Adaptation Planning *for business*

→ *Navigating uncertainty to build long-term resilience*

World Business Council *for Sustainable Development*

Foreword

The increasing frequency and severity of physical risks is disrupting our way of life. Adaptation is no longer a choice. It is a necessity. But governments cannot address this challenge alone. Businesses have a vital role in building the resilient systems our societies urgently need.

To be effective, our efforts must be aligned. National Adaptation Plans must be matched by business adaptation plans that take into account the collective resilience of both businesses and communities. We need coherent strategies to make sure that today's investments reduce future losses and protect livelihoods and long-term competitiveness.

This guidance, developed by WBCSD in collaboration with business leaders and adaptation experts, arrives at a critical moment. It establishes a practical approach for companies to assess climate risk, design adaptation solutions that strengthen resilience, and contribute meaningfully to global adaptation goals, most notably the Sharm-El Sheikh Adaptation Agenda's call for 2,000 Business Adaptation Plans by 2030.

I welcome this timely and valuable resource to help businesses embed adaptation and resilience into decision-making, and to foster stronger collaboration between governments and businesses to deliver a more resilient world for us all.

Dan Ioschpe

Climate High-Level Champion for COP30

RACE TO RESILIENCE

SAA SHARM ADAPTATION AGENDA

The impacts of climate change on business are no longer distant threats. They are here today. Climate-related impacts manifest through sudden shocks like damaged infrastructure and disrupted supply chains, and simultaneously through chronic risks like reliable access to water or increased heat stress. They translate into less predictable revenues and rising costs, creating a wicked risk-multiplier for the company on top of an already uncertain operating environment. Increased physical risk is exacerbating existing business risks and financing costs and oftentimes can feel uncontrollable. To be competitive, a leading business must adapt.

Adaptation isn't just about risk avoidance, however, it can also be an opportunity. When a company invests in adaptation to climate change, it helps build the resilience of its employees, its operations, and the communities it operates in. It contributes to more predictable and, as a result, more competitive supply chains. Investing in resilience also opens the door to technology and operational innovation, smarter, more predictive planning, and long-term value creation.

But this work is not something a corporate sustainability team can do alone. Adaptation must be integrated into core business strategies—across risk, finance, procurement, HR, and R&D functions. To maintain competitive edge, investment in resilience is required across operational functions today and must be integrated into company transition plans for the future.

This new guidance from WBCSD, created with insights from 70 global business and adaptation experts, is the first, unique step in making "adaptation mainstreaming" operationally possible across a company. Carefully designed by business practitioners for business practitioners, it is a practical, action-oriented guide that supports business managers wherever they are on their adaptation journey.

I would like to thank all the WBCSD member companies, our team and all the experts who took part in the important work to produce this guidance. As you deploy this guidance into your business operations, we welcome your feedback so that we can further iterate and refine the content.

Dominic Waughray

Executive Vice President, WBCSD

WBCSD World Business Council for Sustainable Development

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01. Introduction

1.1 Confronting Climate Realities: A Business Imperative

As the impacts of climate change become increasingly evident, **businesses across the globe face unprecedented challenges that threaten their workforce, operations, value chains, and ultimately their long-term viability.** Rising temperatures, extreme weather events, and shifting environmental conditions are no longer distant possibilities but present realities that demand immediate attention.

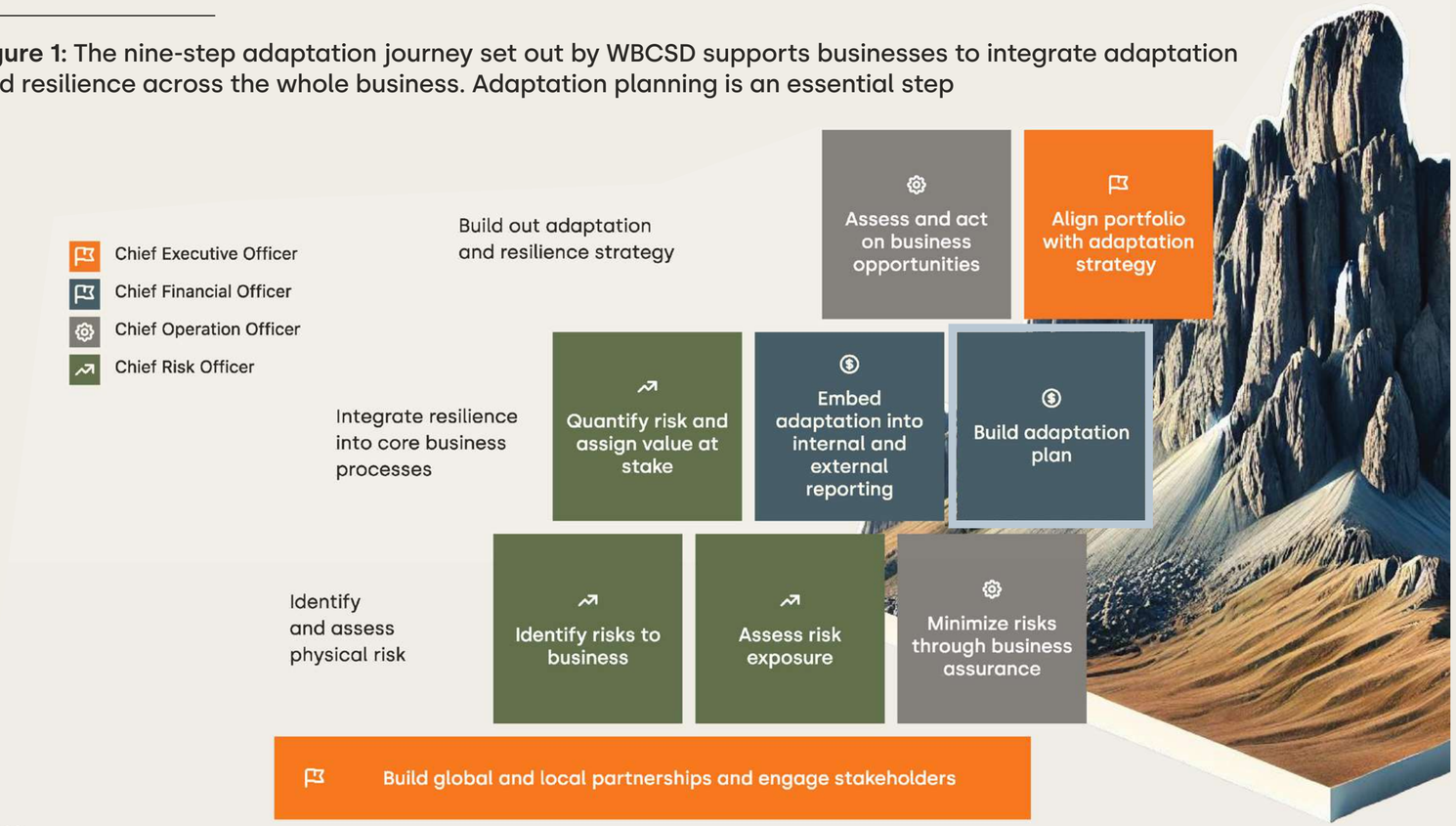
The cost of inaction is clear. Current estimates show that physical risks could severely impact financial performance of businesses by 2050, **reducing EBITDA* by 5-25% annually** across critical industries in every global region, without efforts to adapt and build resilience.[1] While 2050 feels far away, business leaders are already acutely aware of the potential impacts today. Insights from WBCSD's forthcoming Business Breakthrough Barometers found 60% of the businesses who responded anticipate increased costs from physical risks including extreme weather and supply chain disruption within the next 12 months.†

Adaptation planning is essential for businesses to generate a competitive edge by managing the impacts of physical risks and opportunities, both now and in the future. For business, adaptation planning refers to the *strategic process of identifying and addressing immediate and long-term priorities for building resilience to climate change* (see Glossary of Terms for full list of definitions).[2] The process involves investment in adaptation solutions to protect workforce, critical assets, infrastructure, and communities; building new capabilities, product and service offerings, and innovation within companies; and rolling out tools to monitor and address current and emerging vulnerabilities over time.

Historically a lot of attention has been placed on identifying and quantifying acute and chronic physical risks for businesses, without much consideration or guidance on how to adequately plan for and address these risks or opportunities. Adaptation planning addresses this gap and—through integration into existing Enterprise Risk Management (ERM) processes or similar approaches (e.g. three lines of defense)— enhances the organization's ability to boost its own resilience and that of its value chain.

This guidance builds upon the nine-step adaptation journey set out in the Business Leader's Guide to Climate Adaptation and Resilience to support businesses on one of the most challenging steps: adaptation planning (see Figure 1).

Figure 1: The nine-step adaptation journey set out by WBCSD supports businesses to integrate adaptation and resilience across the whole business. Adaptation planning is an essential step



Notes:
*EBITDA - earnings before interest, taxes, depreciation, and amortization.
†Based on a sample size of 304 businesses.

This guidance is designed to help companies, specifically risk and sustainability teams at the enterprise level, implement the business transformation required to integrate adaptation planning across business, strategy, governance, operations, and the value chain, enabling them to:

- → prioritize how, where, and when to invest in adaptation solutions to both maximize business resilience to worsening climate **hazards** and build a competitive advantage.
- → set up the tools, training, and systems needed to successfully integrate adaptation planning into everyday business activities.

When effectively integrated across operations, adaptation planning becomes a part of standard business practice that strengthens overall resilience, optimizes investments in adaptation solutions, unlocks new business opportunities, and fosters collaboration with external stakeholders to co-create long-term resilience.

Adaptation planning involves teams across enterprise, business unit, and site levels of the company and wider stakeholders in the value chain. Collaboration is essential to success.

Although adaptation planning provides vital information to support external disclosure and develop integrated transition plans, this is not primarily a reporting and disclosure exercise.[3] Adaptation planning has many uses and benefits for a business beyond disclosure (illustrated in Figure 2).

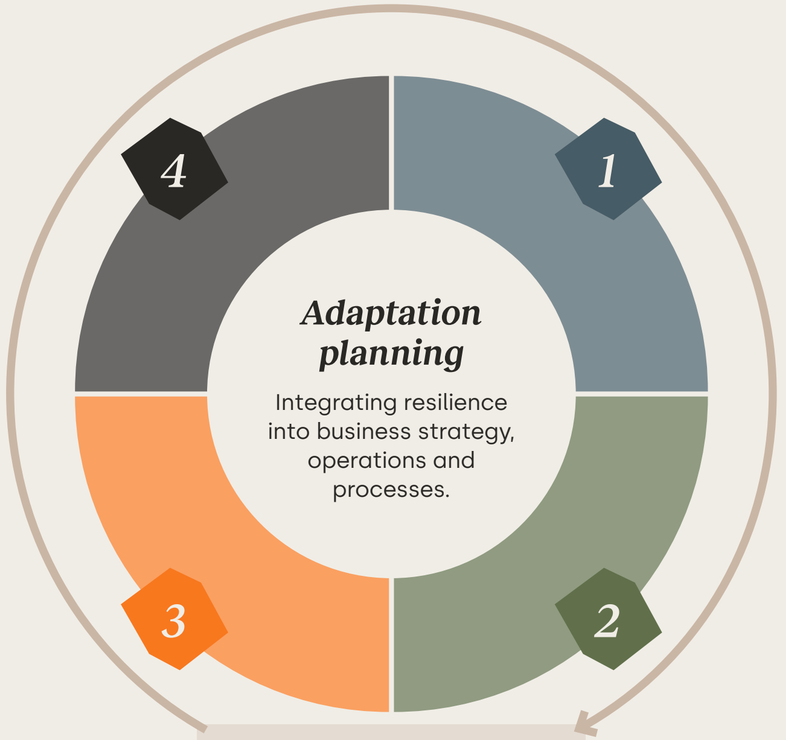
Figure 2: The different elements of the business case for adaptation planning

1.2 The Business Adaptation Planning Process

The adaptation planning process set out in this guide consists of four steps: to identify priority risks and opportunities, design suitable adaptation solutions, integrate them across the business, and monitor effectiveness (shown in Figure 3). At every step, it is essential to consult with a wide range of stakeholders—both internal and external. This will help the business consider both the business rationale (e.g. cost/benefit or the cost of inaction) and the impact beyond.

It is also important to recognize that the adaptation planning process is one of continuous improvement and refinement. It will never be possible or feasible to address every risk or opportunity across a business and so the organization will need to embark on this as a journey, building on successes and learning from challenges.

Figure 3: The adaptation planning cycle follows four steps to build resilience



1.3 Linking Adaptation and Transition Plans

Adaptation is a critical—often underdeveloped—element of a company's wider **transition planning** approach. While many companies begin their transition planning processes by prioritizing **mitigation** activities, addressing physical risk **exposure** through adaptation can be overlooked.

Rather than being a separate or competing agenda, adaptation is integral to building a credible, comprehensive transition plan, to ensure businesses are prepared for both the transition to a low-carbon economy and the realities of a changing climate. The two should be addressed in an integrated manner. As a result, this guidance does not recommend developing a separate, standalone adaptation plan (where possible), but seeks to illuminate the steps required to implement adaptation planning effectively within businesses, as part of a wider holistic transition. Companies may elect to begin their adaptation planning as a standalone process initially, integrating these efforts into the wider transition planning process when the initial systems, tools, and approach have been established.

02. Setting the Scope *and Adaptation Goals*

Establish the foundations by defining the business case for action, aligning stakeholders, securing resources, and setting goals to raise overall resilience across business and steer action to address the highest priority risks and opportunities.

2.1 Establishing the business case for adaptation planning

Effective adaptation relies on accurately judging the scale and timing of risks and opportunities and the timing of decisions to manage them. Over time, the business will be able to mature the approach and broaden the scope of activities in subsequent adaptation planning cycles as they better understand what works in the context of uncertainty.

For businesses starting adaptation planning for the first time, there may be a strong inclination to immediately work toward addressing all risks and opportunities identified across all business areas. However, this approach is impractical and can quickly become unmanageable, particularly because of the large amounts of uncertainty with climate risks—when and how they will manifest. However, when beginning, there are four main approaches to consider, illustrated in Figure 4, which can guide a business in defining its scope.

Figure 4: Approaches to adaptation planning

Selecting the right strategic approach to adaptation for an organization depends on several key factors, including current risk exposure, industry nuances, market conditions, business priorities, culture, and long-term resilience goals.

Businesses facing immediate threats to critical assets or value chains may benefit most from a **Target Risk Hotspots** approach. This may also take the form of a highly focused plan, with the goal of resolving a risk associated with a hazard (e.g. reduced productivity from heat stress, business disruptions due to flooding) or covering only a specific high-risk geography, product, or business line. This will likely focus on the short-term risks - where the business is exposed today, or where decisions are being made that lock-in risk.

