social Sciences and Humanities
Research Council of Canada

Conseil de recherches en
sciences humaines du Canada

Canada

And by contributions from our corporate partners:

<https://embeddingproject.org/our-community/>

The Embedding Project is hosted by
Beedie School of Business at Simon Fraser University