If the priority for the business is building organization-wide resilience and fostering a culture of preparedness, **Increasing Baseline Resilience** provides a structured, long-term solution and can support planning for general, unforeseen or **off-radar risks.** This is a more strategic adaptative management approach which looks at when risks are likely to happen across different timescales and evolves as the business learns to better understand these.

A **Balanced Approach** is ideal for companies needing both targeted risk reduction and broad resilience-building, especially in instances with high levels of uncertainty. It allows the organization to approach adaptation planning from a top-down and bottom-up approach, building preparedness for unforeseen and uncertain risks across longer time scales, while managing risk hotspots in the short term. If a business has not started with any adaptation planning processes, this is a recommended good starting point to build a balanced approach to managing physical risks.

Decision questions for deciding on an adaptation planning approach

Target risk hotspots

Does the business...

→ have **significant short-term** risks in specific regions, business units or product lines?

→ manage risks using a **bottom-up** approach?

→ have **limited resources** or capacity to commit to adaptation planning across the whole organization?

Increasing baseline resilience

Does the business...

→ manage risks using a **top-down** approach?

→ have more **medium-long** term **less certain** risks?

→ prefer to **provide guidance** and allow the business areas to manage risks autonomously?

→ have **limited resources** or capacity to commit to adaptation planning across the whole organization?

Balanced approach

Does the business...

→ have the **organizational structure and resources** to work closely between the enterprise, regional and site levels?

→ want to address both **short-term risks** while **enhancing operational resilience** to manage medium-longer term uncertain risks.

Opportunity-driven adaptation

Does the business...

→ have **fewer or is already managing** its significant risks?

→ see avenues for business growth through **offering resilience-centered products or services?**

Meanwhile, organizations with lower immediate risk but strong innovation potential may find **Opportunity-driven adaptation** beneficial for creating competitive advantages. This could include organizations that have limited direct exposure or **vulnerability**, companies who already have an advanced physical **risk management** approach in place, or companies offering goods and services that can support adaptation.

After identifying the business approach, the organization will need to **secure buy-in** for its adaptation planning. Companies should therefore establish a **business case for adaptation** that articulates the business value of adaptation planning, identifies the key challenges and opportunities that the plan will address, and explains strategic alignment with wider business objectives. This is essential to ensure businesses can gain leadership support, secure funding, and integrate adaptation solutions effectively into business operations.

The business case should contain six elements (shown in Box 1) and should be refined over time to provide more precise information throughout the adaptation planning process. This outline business case also forms the foundations for the eventual adaptation plan that will be developed from this process.

Box 1: Considerations for developing the business case for adaptation planning

1. **Demonstrate the business value of adaptation:** State how adaptation planning can help the business to address the challenges or opportunities. Outline potential financial, operational, and strategic benefits, such as enhanced risk management, regulatory compliance, business continuity and opportunity costs of inaction. Provide background information on potential adaptation solutions under consideration.
2. **Identify relevant business challenges and opportunities:** Outline the top priorities that adaptation planning will address. Summarize the expected business impacts, recognizing that this assessment will be refined throughout the planning process. Highlight actions that are already taking place and the impacts from these areas.
3. **Define the business context and strategic alignment:** Outline the company's core strategic goals, risk tolerance, and competitive priorities. Explain how adaptation planning supports these objectives and integrates with existing sustainability, enterprise risk management (ERM), or business continuity strategies.
4. **Outline potential risks of adaptation planning:** Identify and assess potential risks, including high upfront costs, temporary operational disruptions, maladaptation, regulatory uncertainty, market competitiveness concerns, or stakeholder resistance.
5. **Estimate timeline, resource, and budget needs:** Outline the resource requirements for adaptation planning, including personnel, expertise, and technology needs. Provide an initial estimate of budget and timeline, ensuring feasibility and scalability. Highlight potential external funding options available where the business might not be able to finance.
6. **Build the financial and strategic case:** Compare the cost of inaction with the investment required for adaptation. Highlight return on investment through avoided disruptions, operational efficiencies, and long-term resilience. Strengthen the business case by demonstrating how adaptation enhances long-term financial stability and competitive positioning.

2.2 Analyzing risk assessments and prioritizing actions

A business's adaptation planning process cannot be successful without a clear understanding of the physical risks and opportunities facing the business. If the business has not already conducted comprehensive physical risk or opportunity assessments, this will need to be completed before the adaptation planning process begins.[4] Additional resources for undertaking physical risk and opportunity assessments are provided in Annex 3. The output from these assessments will inform the scope of the business' adaptation planning as shown in Table 1.

It is important for a business to understand the quality and coverage of assessment data before proceeding with adaptation planning and be mindful of any **potential limitations.** While it may not be possible to do a full risk and opportunity assessment from the start, these assessments should be updated on a regular basis in line with the evolving projections and technological advancements.

Poor data quality (e.g. low granularity, low resolution, outdated, uncertain or unverified) or assessments with very limited scope (e.g. missing key variables, covering a limited timeframe, or focusing on limited set of hazards) may provide flawed foundations for adaptation planning—which could ultimately lead to maladaptation. If the business doesn't have a good understanding of the risks and opportunities, then it is at risk of spending precious resources on a solution that might not meet the most significant business needs. The timing and

Table 1: Risk and opportunity assessments are essential to inform the scope of adaptation planning

Assessment Type	*Purpose*	*Relevant information for adaptation planning*
Physical risk assessment	Identifies and quantifies hazards, exposure, and vulnerability posed by extreme weather and changing climate conditions to assets, operations, and value chains. A physical risk assessment covers both immediate and long-term hazards to allow the business to evaluate potential damage and disruptions.[5]	→ Types of hazards across assets, operations, value chains. → Potential exposure of the business areas to the hazards. → Areas of the business that are most at risk when taking existing and planned measures into consideration. → Anticipated timing of impacts according to modeled scenarios. → Quantified impact of the risk to the business.
Opportunity assessment	Highlights business opportunities that may emerge from changing climate conditions such as new markets and revenue streams, policy incentives, cost savings, and supply security.	→ Outline potential new adaptation-related business opportunities. → Inputs to the business case for implementing adaptation solutions.

Considerations for risk assessments

→ Extend assessments **beyond owned assets** and cover as much of the value chain as possible.

→ Select the **right resolution of data** between local and regional datasets based on the business needs.

→ Incorporate **forward-looking climate projections** (short, medium and long term) into assessments.

→ Include **uncertainty analysis** (e.g. probability-based risk assessments) and consider compound, cascading and aggregating risks

→ Use **integrated frameworks** (e.g. combined analysis of physical, transition and socioeconomic risks and opportunities).

likelihood of risks and opportunities is important to understand, as these influence when a business may need to act. Therefore, risk and opportunity assessments should evaluate risks and opportunities across different time periods (e.g. 2030, 2050) and across a range of socio-economic scenarios the world could head toward.

Principles for Responsible Investments (PRI) provide guidance on conducting physical risk assessments in private markets. This is divided into three main phases with some of the actions in the *Taking Action* phase linking closely to the guidance provided within this document (see Box 2 below).[6]

Box 2: Approach for Physical Risk Assessments

Information gathering

- **Scoping:** Determine which business areas need assessment, whether individual assets, specific business units, products or the broader value chain. Identify the relevant hazards and potential exposure.
- **Data Requirements:** Collect data on climate hazards, exposure, and existing vulnerabilities. Understand potential impacts through an analysis of the frequency, intensity, and location-specific data.
- **Climate Models, Scenarios, and Time Horizons:** Select appropriate climate models and scenarios to understand the evolution of climate risks. Use these to conduct meaningful assessments.

Risk Assessment

- **High-Level Assessment:** Conduct an initial review to identify key risks and potential impacts. Use this overview to inform business decisions and identify areas needing deeper analysis.
- **In-Depth Assessment:** For significant business areas and areas of high risk, perform detailed assessments allowing for comparison across the business. This helps in identifying existing or necessary adaptation measures.

Taking Action

- **Business Strategy and Decision-Making:** Use insights from the assessment to inform business strategies and make informed decisions on risk management and resilience planning.
- **Implementing Adaptation Measures:** Develop and implement targeted adaptation and resilience measures based on the assessment findings. Plan for financial and operational resources required for implementation.
- **Disclosure and Reporting:** Ensure transparency by disclosing findings and strategies related to climate risk and adaptation measures, aiding in compliance and stakeholder communication.

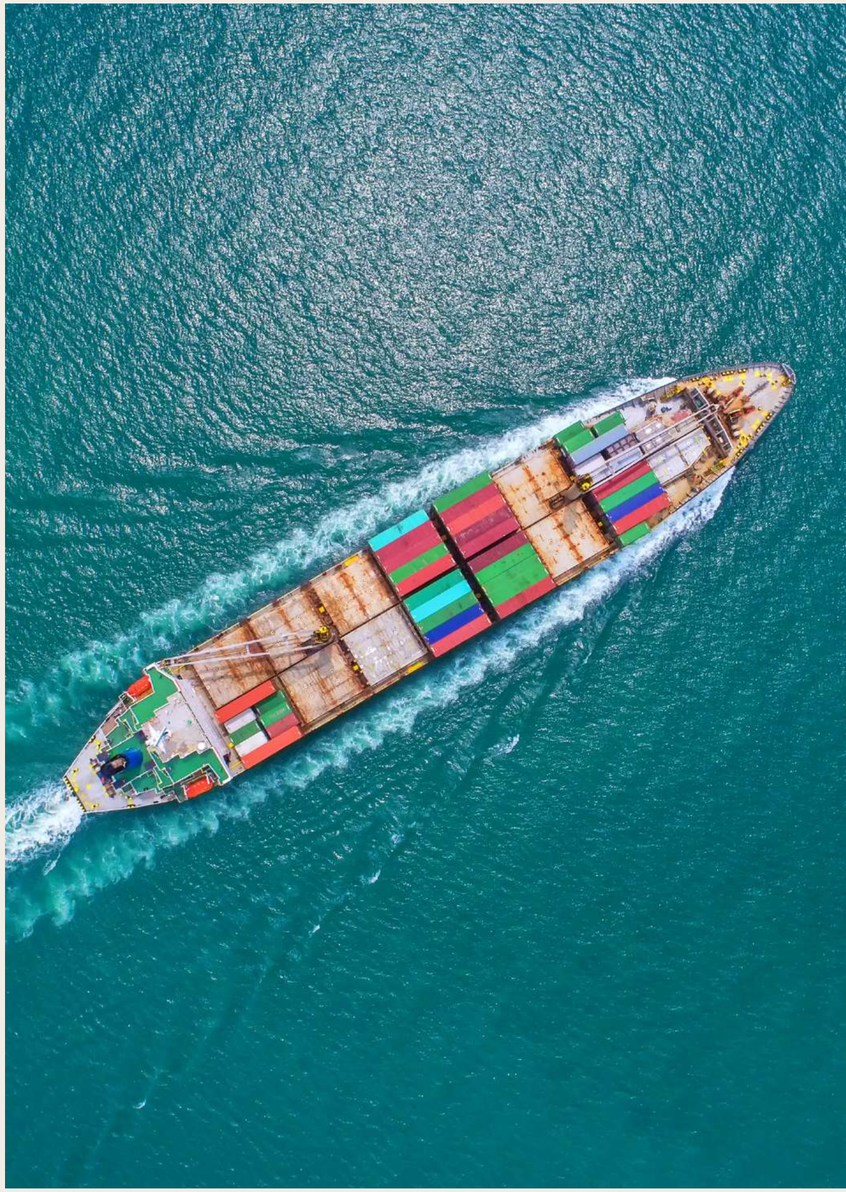
Using the outputs from risk and opportunity assessments, businesses can **develop a comprehensive long list** of risks and opportunities—categorized across operations, the value chain, and strategic business areas. The long list should be evaluated using a **risk and opportunity matrix** such as that shown in Figure 5 to identify risks and opportunities with the highest business value. Businesses should establish clear decision criteria, leveraging existing risk analysis frameworks in their existing ERM (or similar existing risk processes) where possible to ensure comparability with other business risks (e.g. geopolitical, cyber, technological). Evaluation criteria should include operational, financial, and strategic impact, as well as effects on employees, reputation, and compliance.

Figure 5: Example of a risk and opportunity matrix that can be used to prioritize business action

Likelihood	Impact: Risks					Impact: Opportunities				
	-5 Severe	***-4 Major***	***-3 Significant***	***-2 Major***	***-1 Insignificant***	***1 Insignificant***	***2 Major***	***3 Significant***	***4 Major***	***5 Severe***
5 Almost certain	-25 Extreme	-20 Extreme	-15 Very high	-10 High	-5 Medium	5 Medium	10 High	15 Very high	20 Extreme	25 Extreme
4 Likely	-20 Extreme	-16 Very high	-12 High	-8 Medium	-4 Medium	4 Medium	8 Medium	12 High	16 Very high	20 Extreme
3 Moderate	-15 Very high	-12 High	-9 Medium	-6 Medium	-3 Low	3 Low	6 Medium	9 Medium	12 High	15 Very high
2 Unlikely	-10 High	-8 Medium	-6 Medium	-4 Low	-2 Very low	2 Very low	4 Low	6 Medium	8 medium	10 High
1 Rare	-5 Medium	-4 Medium	3 Low	-2 Very low	-1 Very low	1 Very low	2 Very low	3 Low	4 Medium	5 Medium

From this process, different businesses (e.g. state-owned-enterprises, private companies and listed companies) will naturally have different risk tolerance, exposure, and patience of capital which will influence how they prioritize risks and opportunities, and how they apply the steps outlined in this guidance. In all cases, businesses should narrow down the longlist to select a **shortlist of 3-5 top priorities** as a starting point to develop further. The shortlisting exercise should consider the following **principles for prioritizing the focus:**

1. **Align with risk appetite** – Incorporate physical risk related risks that exceed the company's established risk tolerance into the adaptation plan.
2. **Sites and activities that are integral to business value** – Identify whether there are sites or products that don't have a high risk or probability but still need to be considered a priority due to their importance to the business or other stakeholders.
3. **Balance short- and long-term risks** – Ensure the scope includes both immediate threats and emerging long-term risks or risks that may appear in the future but require action now.
4. **Off-radar and cascading risks** – Risks that are not identified as extreme or needing to be prioritized or that may result in larger knock-on risks, should still have a basic response plan developed in case they manifest.
5. **Identify quick wins** – Prioritize low-cost, high-impact solutions that can be implemented immediately to demonstrate early success and secure leadership buy-in for adaptation planning.
6. **Consider the lifespan of assets** – if the asset is to be decommissioned in the short-term, it may not be a high priority for investment in an adaptation solution.
7. **Assess feasibility** – Ensure prioritization aligns with budget, resource availability, and internal capabilities. Identify any gaps in technology, expertise, or innovation and determine whether it is feasible to address them within the timeframe of the adaptation planning cycle.
8. **Assess organizational readiness** – Identify areas where there is interest and willingness among internal teams to pilot adaptation solutions. Engage motivated stakeholders to participate in risks and opportunities prioritization, and to test and refine early actions (see Section 2.3 for further details on Stakeholder Engagement).
9. **Consider external pressures** – Account for regulatory requirements, government mandates (e.g. stability of critical infrastructure, energy networks, or data centers), industry standards, investor expectations, and stakeholder concerns (e.g. customers, communities, and suppliers) that create urgency for action in specific regions or sites. Globally, different jurisdictions will have varying qualities of early warning systems, data sharing regulations, and political environments, which create additional considerations for companies to navigate. Weaker governance in some jurisdictions may expose company operations to more challenges, especially during extreme weather events. Additionally, companies should consider any financial drivers (e.g. investor expectations, insurance costs, or reduced coverage) to ensure the business recognizes adaptation as a value-creating activity, not just a compliance requirement.



2.3 Aligning stakeholders and securing planning resources

Once buy-in for adaptation planning is secured and the priority risks and opportunities have been identified, establishing effective governance for adaptation planning is necessary to ensure organizational alignment and accountability for actions.[7] Adaptation planning can be complex and time-consuming, especially in large organizations, but also for smaller businesses with fewer resources. Outlining clear roles, responsibilities, and oversight mechanisms across all teams at the outset of the process can help ensure objectives are met.

A **central adaptation planning taskforce** or governance committee, comprising representatives from key functions and subject matter experts, can be helpful to integrate adaptation planning with existing corporate strategies and risk management processes.[8] Figure 6 provides an illustrative company structure and responsibilities for adaptation planning.

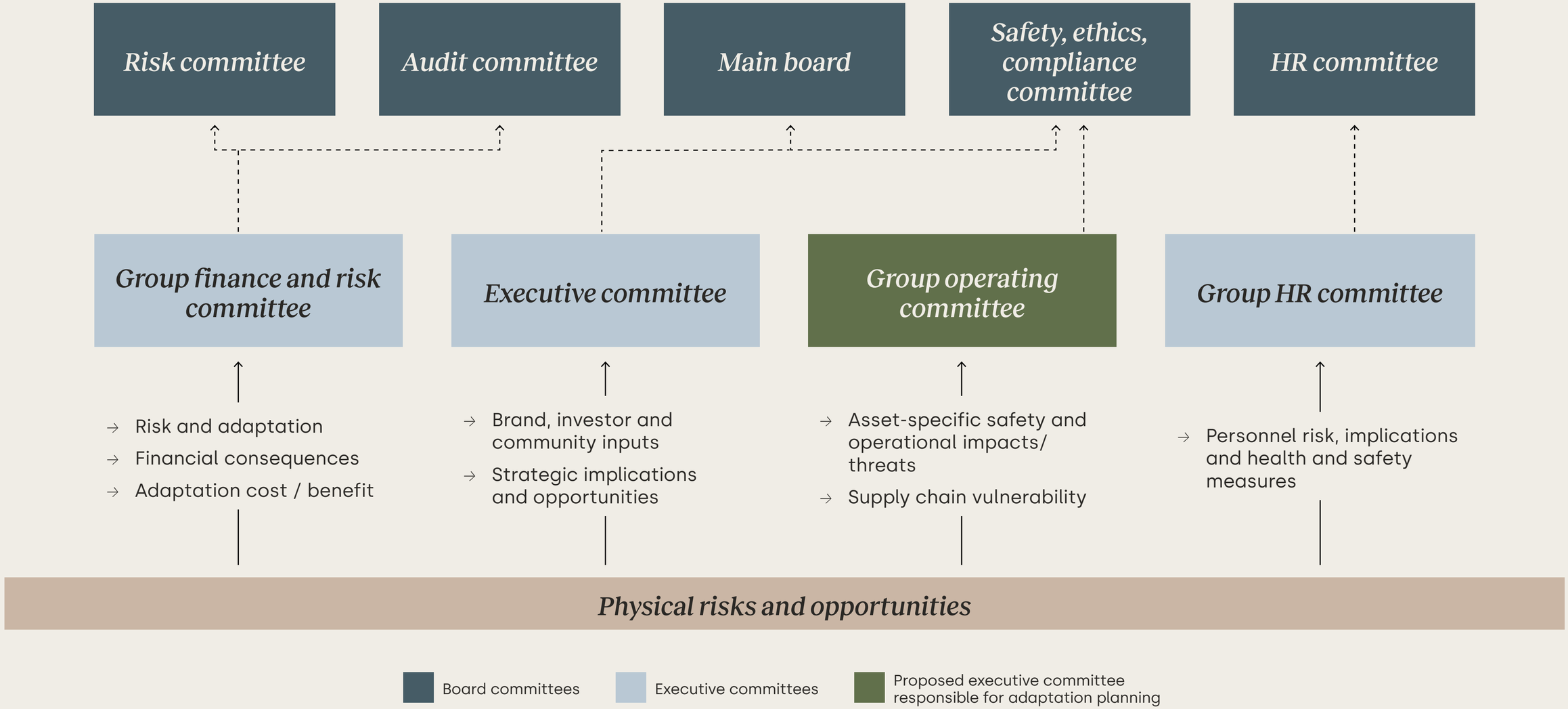
A company will also need to ensure that it assigns an **investment committee** or board committee to sign off on the adaptation solutions to be taken forward to implementation. Ideally this should not be a new committee, but rather an amendment to the mandate of an existing committee such as the Finance and Risk committee. In making these investment decisions, it is important to involve the same people responsible for the ERM to embed adaptation planning within the existing structures.

Variations of governance structure

Companies will have different structures and sizes – these will require different governance setups. Where possible, the following should be considered:

- → Assign overall responsibility to a senior staff member with decision making power.
- → Establish champions, an advisory group or taskforce of functions across the business (finance, risk, sustainability) depending on company size and structure.
- → Define scope and mandate of actions to be achieved to guide team.

Figure 6: Illustrative governance structure for adaptation planning (adapted from the Business Leaders Guide for Adaptation and Resilience).[9]



Identifying and mapping stakeholders

Collaboration is one of the key considerations for adaptation planning.[10] A **stakeholder engagement approach** is crucial for gathering a broad range of insights and avoiding potential **maladaptation**. A prudent first step is to conduct stakeholder mapping across the business and value chain to help identify and prioritize key stakeholders to engage. Figure 7 outlines the key internal and external stakeholder categories businesses should consider consulting throughout the adaptation planning process and at what points the Central Taskforce should engage them.

The role of the Central Taskforce

The Central Taskforce (the middle group in Figure 7) should own the adaptation planning process at the enterprise level. The Central Taskforce provides oversight, resources, and strategic alignment, while local business teams take the lead in designing and implementing solutions (see Chapter 3 for details). Throughout the adaptation planning process, these teams should engage local experts in areas such as environmental sustainability, biodiversity, and community impact to **avoid maladaptation.** Poorly understood risks and poorly designed solutions can create unintended consequences that can increase vulnerability, create new risks, or harm communities or local ecosystems, which can lead to financial losses and reputational damage for the business.

Appointing risk and opportunity owners

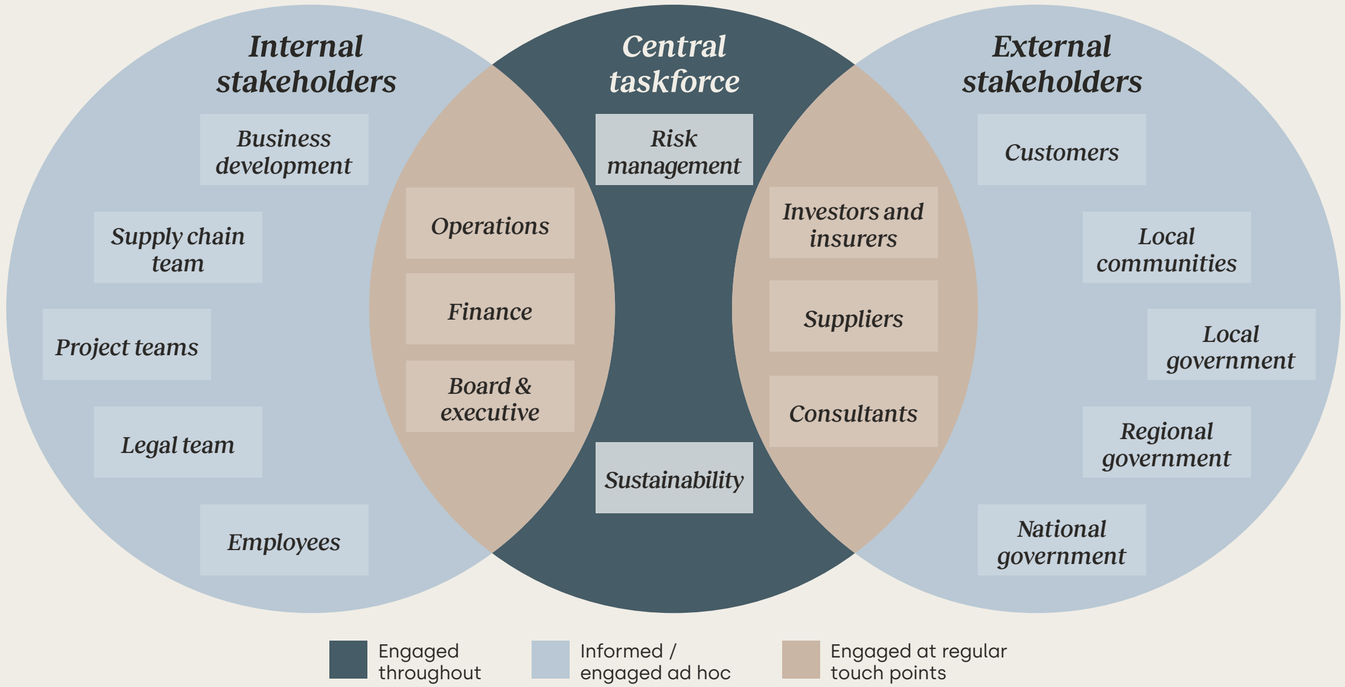
For each identified risk or opportunity, the Central Taskforce should **assign a risk (or opportunity) owner**—a senior stakeholder with direct knowledge of the relevant site, asset, or operational process.

Risk owners may include site managers, supply chain leads, or HR representatives responsible for workforce policies and procedures. The main role of the risk owner is to determine the suitability of the adaptation solution from a contextual perspective, rule out any impractical proposals. Risk owners will also be responsible for developing the investment case for each adaptation solution and play a key role in monitoring the effectiveness of the solutions after implementation.

The Central Taskforce can also develop capacity-building initiatives for risk owners such as targeted training, workshops, or peer learning programs to enhance their understanding of adaptation solutions.

The risk owners should be supported by internal or external adaptation experts to assess feasibility, develop solutions, and build robust business cases for implementation, as well as finance teams to support multi-criteria evaluation analysis of solutions. Together, these teams will evaluate and prioritize **adaptation options,** ensuring alignment with business strategy and operational realities.

Figure 7: Key stakeholders to engage during the adaptation planning process



Determine the timeline and preliminary budget

Establishing a **structured timeline** allows a business to identify any key milestones, activities, and deadlines in the adaptation planning process. Figure 8 illustrates the key phases of the adaptation planning process and suggested activities and timing across these phases.

For each phase, it is important to define key **milestones, clear deadlines,** and designated approval points to ensure leadership buy-in and cross-functional alignment. To ensure success, the timeline should be flexible enough to accommodate unforeseen challenges and businesses should regularly track progress against milestones to adjust plans as necessary.

In addition to the timeline, a business should define a **preliminary budget** for adaptation planning, to be approved by the appointed investment committee. Setting a budget for adaptation planning ensures that resources are allocated effectively across key phases of the process. If possible, budgeting should also anticipate pilot projects or early-stage adaptation solutions to test solutions before full-scale implementation. Any upfront costs (e.g. additional risk or opportunity assessment needs, feasibility studies, legal, or software), costs for plan development (e.g. staff time and consultations), and a contingency budget for unforeseen needs should also be included. This helps keep the process aligned to realistic needs and realities of the business.

Businesses should explore and document available financing options, including internal capital, grants, incentives, public-private partnerships, or climate finance mechanisms such as international climate finance (e.g. the Green Climate Fund and GEF).[11,12] They should also consider mixed financing sources and instruments that might be available to them.

Engaging with finance and operational teams early will enable businesses to align financing closely with business priorities and provide vital inputs for the adaptation planning process. This is important as there can be a steep learning curve around economics and financing of adaptation and how the company accounts for this (e.g. regarding the financial treatment of discounting and uncertainty). At this stage, the budget serves as a high-level estimate, with refinements made as specific adaptation solutions are developed and assessed.

Figure 8: Phases of adaptation plan development.

	Set the scope and adaptation goals	*Design adaptation solutions*	*Build the plan and implement adaptation solutions*	*Monitor and evaluate*
Activities	→ Establish business objectives of adaptation planning → Prepare longlist of risks and opportunities and narrow down → Stakeholder mapping → Establish governance and accountability	→ Establish assessment framework → Identify and evaluate adaptation solutions → Determine implementation timelines and adaptation pathways over time → Estimate investment needs for solutions → Consult stakeholders	→ Develop investment roadmap → Build adaptation plan → Integrate adaptation activities into business strategies → Begin implementing (pilot) adaptation solutions	→ Design monitoring & evaluation (M&E) framework → Identify relevant adaptation metrics across the business → Develop staff training programs → Continuously evaluate overall resilience, trigger points, and effectiveness of solutions
Key Milestones	→ Adaptation planning approach identified → Central taskforce assembled → Adaptation goals set → Leadership sign-off to proceed	→ Standardized adaptation assessment framework designed → Investment cases for each solution or pathway established → Leadership approval for preferred adaptation solutions	→ Adaptation investment roadmap approved by CFO → Leadership sign-off for Adaptation Plan → Solutions implemented	→ M&E framework implemented → Metrics defined → Trigger points identified → Learnings identified and shared
Outputs	→ Internal business case for action → Shortlist of priority risks and opportunities → Outline (draft) adaptation plan	→ Preferred solutions → Stakeholder approval → Investment case for adaptation solutions	→ Business adaptation plan → Implemented adaptation solutions	→ M&E framework → Adaptation and resilience metrics → Training tools & programs
Approximate timing	~ 3 months	6-12 months	Variable, depending on solutions (months - years)	Ongoing
Approximate budget & possible cost items	$ → Time for internal staff to establish team and processes	$$ → Consultations and workshops → External support → Detailed risk assessments	$$$ → Capital Expenditures (CAPEX) for implementing → External support	$$ → Operational Budgets (OPEX) for monitoring → External support

2.4 Setting adaptation goals

With the knowledge of what approach the business will be taking and where it is focusing, the next action is setting adaptation goals. **Adaptation goals help businesses address their shortlist of priority actions, measure progress, and align efforts with the broader corporate strategy.** Goals should cover both short-term (1-5 years) and medium to long-term (5-20+ years) priorities, addressing immediate risks while setting clear intentions to strengthen resilience over time and aiming to unlock opportunities where they are available.

Many companies may already have adaptation-related goals, although these may not be explicitly labeled as such. These goals may be:

→ Process-based (e.g. establishing systems or plans),

→ Risk-reduction focused (e.g. addressing physical risks), or

→ Transformational (e.g. embedding adaptation into broader innovation or sustainability strategies)

When starting out, it is generally a good idea to aim for **3-5 core adaptation goals** and expand over time as capabilities grow. Key considerations for setting goals and developing the processes to meet these are shown in Figure 9.

Case Study: Setting adaptation goals

Process-based: develop adaptation plans for all business units by 2025

EDP has identified adaptation as one of the five main priorities of its climate action approach. The company aims to improve the resilience of infrastructures to climate change.

EDP is assessing the level of exposure of infrastructure to climate physical risks, **considering the short, mid and long-term IPCC scenarios, to develop adaptation plans for each business unit by 2025.**[13]

Risk reduction focused: manage climate-related risks and opportunities to build climate resilience into the business

As part of Vodafone's 2025 to 2027 transition plan, the company sets out an integrated approach to tackling climate-related physical risks and opportunities. This includes objectives, strategy and governance for building climate resilience alongside climate mitigation.[14]

Vodafone has identified a shortlist of priority climate-related risks including extreme weather and rising average temperatures and one key opportunity (customer enablement). Building climate resilience is integrated into Vodafone's business-as-usual risk mitigation processes and is not defined as a separate initiative within the company's existing transition plan.

Transformational: end-to-end business transformation through pep+

PepsiCo's pep+ (PepsiCo Positive) strategy is a company-wide transformation that places sustainability and resilience at the heart of its operations. Key adaptation-relevant goals include:

→ **Net Water Positive:** Replenish more water than used in high-risk areas by 2030.
→ **Diversified Ingredients:** Use more climate-resilient crops and sustainable sourcing.
→ **Regenerative Agriculture:** Improve soil health and farmer livelihoods through regenerative practices.[15]

Figure 9: Considerations for setting adaptation goals.

Scope of coverage

Consider the areas of the business that will be covered based on the adaptation approach. This includes the operations, assets, products or areas of the supply chain to be covered by adaptation measures.

Integration with business strategy

Ensure adaptation goals align with corporate sustainability, risk management, and operational strategies to maximize impact.

Stakeholder alignment

Engage internal teams, supply chain partners, and external stakeholder to ensure buy-in and accountability in setting and delivering adaptation goals.

Financial and investment planning

Link adaptation goals to capital planning and budgeting to ensure financing is available for implementation.

Performance tracking and review

Establish regular review cycles (e.g. annually or every 6 months) to track progress, refine goals, and incorporate new data and business priorities.

Scenario-based planning

Select an appropriate future state scenario (e.g. RCP7.0) and time horizon (e.g. 2050) with which the goal is positioned and be clear on why these were selected.

Uncertainty in solutions

When the best adaptation measures are not yet clear, set process-based goals (e.g. improving risk assessments, piloting solutions) to ensure continuous learning and refinement.

Businesses should also determine whether specific goals may need to be set in line with regulatory requirements or country specific plans such as **National Adaptation Plans (NAPs)**, Regional Adaptation Plans or other reporting requirements or standards such as the ISSB disclosure standards.[16]

Adaptation goals must remain flexible and iterative, evolving as new risks, technologies, opportunities and business needs emerge. Once the adaptation planning cycle has concluded and goals have been approved by senior leadership, businesses could consider making these goals **public.** This can **enhance transparency and accountability**, increase investor and customer confidence, and attract like-minded collaborators to co-develop adaptation solutions in key regions where the business operates. This can also demonstrate to governments where support is needed and how the private sector is contributing to national goals. Before publishing goals, businesses should ensure that goals can be clearly measured to demonstrate progress and that they are achievable within the context of evolving risks and uncertainty.

Box 3: Principles for Corporate Climate Resilience Leadership

When setting adaptation goals, companies should consider the principles set out by the Center for Climate and Energy Solutions (C2ES).[17] The principles act as a guide for corporate action on advancing resilience to the physical impacts of climate change and reflect how companies can **demonstrate leadership.** The principles are the result of engagement with **cross-sector stakeholders,** including businesses and NGOs.

1. ***Science-Based & Proactive***
   Companies acknowledge and assess risks due to climate change and implement best practices to enhance resilience
2. ***Transparent & Accountable***
   Regular measurement and reporting of climate risks and adaptation actions in a consistent manner.
3. ***Safeguarding & Enhancing***
   Practices that safeguard against maladaptation and increase community and ecosystem resilience
4. ***Inclusive & Equitable***
   Collaborative efforts to engage and improve decision-making within value chains and local communities
5. ***Transformative***
   Pursuing climate adaptation solutions that enable positive systems-level transformations

C2ES
CENTER FOR CLIMATE AND ENERGY SOLUTIONS

Source: Center for Climate and Energy Solutions

2.5 Creating an outline adaptation plan

Once leadership buy-in is secured and the previous actions have been completed the business will be ready to assemble an **outline adaptation plan** by consolidating insights from previous steps. This plan should summarize the prioritized risks and opportunities within scope of the plan, adaptation goals, governance structure, resource needs, and initial actions. It should also begin to identify any preliminary solutions and existing adaptation solutions that have already been implemented.

This outline adaptation plan will serve as a **working document** to test with key stakeholders, refine priorities, and guide the development of the rest of the process. The outline plan should also define clear milestones, estimated costs, and approval points to guide implementation. As adaptation efforts progress, this document should be continuously updated to reflect the latest risks, opportunities, and strategic decisions — ensuring it remains a relevant and actionable roadmap. An example of an outline adaptation plan is provided in Annex 2.

03. Designing *Adaptation Solutions*

Assess adaptation options for the business, when, where, with whom and how to implement them, and determine indicative cost of solutions.

3.1 Developing an internal library of adaptation solutions

The solutions design phase is a critical stage of adaptation planning, where businesses identify and develop adaptation solutions to enhance resilience. Having already set the scope to address the key risks and opportunities, the focus now shifts to designing and evaluating specific **adaptation options** to address them effectively.

There are a broad range of adaptation options available to businesses to manage risks and maximize strategic opportunities (as shown in Table 2). Using the **adaptation assessment framework parameters** (see section 3.4), businesses will be able to determine which options best meet the business needs and align with the necessary implementation, timing, and other requirements (e.g. cultural and ecosystem fit).

It is important that businesses consider a wide range of adaptation options across all categories. Ruling out any of these categories of solutions from consideration could lead the business to overlooking a solution that could be more effective, lower cost, easier to implement or in the worst cases, investing in maladaptive solutions.

During this phase of adaptation planning, businesses may also consider systemic resilience and the interplay between their adaptation needs and solutions, and wider systems (e.g. food, health, infrastructure, nature).[18]

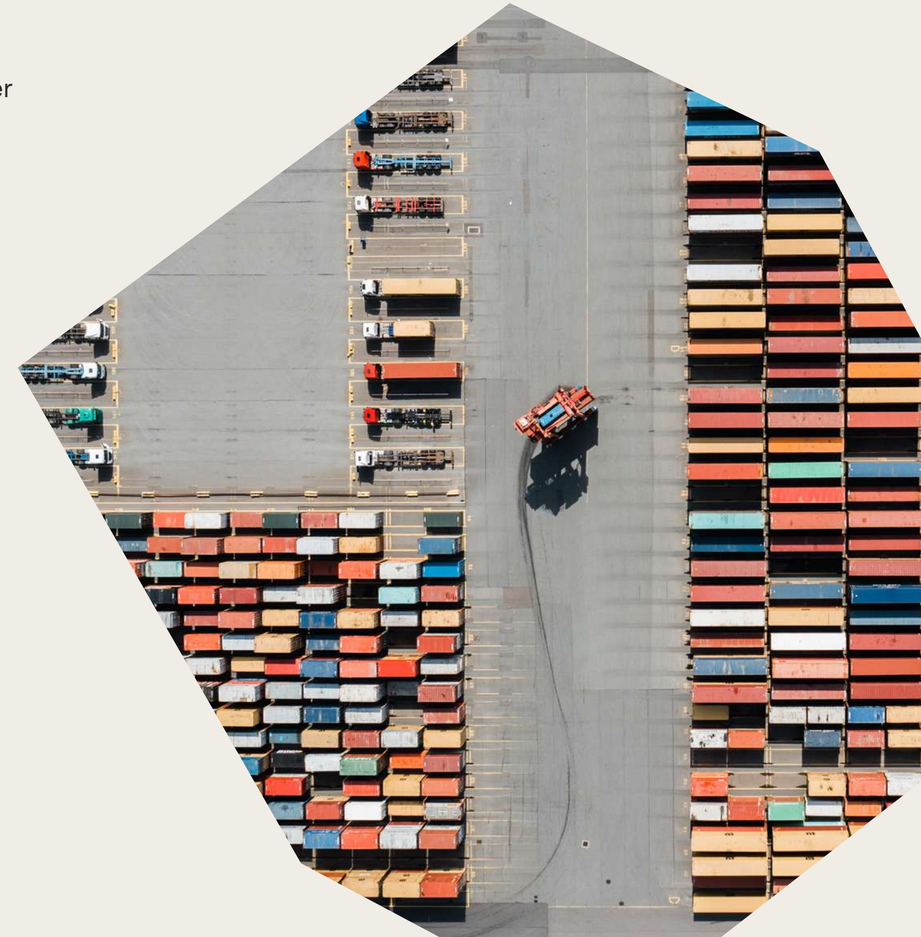


Table 2: Categories of adaptation options for businesses

Adaptation Options	*Examples*	*Advantages and Limitations*	*Case Studies of Implementation*
 **Infrastructural / Physical Adaptation** protect business sites and assets and ensure operational continuity	**Investments in the built environment and assets to withstand climate risks, including:** → Flood barriers, storm-resistant buildings → Upgraded transportation and logistics networks → Water conservation and management infrastructure → Climate-resilient energy systems (e.g. microgrids, renewable energy) → Reinforced infrastructure to withstand extreme events → Fire-suppressant systems	**Advantages:** Can provide the most direct protection of physical assets and infrastructure and can be directly tailored to specific site vulnerabilities to protect and support other infrastructure. **Limitations:** Can be very costly and has the risk of shifting the risk to other parties, which is a potential maladaptation risk. It can also create a false sense of security and has a risk of lock-in.	**Water resilience through infrastructure innovation** ArcelorMittal Tubarão implemented a **Water Master Plan** to address severe drought risk, modernizing its Water Treatment Plant to increase freshwater reuse and reduce reliance on public supply. A new seawater desalination plant—the largest in Brazil—now provides 500 m³/h of industrial water, powered by on-site energy. Together **with waste-water reuse and spring restoration,** these measures cut freshwater use by over 35% and improve long-term water security and operational continuity.[19]
 **Technological Adaptation** enhance operational resilience through innovation	**Deploying technology to manage and respond to physical risk impacts and capture opportunities:** → Advanced weather monitoring tools → AI-driven risk assessment and scenario planning → Energy efficient cooling → Smart irrigation and water efficiency systems → Supply chain tracking for climate risks → Climate-resilient products and services → Drought or salt resistant crops	**Advantages:** Enables smart decision making and early action. This can lead to efficiencies and cost savings and is often scalable and adaptable to changing conditions. **Limitations:** May require continuous research and development otherwise the technology may become obsolete. May also require highly specialized skills and training.	**Smart agriculture for climate resilience** Alibaba's Freshippo launched a Climate-Resilient Agriculture program using **AI-digital technology to help farmers adapt to extreme weather.** Freshippo assessed crop damage and optimized routing to rapidly redirect supply chains—turning hail-damaged peaches into processed goods and **increasing farmer income** by over RMB 18,000 ($2,520) per hectare. The system integrates real-time weather data, crop conditions, and inventory to automate sourcing and reduce waste, safeguarding farmer incomes.[20]
 **Nature-based Adaptation** provide long-term protection while improving biodiversity	**Leveraging ecosystems for resilience, sustainability, and co-benefits:** → Reforestation, wetland restoration, and mangrove planting → Green roofs, urban tree planting, and permeable pavements → Agroforestry and regenerative agricultural practices → Watershed and soil conservation efforts → Carbon sequestration, biodiversity credits, and ecosystem services. See the Nature-based Solutions (NbS) Blueprint for further examples.[21]	**Advantages:** Often cost effective and sustainable and can provide co-benefits to the surrounding communities through improved biodiversity. Often NbS can reduce emissions which can be a win-win for adaptation and mitigation. **Limitations:** It isn't always easy to engineer natural solutions, and this may take time to get right and for the benefits to materialize. These also tend to lend themselves more to the broader co-benefits and can be less effective for pure adaptation focused efforts.	**Nature-based cooling in dense urban environments** To **combat rising urban heat,** Singapore-based developer CDL implemented a regenerative tropical **MicroForest** at City Square Mall.[22] This 2,800 sq ft nature-based solution mimics native forest ecosystems to reduce ambient temperatures and enhance biodiversity. **Early results indicate a measurable reduction in surface temperatures.** The project demonstrates how NbS can deliver measurable cooling and resilience in dense urban settings, with the co-benefits of improving biodiversity and reducing the need for artificial cooling, thereby preventing additional emissions generation.
 **Behavioral & Workforce Adaptation** adjust employee-related policies to boost workforce resilience and build in-house adaptation skills	**Building an adaptive organizational culture and ensuring workforce resilience:** → Employee training on climate risk and adaptation solutions, and disaster response → Adjusted work policies and practices (e.g. heat safety protocols, remote work during extreme weather) → Recruit adaptation specialists to develop in-house capabilities	**Advantages:** Fostering a broader culture of risk awareness among staff which can boost workforce resilience and increase "buy in" for the topic among employees. This can also build in-house adaptation skills and knowledge. **Limitations:** May face resistance from employees who are already overburdened. Requires continuous time and effort to ensure behaviors change. In some instances, the benefits of these behavior changes may also be difficult to quantify.	**Workforce resilience to extreme heat** In response to rising heatwaves, Aditya Birla Group launched a comprehensive **heat stress program across 1,732 workplaces.**[23] Using Thermal Work Limit (TWL) technology and physiological monitoring, the company identified high-risk zones and vulnerable employees. Interventions included shaded rest areas, hydration stations, adjusted work schedules, and targeted training. The initiative not only safeguarded health but also embedded climate resilience into workforce practices across cement, metals, textiles, and chemicals operations.

 **Financial Adaptation** help businesses manage financial risk and improve investment planning	**Ensuring financial resilience to climate risks:** → Risk transfer solutions e.g. climate risk insurance and parametric insurance (case study below) → Diversified investment strategies to hedge climate exposure → Contingency funds and business continuity planning → Screening decisions and/or financial assessments of risks in cash-flows or proposed investments	**Advantages:** Can be an effective way of managing residual risk and provide access to new financing and insurance options. **Limitations:** These should be used in a suite of solutions as insurance-based mechanisms can cushion financial impacts, but are insufficient on their own, since they do not address the risk directly and so it is not reduced by these solutions but transferred or retained. Can also be costly to secure and can take time to payout when needed.	**Leveraging insurance to withstand extreme weather events** After a tornado severely damaged its Marshalltown, Iowa factory, Lennox International leveraged a robust insurance strategy to offset financial losses. **The company reached an agreement with its insurer to cover $368 million in damage and lost profits.**[24] This event catalyzed a broader reassessment of physical climate risk exposure, with Lennox now integrating climate risk into financial planning and site selection to enhance long-term resilience.
 **Value Chain Adaptation** ensure resilience in the value chain to retain competitive advantage	**Making value chains more resilient to climate shocks and disruptions:** → Engaging with communities to foster collective resilience → Engaging with governments/other organizations to combine efforts and resources → Diversifying supplier networks to reduce risk exposure and engaging with vulnerable suppliers to understand their adaptation plans → Sourcing climate-resilient materials and products → Strengthening logistics and distribution adaptability → Including climate risk sharing clauses in future contracts → Engaging customers on adaptation-related product innovation See CEO Handbook on physical risk in value chains (forthcoming)[25]	**Advantages:** Can reduce risk in the value chain (especially business interruption) by spreading the risk and supporting suppliers and communities. **Limitations:** Could leave certain suppliers at a disadvantage if they are excluded as well as pushing up supplier costs for the company in the short term. Also requires comprehensive supply chain analysis and planning.	**Collective resilience in Maranhão, Brazil** Arcadis (in collaboration with Vale, Suzano, and Governo do Maranhão) led a collective resilience initiative to identify and address key climate-related vulnerabilities in the Amazon region of Maranhão. The project conducted a comprehensive, **integrated socio-economic assessment** of along 700km of the Carajás Railroad, **a vital logistics corridor** for Vale and Suzano. The project identified 38 targeted adaptation-related actions to boost the resilience of the population of Maranhão in five priority zones to **address deforestation, water scarcity, and soil degradation.** The initiative aligned corporate goals with local needs, improving agricultural resilience, supporting vulnerable communities, and enabling long-term value chain stability.[26]
 **Informational Adaptation** improve business foresight to enable proactive adaptation measures	**Using climate intelligence to guide business decisions** → Climate vulnerability and risk assessments → Industry collaborations on climate knowledge-sharing → Digital twin simulations for climate stress testing → Open-source climate data partnerships → Consideration of climate risk scenarios in planning new site locations	**Advantages:** Improves business foresight and enhances decision making. This can lead to better risk assessments and management over time through learnings and reduced costs from better understanding of options. **Limitations:** Requires a high level of expertise for operation and interpretation as well as accurate and timely data. This can lead to fear of acting which can miss key decisions where there are large amounts of uncertainty.	**AI-driven forecasting for energy resilience in China** Alibaba's DAMO Academy developed "Baguan," an **AI-powered forecasting system** that integrates real-time weather conditions, historical power output data energy, power system production, and maintenance plans. **During a 2024 extreme weather event, it achieved 98.1% accuracy in forecasting a 20% drop in power demand, helping stabilize grid operations.**[27] This innovation enhances resilience of energy systems and is also an example of the mitigation-adaptation synergy, demonstrating the importance of ensuring the resilience of energy transition.
 **Product Portfolio Adaptation** adjust the core business model or product portfolio to reduce risk or access opportunities	**Focusing on business continuity and longer-term strategic changes** → Circular economy models to decrease dependency on climate-vulnerable raw materials and increase efficiency → Adapting existing products and services to increase resilience → Developing new products or services that are less vulnerable to climate risks → Shifting from a one-time sales business model to a subscription-based model to safeguard a steady income stream despite climate-related disruptions	**Advantages:** Reduces dependency on climate-vulnerable raw materials, diversifies risk, and opens new market opportunities. **Limitations:** Requires significant investment and could pose operational and strategic challenges due to fundamental changes required.	**Microgrids as a Resilience Service** Schneider Electric has developed modular microgrid systems that provide decentralized, low-carbon energy to off-grid and climate-vulnerable communities. Delivered through an **Energy-as-a-Service model,** these systems **reduce reliance on centralized grids and improve energy reliability during extreme weather events.**[28] The approach supports adaptation by enabling faster deployment of resilient infrastructure and mitigation expanding access to clean power in underserved areas.

To support the risk owners in designing adaptation solutions, the Central Taskforce should create a **library of adaptation solutions.** This library acts as a centralized database and starting point for assessing different options and should include both **data on different types of adaptation** that are appropriate for the business' context and strategy, and any existing **adaptation solutions already in place** (i.e. details of the adaptation inventory check, see Box 4). This allows risk owners to leverage existing best practices and lessons learned across the business.

The library of adaptation solutions should also include information on options that the business has ruled out as **misaligned with business strategy, out of budget, or maladaptive.** Any available information on implementation should also be included here including cost, lead times, procurement or permitting requirements, reversibility, and scalability of solutions.

Box 4: Adaptation inventory check

This process helps business identify adaptation solutions that are **already present within the company** that my not **not be explicitly called or linked to adaptation.** This involves:

1. The business will likely already have a **list of risks** it has identified and is managing through risk registers or the like. A review of these risks by the **Central Taskforce** can help identify those that may be influenced by changing physical risks in the future.
2. The Central Taskforce **reaches out to the relevant departments/sites** already managing these risks to:
   - Understand what management measures have already been undertaken to manage these risks
   - Work with the **risk owners** to help them understand how these risks may change over time due to changes in extreme weather
   - Share a template to **collect basic information on identified solutions** (e.g., starting date, implementation status, cost, benefits, shortcomings, lessons learned)
3. **Document and incorporate existing initiatives** into the adaptation planning process going forward

3.2 Understanding maladaptation

Maladaptation[29] can include:

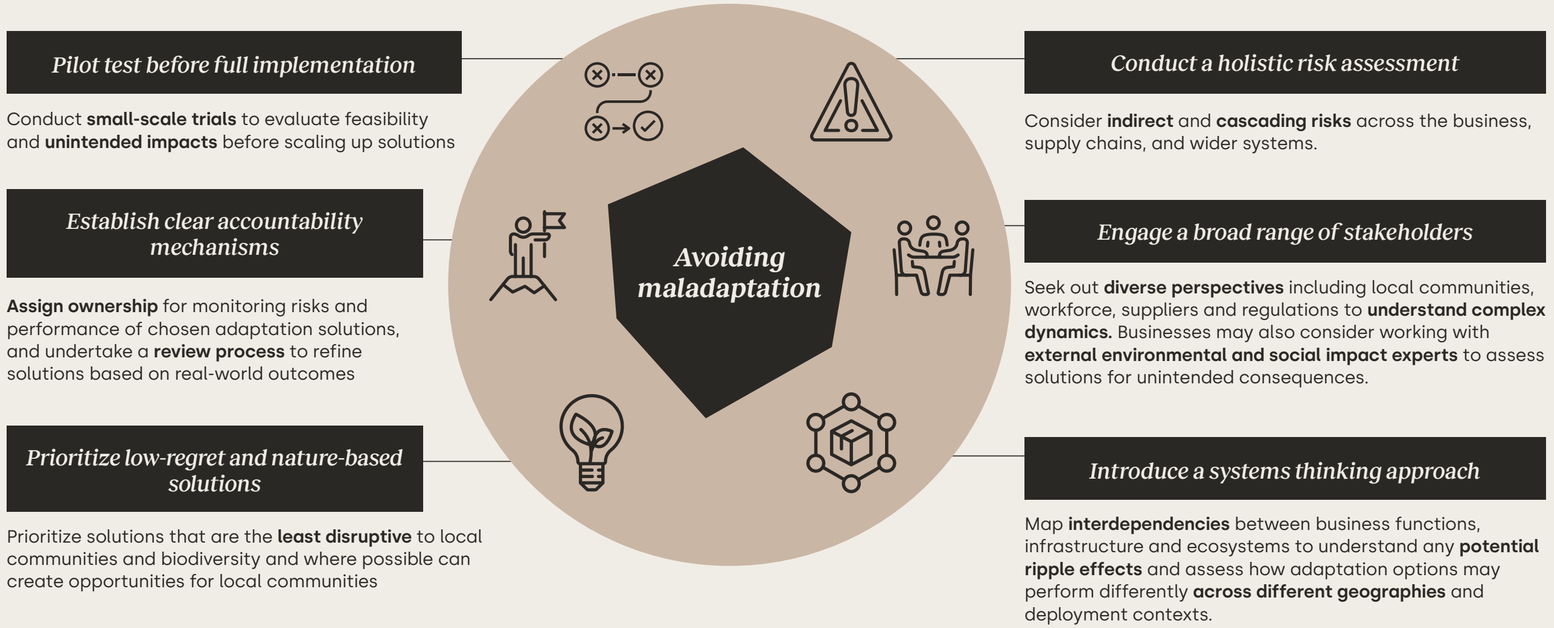
- → **Short-term fixes that increase long-term risks** – a business invests in water-intensive cooling systems to manage rising temperatures but exacerbates local water scarcity.
- → **Avoiding systems thinking** – a mine upgrades its infrastructure to withstand increased hurricane events but does not engage in collective resilience building to ensure surrounding infrastructure and communities are resilient. As a result, the site is isolated after an event when goods, services, and employees can't access the site due to damaged surrounding infrastructure.
- → **Shifting risk to vulnerable stakeholders** – a company reinforces flood defenses around its site, displacing floodwaters onto neighboring communities or suppliers.
- → **Creating dependency on fragile systems** – a company relies on a single-source supplier in a vulnerable region, which may fail under future climate stress.
- → **Retreating from highly exposed areas**– to reduce its losses, a business retreats from a site frequently experiencing extreme weather events (i.e. managed retreat). While there might be cases (e.g. sea level rise) where the business has no other option, it must be considered that a definite retreat from an area affects surrounding communities (e.g. loss of employment, loss of critical services) and will impact employees and communities who might not be willing or able to relocate to the new site location. Managed retreat should be considered a last resort, and businesses must understand and seek to manage the significant socio-economic impacts on the remaining communities.

Avoiding maladaptation in business adaptation planning is crucial to ensure the long-term sustainability of adaptation efforts. It is also a key factor in avoiding additional financial costs arising from the need to implement additional adaptation solutions to counteract the maladaptation impacts, reputational impacts, or penalties imposed by regulatory authorities in response to maladaptive impacts.

To avoid maladaptation, businesses should map out the broader implications of different adaptation options to understand which **may have unintended consequences**. This can be time and resource intensive but can have the additional benefit of increasing synergies and efficiencies across the business.

To minimize the risk of maladaptation, a business can follow the activities suggested in Figure 10.

Figure 10: Actions to consider for avoiding maladaptation



Case Study: Enhancing climate resilience of drinking water infrastructure while avoiding maladaptation

Veolia has embedded maladaptation into its efficiency criteria to prioritize resilient, low-regret solutions

Context: In 2022, Veolia conducted a comprehensive vulnerability study as part of the preparation for major renovations of Toulouse Metropolis's three drinking water production plants.

Risk assessment methodology: The study employed the OCARA (Operational Climate Adaptation and Resilience Assessment) method to map the evolution of climate hazards for 2030 and 2050. The assessment of each of the Toulouse Metropolis's process's vulnerability to future climate conditions allowed for risk prioritization and the proposal of targeted adaptation actions.

Strategic guidance: Veolia provided Toulouse Metropolis with a comprehensive multicriteria analysis of relevant adaptation actions for their drinking water management strategy including key factors such as availability, efficiency, cost, implementation time, and public acceptability, each rated on a scale of 1 to 3.

Assessments of Maladaptation: Part of this multicriteria analysis assessed whether the adaptation actions have the potential to be maladaptive. Where maladaptive criteria were identified, (e.g. installing specific cooling infrastructure that could increase emissions) this was rated as 0.

Source: Veolia[30]

Score	*Description*	*Efficiency*
0	The action temporarily reduces the impact and leads to an increase in the consumption of water, energy, materials, ...	Maladaptation
1	The action temporarily mitigates the impact (curative approach)	Low efficiency
2	The action significantly reduces the impact	Medium efficiency
3	The action completely absorbs the impact (corrective approach)	High efficiency

Relevant activities for adaptation planning

- → Risk assessment
- → Assessing adaptation solutions

Key stakeholders involved

- → Local teams including site operators to decision makers
- → Headquarters' sustainable development team provided methodology support
- → Collaboration with the client throughout

3.3 Identifying opportunities for collective resilience building initiatives

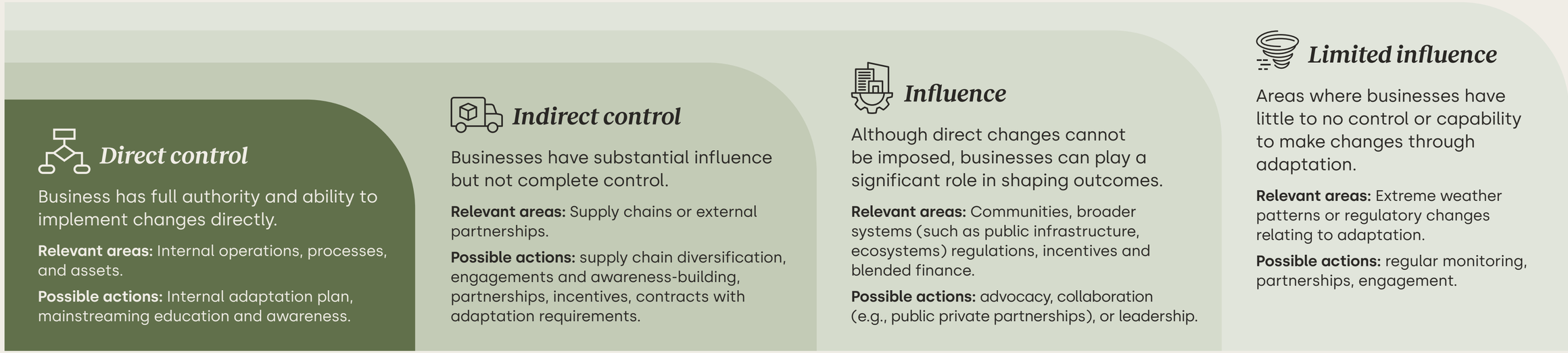
Collaborating with the value chain

In some cases, **adaptation solutions identified by businesses may be beyond their direct control to implement**, and therefore a key part of adaptation planning is identifying strategic collaborations to co-design adaptation solutions for collective resilience. Suppliers, customers, communities, and the public sector are key potential collaborators for assessing and integrating different types of knowledge systems, including local, traditional, and indigenous knowledge where relevant to avoid maladaptation. Businesses should consult widely to understand where existing resilience initiatives are under development, to exchange knowledge on potential solutions for a given risk and improve social license to operate.

Businesses often have **limited direct control over the adaptation actions of their suppliers and external partners** as shown in Figure 11. However, they can incentivize these actors to implement adaptation solutions by setting minimum resilience requirements in procurement policies, offering incentives, including risk sharing clauses in contracts, and building awareness through engagement and partnerships.[31]

Furthermore, many business operations are **dependent on critical infrastructure such as transport and energy networks,** which are usually beyond their control to influence. In these cases, businesses should seek to understand their dependency on this infrastructure, develop back-up solutions where required and possible, and establish relationships with the actors responsible for maintaining critical services. In these cases, businesses may be able to advocate for adaptation solutions, support public-private partnerships, or lead sector or community initiatives like education campaigns. If these efforts fall short and risks become unmanageable, businesses may need to consider a managed retreat from high-risk areas.

Figure 11: Levels of influence of business adaptation along the value chain



Leveraging National Adaptation Plans (NAPs)

National Adaptation Plans (NAPs) are a vital resource for businesses—both to consult when designing their own adaptation solutions, and to participate in developing. By participating in NAP consultations and the development of NAPs, companies can bring issues to the table, gain insights into relevant adaptation and resilience initiatives, better understand physical risk exposure and priorities at a national level, and shape business needs in line with broader collective resilience goals.

NAPs are **government-led** strategies that outline national priorities and actions for adapting to climate change impacts. The plans typically define major climate risks at a national level and address areas critical to economic stability and societal well-being, such as agriculture, energy, water resources, and critical infrastructure.[32]

NAPs often define regulatory expectations, financing opportunities, and areas where public-private partnerships can thrive. Businesses can benefit from **aligning adaptation solutions design with NAP priorities** (and, in some cases, local, regional, or city level adaptation strategies), enhancing their reach, and co-investing in sustainable projects. The landscape of NAPs is evolving with increasing integration of private-sector roles. Monitoring NAP developments and continuing to participate in NAP consultations helps businesses anticipate changes and position themselves as proactive contributors with a key role in helping governments to understand where private sector support is needed.

3.4 Establishing a company-wide framework for assessing adaptation solutions

Adaptation solutions will be assessed and designed by multiple different risk owners throughout the business. The Central Taskforce should therefore **define key parameters to guide the identification and evaluation of adaptation risks, opportunities, and solutions** to ensure consistency (see Box 5). This ensures a structured approach to decision-making, creating a standardized assessment system across the business.

As part of evaluating proposed adaptation solutions within the framework, the risk owners can use these framework parameters to develop a **multi-criteria analysis**. This enables each risk owner to determine preferred solution(s) while allowing for comparison and consistency across the business. An example of such a multi-criteria analysis approach is provided in Box 6.

Most businesses will require a combination of adaptation solutions to navigate the varying levels of uncertainty across the different risks and opportunities. In these instances, businesses should consider the combined benefit of solutions which may achieve a higher combined score than the two individual solutions on their own (e.g. parametric insurance and fire suppressant systems may not be attractive on their own, but combined they offer a more cost-effective way of managing significant wildfire risks).

Box 5: Establishing a company-wide framework for assessing adaptation-related risks, opportunities, and solutions

An adaptation assessment framework is an essential tool **to guide risk owners in assessing feasibility, business fit, and potential trade-offs of adaptation options.** The Central Taskforce should create a single, centralized framework, to standardize the assessment process across the whole organization. Listed here, are the fundamental framework parameters businesses should consider, including overall considerations from the business strategy and operating environment, considerations for assessing risks and opportunities, and the key criteria for assessing adaptation solutions.

1 Overall framework considerations

Liabilities, policy and regulatory drivers
Mandatory requirements that may drive specific adaptation actions or solutions

Degree of control
The ability of the business to act or motivate other stakeholders to act

Availability of data
The quality, scope and coverage of data on business operations and how they interact with the specific risk or opportunity

Collaboration options
Potential financing options and partnerships that can support the implementation of solutions

2 Considerations for risks and opportunities

Timing
Expectation on when the risk or opportunity will manifest. Short term: 1-5 years, Medium term: 5-10 years, Long term: 10 years+

Stakeholders
Internal functions and external stakeholders who need to be involved to resolve the risk or realize the opportunity

Business Impact
Severity of risk or opportunity (financial and non-financial impacts), how this changes over time and what the trigger points are

Certainty
The probability of a risk or opportunity happening

3 Assessment of adaptation solutions

Associated costs
Total investment needs over time including upfront costs, maintenance and monitoring costs

Stakeholder acceptance
Key stakeholders including employees, suppliers, finance team, the board, customers, investors, insurers and communities support of the solution

Co-benefits
Potential impact (positive and negative) on communities and ecosystems including maladaptation potential

Availability of solutions
Lead time for implementing the solution including further technology innovations required or deployment challenges

Value to the business
Cost/Benefit, impact on business model, costs savings, new revenue streams or avoided risks

Effectiveness
Effectiveness in reducing vulnerabilities, improving adaptive capacity or responding to an opportunity, is the solution scalable and flexible

Box 6: Example adaptation scoring system, based on the adaptation assessment framework

Shortlist options	Stakeholder acceptance	Effectiveness	Co-benefits	Availability of solutions	Value to the business	Associated Cost	Avoids Maladaptation*	Score
Options shortlisted to be assessed to mitigate potential risk or unlock potential opportunity	Will key stakeholders including employees, suppliers, finance team, the board, customers, investors, insurers and communities support the solution	How effective is the solution at reducing vulnerabilities or exposure, improving adaptive capacity or responding to an opportunity, is the solution scalable and flexible	How does the proposed solution support or detract from other initiatives within the business e.g. transition plan, nature strategy, equity strategy.	Is the solution ready to implement including the lead time for implementing, or further challenges to overcome before the solution can be implemented.	Impact on business model, costs savings, new revenue streams or avoided costs.	Total investment needs over time, upfront costs, maintenance and monitoring costs	Potential to have expected or unexpected negative impacts that ultimately reduce resilience of the business or associated community, environment or suppliers.	Final score per option with the higher scoring options being the more preferable.
Option 1	**3** + **1** + **3** + **2** + **3** + **4** x **1**							**16**
Option 2	**1** + **4** + **4** + **1** + **5** + **2** x **1**							**15**
Option 3	**1** + **2** + **5** + **5** + **2** + **5** x **1**							**22**
Option 4	**4** + **4** + **2** + **2** + **1** + **1** x **0**							**0**

Illustrative examples

Scoring: **1:** Very low **2:** Low **3:** Neutral **4:** High **5:** Very high

**Maladaptation is scored as 1 if is expected to avoid maladaptation or 0 if maladaptation is expected and can't be mitigated*

3.5 Considering the timing of risk vs the timing of solution implementation

To design effective adaptation solutions tailored to the risks and opportunities identified in the scoping phase, businesses must understand how to accurately **judge the timing for implementation**. This ensures strategic investment over time, reducing the risk of *under-investment* that leaves businesses vulnerable to physical risks, and *mistargeted investment* in adaptation solutions, that may cause senior leadership or investors to lose confidence in the business' adaptation planning strategy, and make it harder to secure buy-in for future adaptation investments.

Not all risks require immediate or high-cost solutions. Businesses should factor in wider business planning timelines (e.g. when the lifespan of an asset ends, and it can be replaced or when prices are expected to reduce significantly) as mainstreaming is often cheaper than retrofitting. It is also important to consider the **lead time** required to implement the solution as well as the **time needed for the solution to take effect**—to be able to adequately manage the risk within the company's risk threshold (e.g. certain NbS, such as wetland rehabilitation, will take several years to establish, so will not be able to immediately address flood risk).

Investments in adaptation solutions should be staggered in line with evolving risks and financial planning cycles. The timing of adaptation solutions should be informed by:

→ **Historical risk data** – Have similar risks occurred in the past and what was the impact on the business? Have risk patterns changed significantly in the last five years?

→ **Climate scenario analysis** – Based on the physical risk and opportunity assessments, what do climate projections indicate for short-, medium-, and long-term risks?

Climate projections, while valuable, are inherently uncertain due to complex climate dynamics, evolving policy landscapes, and unpredictable socio-economic factors. Businesses should adopt a strategic, flexible, and risk-informed approach to make decisions in the face of uncertainty, considering the key tips alongside.

Using scenarios to support adaptation decision-making

→ **Use a range of scenarios** (e.g., low-emission, high-emission, business-as-usual) to identify risks and provide motivation for the preferred scenario when developing the action plan

→ **Integrate insights from climate modelling with business-specific data** to translate into business-relevant risk indicators

→ **Focus on risk trends** rather than focusing on precise predictions

To determine the timeline for action, businesses should align with the best available projections to classify risks and opportunities. To do this, businesses may consider the key **decision questions** posed in Figure 12 to **understand when to act to best meet the business need:**

A. Act Now – Deploy low-regret and no-regret adaptation solutions immediately where there is a clear business value and benefit (e.g. energy efficient cooling to address increased heat days already being experienced).

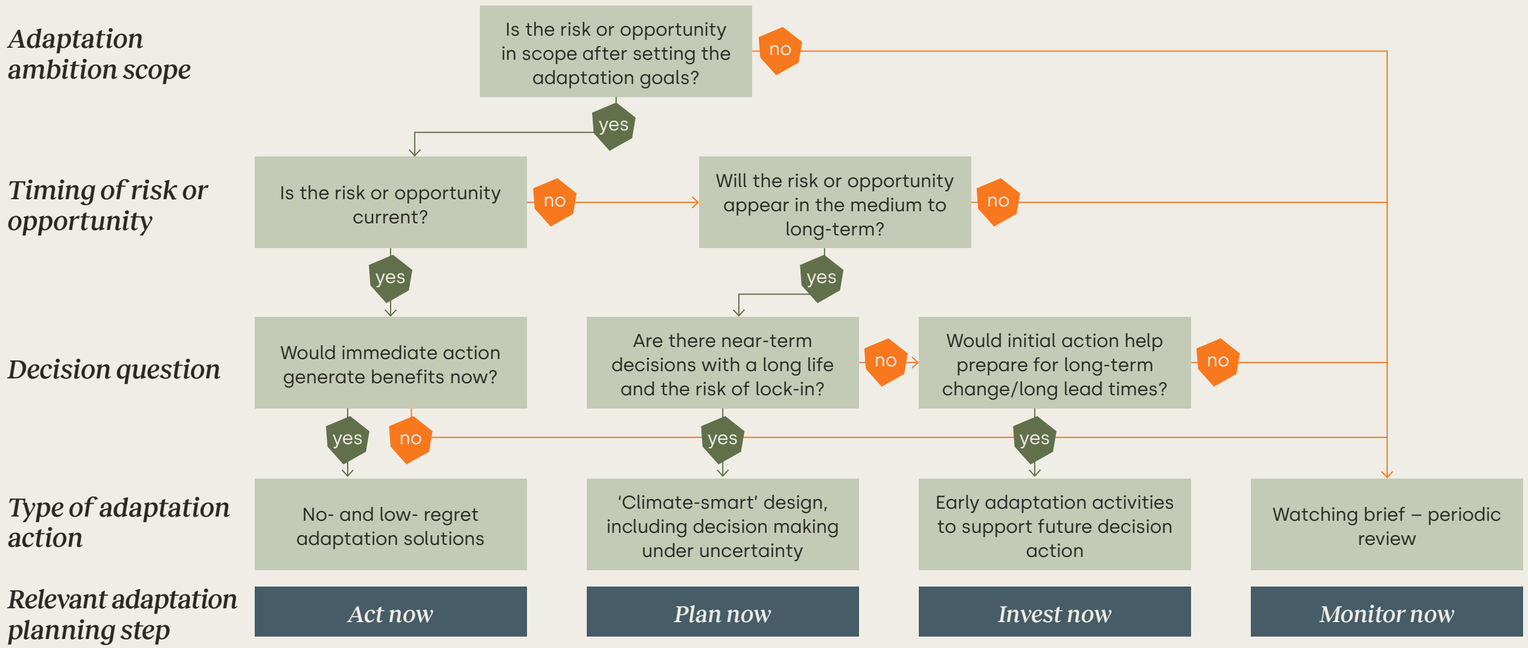
B. Invest Now – Invest in medium- or long-term solutions now if early investment is necessary due to long lead times or other strategic advantages (e.g. being investing in R&D for drought resistant crops in business areas likely to experience future droughts). Seek insurance cover for risks that are uncertain but that could materialize with significant impact already in the short term (e.g. secure parametric insurance for potential wildfire events across a specific land area of the business' operations).

C. Plan Now – Develop an adaptation pathway for sites, assets, product lines or business processes (e.g. invest in training and upskilling but wait to see if trigger points such as increased rainfall events materialize before investing in solutions to manage these impacts). When planning investment in new infrastructure or opportunities, incorporate climate-smart design features to increase resilience and long-term business value (e.g. smart irrigation and water efficiency systems).

D. Monitor Now – Continue gathering data, tracking risk and opportunity evolution over time, and identifying trigger points that would require future intervention (e.g. expand physical risk assessments to areas of the value chain not previously considered, while monitoring for existing trigger points).

Most businesses will require a combination of these actions to navigate the varying levels of uncertainty across the different risks and opportunities.

Figure 12: Decision-tree for timing implementation of adaptation solutions, updated from the World Bank[33]



3.6 Managing uncertainty and long-term risks through adaptation pathways

Often, businesses must combine several adaptation options over time to resolve a particular risk or unlock additional opportunities. This combination of solutions is known as an **adaptation pathway,** which are inherently designed for dynamic adjustment. Adaptation pathways are implemented progressively over time, depending on how the future climate scenarios play out and based on updated understandings and knowledge.

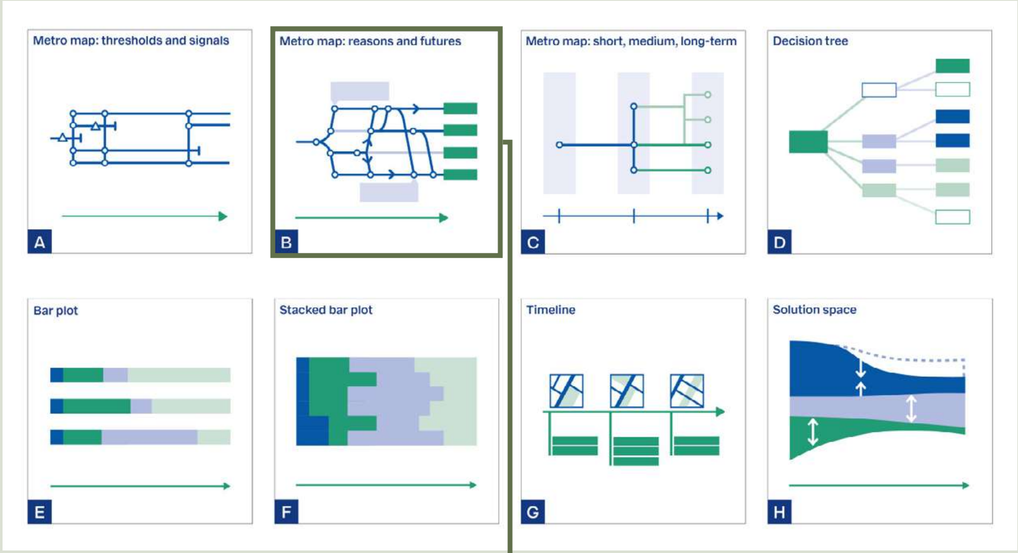
Adaptation pathways can be used to help businesses **manage uncertainty** in adaptation planning, understand and structure the options for building **long-term response** to a particular risk or opportunity, compare different combinations of adaptation options, and plan implementation timing for each solution. One advantage of adopting a pathways-based approach is that it allows businesses to **develop multiple pathways to compare options for different climate scenarios** (e.g. optimistic, worst case, and most likely projections), and prepare responses for each. However, adaptation pathways are **not suitable for every situation** or risk since they can be quite resource intensive, and many of the risks that businesses will be responding to will be short term risks. The visualization can also be complex and non-technical stakeholders can struggle to understand them.

For the subset of long-term and uncertain risks where businesses have identified that a pathways approach is appropriate, they should define **trigger points.** These trigger points enable businesses to determine if they should change course, based on factors such as an increase in risk likelihood or impact, availability or new solutions, or wider business strategy, and to understand the optimum timing to initiate different adaptation solutions to account for lead time, approvals, and piloting activities.

Box 7: Adaptation pathways in practice

Adaptation pathways can be visualized in different formats to better illustrate adaptation options over time to different stakeholders

Adaptation Pathways experts at Deltares analyzed over 200 pathways studies to determine appropriate **pathway visualizations,** each offering unique advantages based on the planning needs and the desired focus of the pathways.[34] Certain visualizations (e.g. A and B) may be unsuitable for non-technical audiences, or for illustrating the adaptation strategy to senior decision-makers and Boards.



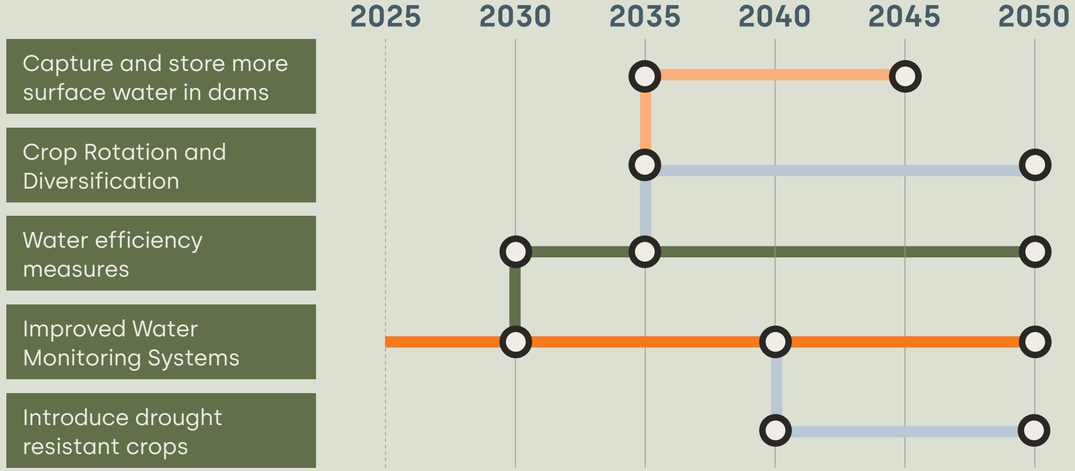
Source: Deltares

Adaptation Pathways Example: Comparing Adaptation Options for AgCo

To illustrate how pathways can be used, WBCSD has provided an example of an adaptation pathway approach for an agricultural company using a **metro map visualization.**

In this example, the business has identified four different adaptation pathways, for a site facing increased drought risks. To gather additional information, the site manager (the appointed risk owner in this example) **implements the improved monitoring systems** in 2025 at the start of the pathway. Based on best available current projections, the site manager expects that by 2030 these monitoring systems will indicate the need for additional solutions to be implemented in the form of water efficiency measures. Depending on how effective these two adaptation solutions are in managing the changing risks, the site may need to implement water storage mechanisms or consider changing farming practices.

Over time, the site can update and adjust the adaptation pathway, implementing additional solutions based on wider business strategy and additional information about effectiveness and associated costs and benefits.



Source: WBCSD

3.7 Financing adaptation solutions

Once the risk owners have identified which adaptation solutions are the best fit to resolve each risk or opportunity and identified the appropriate timing for implementation, they will be able to develop the investment case. The investment case for adaptation solutions is different to the **business case for adaptation planning** (see Section 2.1) in that this investment case focuses on the investment needed to implement specific adaptation solutions in response to each risk or opportunity. The adaptation planning business case focuses on the need for the business to undertake the adaptation planning process in the first place.

However, to provide decision-useful information, risk owners will need to perform a detailed financial analysis of the priority options, using one of several different appraisal methods—Cost- Benefit Analysis (CBA), Cost-Effectiveness Analysis (CEA), Return on Assets (ROA)—or other relevant appraisal tools the business already uses.

To allow for comparison, the **Central Taskforce** should provide criteria and guidelines for the preferred appraisal method and the key information required for the investment case to ensure consistency across the business. The Central Taskforce will then be responsible for the initial filtering and comparison, before a final decision is made by the investment committee.

At a minimum, the investment case for the adaptation solutions presented should contain the following:

- → Which **adaptation goals** the solution aligns with and supports
- → A view on **what the solution will achieve** (e.g. reduce risk, improve resilience, unlock opportunities).
- → The multi-criteria evaluation approach (financial and non-financial) as well as **potential risks.**
- → **Performance indicators** that can be used to monitor the success of the preferred option.

The investment case should also provide details on how the adaptation solution will be financed and if necessary, how it will be repaid. This requires businesses to evaluate both internal and external financing sources to determine the most cost-effective and strategic approach. Examples of these are provided in Examples of these are provided in Figure 13.

Figure 13: Key financing options from internal and external financing sources

Internal instruments

Capital Expenditures (CapEx): Businesses can allocate finances from existing budgets, particularly for resilience-enhancing projects that align with corporate sustainability or operational risk management.

Operational Budgets (OpEx): Smaller-scale or incremental adaptation measures may be financed through annual operating expenses, avoiding the need for large upfront capital investments.

Insurance-Linked Financing: Businesses may use parametric insurance or catastrophe bonds to offset climate-related risks and reinvest savings into resilience projects.

Supplier & Value Chain Financing

Resilience-Incentivized Supplier Contracts: Large businesses can offer financing or preferential contracts to suppliers that implement adaptation measures, ensuring supply chain stability.

Customer Cost-Sharing Models: Some adaptation solutions (e.g. water-efficient products, resilient infrastructure) may allow businesses to pass costs onto customers through pricing strategies or service agreements.

Public sector instruments

Public-Private Partnerships (PPPs): Governments or development banks may co-finance projects that align with regional or national climate adaptation goals.

Grants & Subsidies: Some adaptation solutions may qualify for government grants, international climate funds (e.g., Green Climate Fund, Adaptation Fund), philanthropic funding or industry-specific incentives.

Private sector instruments

Sustainability-Linked Loans (SLLs): These loans offer preferential interest rates based on meeting sustainability and resilience performance targets.

Green Bonds & Resilience Bonds: Debt instruments designed to finance climate adaptation projects, typically used for large-scale infrastructure investments.

Blended Finance: Combining grants with private investment to de-risk adaptation solutions, making them more attractive to commercial investors.

Source: WBCSD

04. Building the Plan and *Implementing Adaptation Solutions*

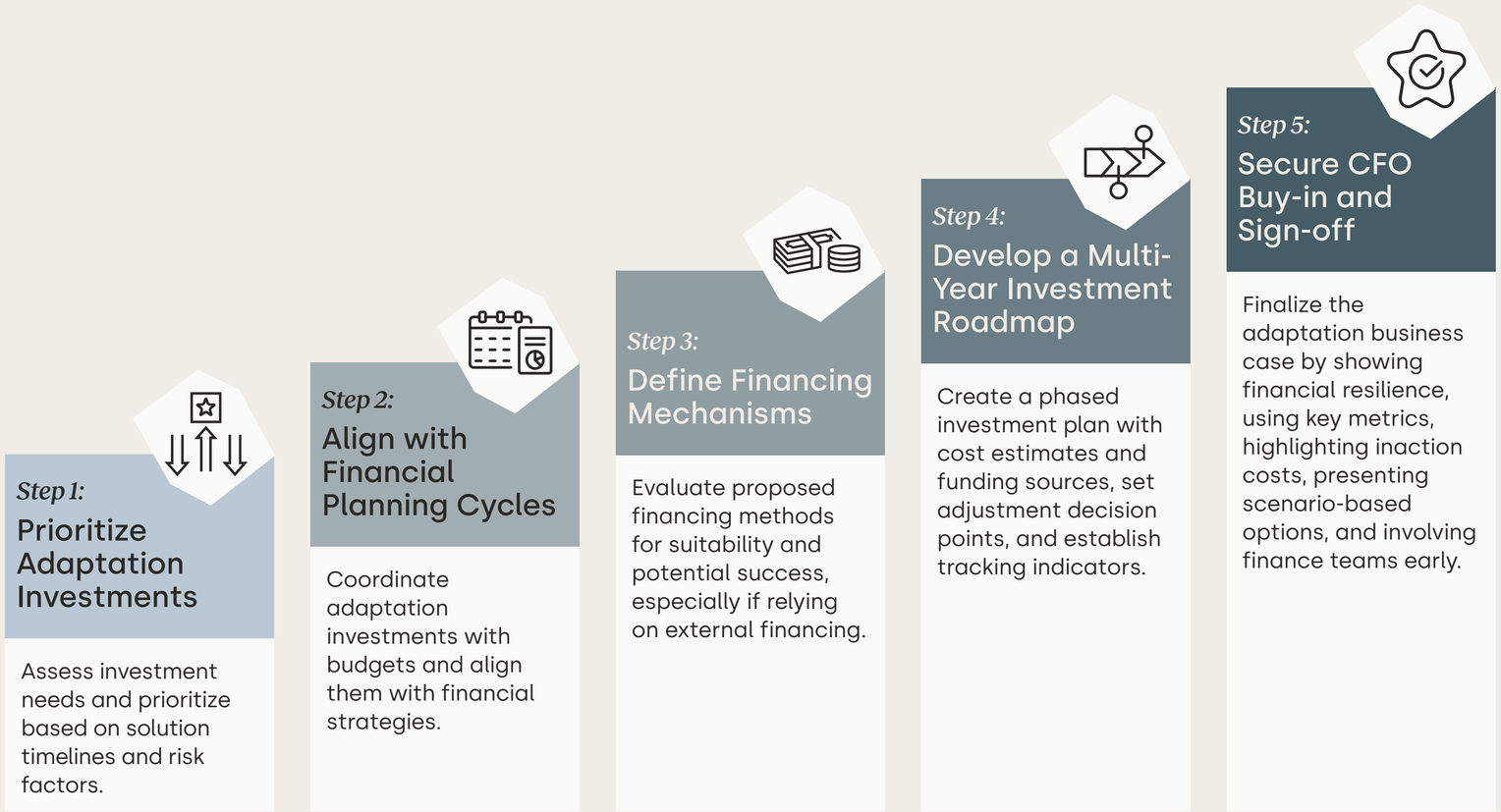
Build an investment roadmap for adaptation solutions across the business, build the adaptation plan, integrate adaptation planning into existing processes, strategies and governance, and kickstart implementation of solutions.

4.1 Defining an investment roadmap for adaptation solutions

At this stage of the adaptation planning process, businesses should have identified, designed, and developed the financial proposals for individual adaptation solutions. To secure long-term resilience, these solutions must be embedded into financial planning through a structured **adaptation investment roadmap.** This roadmap aligns the total adaptation investment needs across the whole business with budget cycles, financing sources, and decision-making processes, and must be developed in collaboration with the relevant finance teams.

The suggested process for developing this investment roadmap is provided in Figure 14.

Figure 14: Process for developing an investment roadmap for adaptation solutions



Source: WBCSD

4.2 Building the plan

In addition to financing and implementing adaptation solutions, a fundamental output of adaptation planning is, of course, documenting the planned actions and investments over time in a **Business Adaptation Plan**.

The Business Adaptation Plan serves as a comprehensive record of how a business intends to respond to the priority risks and opportunities identified during the adaptation planning process. In short: the adaptation planning is the journey, while the adaptation plan is the map. The plan should describe how the selected adaptation solutions are expected to reduce physical risk exposure or respond to a given opportunity, document implementation timelines, and outline key stakeholder engagement.

Businesses should also take account of existing National Adaptation Plans (NAPs) in any key geographies covered by their own plans.[36] There should also be strong **alignment between the Business Adaptation Plan and the NAPs**—including details of any public-private partnerships, business participation in key national resilience initiatives, and co-financing of collective resilience.

An adaptation plan may be an internal or external document, depending on the needs of the business and disclosure requirements. In certain rare cases, national jurisdictions are beginning to require businesses to develop and disclose their adaptation plans, particularly for critical infrastructure and service providers.[37,38] Currently, universal mandatory disclosure of adaptation plans is not a requirement in any country.

Plans should also be reviewed and updated regularly (every 1-2 years) to account for any significant changes, such as increased risks and opportunities or new business resilience initiatives. However, where there are significant events — extreme weather events or changes within the business — these could trigger a requirement for a review.

Alignment with Transition Planning and Integrated Planning Approaches

There are three main approaches that companies are using to structure adaptation plans:

- **Site-specific Adaptation Plan**: Individual site level adaptation plans can capture the adaptation actions around a specific site and can be **useful for getting started** at high priority sites or for piloting adaptation solutions. However, these are **not recommended as a long-term approach** and are not suitable as a whole-organization approach for adaptation planning. There is a strong risk of divergent approaches and central teams at the enterprise level will likely struggle to standardize the assessment and monitoring approaches across every site within the whole business. Site-specific plans should not be developed in isolation of an enterprise level adaptation plan or in isolation of each other as this risks an inconsistent adaptation planning approach.
- **Standalone Adaptation Plan**: A dedicated document outlining the company's adaptation activities in detail. This approach can be **useful for businesses developing their first adaptation plans,** or where leadership buy-in is not present for a more holistic transition plan. It also facilitates communication on adaptation with external stakeholders, such as shareholders and potential partners for collective resilience initiatives. Similarly to the site-specific plan, **this approach is not recommended in the long-term**, as it creates a risk of isolating adaptation efforts within the business, and may overlook potential interfaces with wider climate, nature, and social impact decision-making.
- I**ntegrated Adaptation Plan (Recommended):** An approach that combines the Business Adaptation Plan with other corporate sustainability plans including mitigation, nature, and social plans to form an integrated transition plan. This enhances synergies, reduces duplication, ensures consistency across disclosures, and fully integrates adaptation into corporate decision-making.

Event-based plan updates

Consider event-based reviews around major organizational changes such as:

- Mergers, acquisitions, or divestments
- Major physical site relocations or expansions
- Restructuring of operations or supply chains
- Entry into new markets with different climate exposure

Case Study: Approaches to Building Adaptation Plans

Companies are taking different paths to develop adaptation plans, depending on their structure, risk exposure, and strategic priorities. EDP and Goodyear offer two contrasting models:

Standalone adaptation plans, at the business unit level

EDP has adopted a **decentralized yet coordinated approach** by developing adaptation plans for each business unit.[39]

The plans are based on detailed assessments of infrastructure exposure to physical climate risks and aligned with long-term climate scenarios, allowing EDP to target risk hotspots across different business units.

A **shared corporate methodology** ensures consistency across units and alignment with the company's broader risk framework and TCFD recommendations.

Physical risks		*Business Activities*			
		Hydro Generation	**Wind & Solar Generation**	**Transmission/ Distribution**	**Client Solutions**
Chronic	Temperature increase			Brazil	
	Sea level rise	Portugal, Spain		Iberia	Iberia
	Water availability	Iberia			
	Wind availability		EDPR		
Acute extreme events	Hot days	Iberia	EDPR	Iberia	Iberia
	Cold days		EDPR (mainly USA)	Spain	Iberia
	Storms (inc. wind and rain)	Iberia	EDPR (mainly USA)	Iberia + Brazil	Iberia
	Wildfires	Iberia	EDPR (mainly USA)	Portugal	Iberia

High level risk, followed at corporate level and with need of mitigation measures being planned and implemented at business unit level

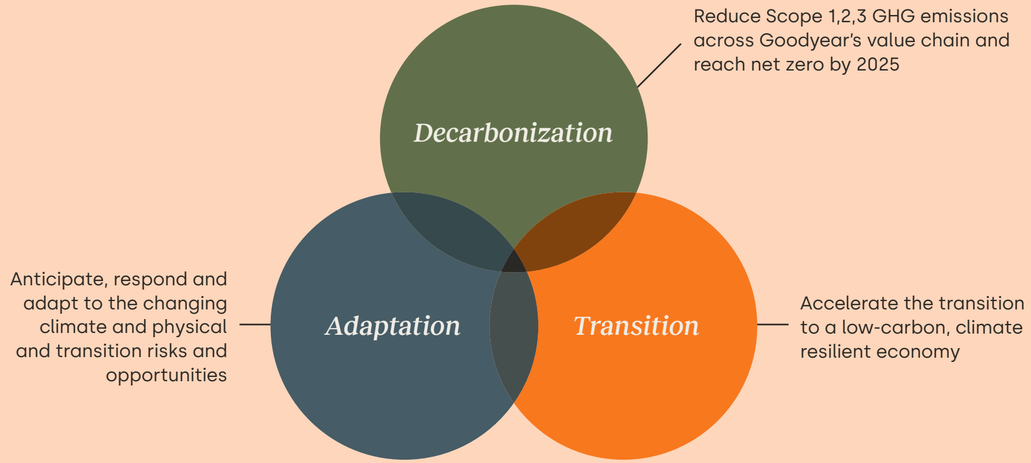
Low level risk, being followed and revised periodically at business unit level

Exposed to risk, but without significant quantification

Adaptation fully-integrated into transition plan

Goodyear embeds adaptation directly into its climate transition plan, treating it as a core component of its broader sustainability strategy.[40] The plan is structured around three pillars—decarbonization, adaptation, and transition—and is aligned with the Transition Plan Taskforce (TPT) Disclosure Framework.

Adaptation actions focus on building climate resilience across operations and the value chain. Goodyear has integrated climate risk assessments, scenario analysis, and integrating physical risk considerations into capital planning and R&D. Goodyear also explores new materials and technologies to enhance product durability under changing climate conditions, ensuring long-term business continuity and customer value.



Box 8: Following a principles-based structure in an adaptation plan

Business Adaptation Solutions

Infrastructural / Physical Adaptation	*Technological Adaptation*	*Nature-based Adaptation*	*Behavioral & Workforce Adaptation*	*Financial Adaptation*	*Value Chain Adaptation*	*Informational Adaptation*	*Product Portfolio Adaptation*
Protect business sites and assets and ensure operational continuity	Enhance operational resilience through innovation	Provide long-term protection while improving biodiversity and providing ecosystem service	Adjust employee-related policies to boost workforce resilience and build in-house adaptation skills	Help businesses manage financial risk and improve investment planning	Ensure resilience in the value chain to retain competitive advantage	Improve business foresight to enable proactive adaptation measures	Adjust the core business model or product portfolio to reduce risk exposure

Design solutions and investment roadmap

Business Adaptation Plan Disclosure Elements

Ambition

1. Foundations

- 1.1 Goals and priorities
- 1.2 Business model and value chain
- 1.3 Key assumptions and external factors

Action

2. Implementation strategy

- 2.1 Business operations
- 2.2 Products and services
- 2.3 Policies and conditions
- 2.4 Financial planning

3. Engagement strategy

- 3.1 Engagement with value chain
- 3.2 Engagement with industry
- 3.3 Engagement with government, public sector, communities & civil society

Accountability

4. Metrics & targets

- 4.1 Governance, business and operational metrics and targets
- 4.2 Financial metrics and targets
- 4.3 GHG metrics and targets
- 4.4 Carbon credits

5. Governance

- 5.1 Board oversight and reporting
- 5.2 Management roles, responsibility and accountability
- 5.3 Culture
- 5.4 Incentives and remuneration
- 5.5 Skills, competencies and training

Relevant for adaptation planning | Not relevant

4.3 Integrating adaptation planning with existing processes

Whilst it is possible for business adaptation planning to be carried out as a standalone process (e.g. at a site level), to be implemented effectively, adaptation planning **must be embedded across the entirety of the business.** Effective adaptation planning requires embedding adaptation solutions, capabilities, tools, and systems into the business's overarching strategies, governance, and day-to-day processes so the process becomes part of business as usual. This integration process needs to be designed from the start of adaptation planning, not only when an organization reaches the implementation phase.

Integration is not merely about adding the Business Adaptation Plan to a list of initiatives; it is about aligning with existing plans, updating strategies to address gaps, and embedding adaptation considerations into ongoing and future processes. This ensures the business is set up to meet its adaptation goals in a holistic manner, while avoiding duplication of efforts and optimizing resources.

Adaptation is cross-cutting by nature, and it is therefore likely that business adaptation planning efforts will impact and intersect with many internal and external processes (see Figure 15). Businesses may use this integration exercise as an opportunity to evaluate the resilience of existing processes and activities and to streamline processes to avoid duplication of efforts between strategies.

Figure 15: Adaptation planning activities should be integrated into internal and external processes.

Value Chain

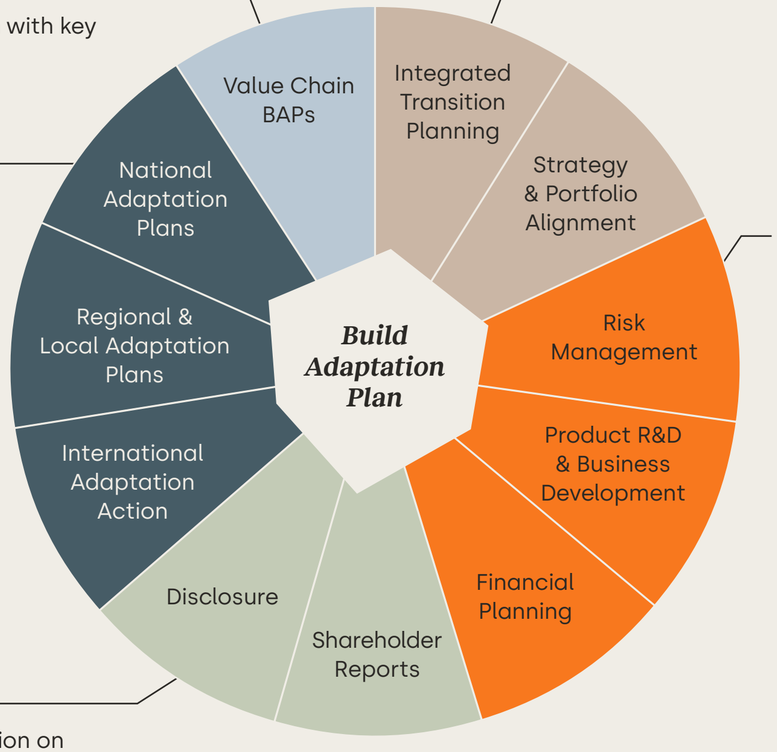
- → Consider the **impact of the BAP on procurement strategy.**
- → Explore alignment of BAPs within the value chain and **opportunities to co-invest.**
- → Share a summary adaptation plan with key suppliers and customers.

Public Sector & Communities

- → **International Adaptation Action** – consider the likely impacts of multilateral policy processes (e.g. COPs) on the BAP.
- → **National Adaptation Plans (NAPs)** – Ensure alignment with any NAP requirements in geographies where a business operates.
- → **Regional / Local Adaptation Plans** – Consider alignment with local APs and engage in **locally-led community adaptation** initiatives.

Reporting & Disclosure

- → **Disclosure** – Incorporate information on physical risk management actions from the BAP into any national and international mandatory reporting exercises.
- → **Shareholder Reports** – Include relevant details from BAPs in annual shareholder reports.



Public Sector & Communities

- → **Planning** – Integrate the BAP considerations into the organization's climate transition plan and other relevant sustainability plans.
- → **Strategy** – align business strategy, governance and portfolio with BAP recommendations.

Operations

- → **Risk Management** – Update existing risk management and business continuity planning processes to consider adaptation planning.
- → **Product R&D and Business Development** – communicate any new opportunities identified in the BAP to R&D and Business Development teams.
- → **Financial Planning** – create a business case for adaptation options identified in the BAP and secure financing.
- → Consider if any updates are needed to **HR** (e.g. workforce policies or programs) or **Legal** (e.g. contracting and liabilities).

4.4 Piloting adaptation solutions

Piloting adaptation solutions before full-scale implementation allows businesses to test feasibility, refine approaches, and identify and minimize unforeseen risks of maladaptation. By **trialing solutions in controlled settings,** companies can gather data on effectiveness, optimize integration, and identify potential challenges before committing significant resources. Pilots should follow an iterative approach, allowing businesses to refine, scale, or discontinue solutions based on performance.

Selecting pilot locations strategically is essential. Businesses should prioritize sites that face relevant risks, align with operational priorities, and have staff willing to participate in the process. **Engaging employees** from the outset fosters enthusiasm and encourages valuable feedback, as those directly affected by the solution can provide critical insights into its real-world impact. Creating engagement opportunities, showcasing pilot successes, and offering incentives for participation can further enhance buy-in.

Allocating a **contingency fund** to pilots can enable the business to manage unforeseen obstacles and requirements that may arise in the implementation. For example, additional risk and opportunity assessments, feasibility studies or legal costs may be required before solutions can be implemented as part of the pilot.

Case Study: Strategic climate adaptation in the beverage industry – Diageo's risk management initiative

DIAGEO

Diageo has embedded climate risk into site-level planning to drive water and agricultural resilience

Risk assessment: Diageo conducted a comprehensive climate risk assessment across over 250 of their owned and key third-party operator's sites to assess the financial impact of physical climate risks on their sites and supply chain.

Pilot focus: From this water stewardship and agricultural resilience were prioritized as focus areas.

Initial Pilot Sites: Adaptation plans were developed for the most material sites based on financial assessments of top physical risks, focusing on actions with the highest potential to reduce net risk.

Strategic Adaptation Programs outcomes & results:

→ Targeting a 30% improvement in water efficiency and 40% in water-stressed sites.
→ Replenishment projects initiated to replenish more water than used in water-stressed areas.
→ Collective Action programs in priority water basins to improve water accessibility and quality.
→ Trials of regenerative agriculture in Scotland, Ireland, and Mexico; and drought-resistant crops in Africa.

Site Level Plans outcomes & results:

→ Developed risk registers with adaptation actions for 39 high-risk or material sites
→ Climate risk is incorporated in site business continuity plans, informed by climate risk assessments
→ At two pilot sites, detailed financial assessments of adaptation solutions of the top three risks per site were conducted – provided recommendations on the greatest potential to reduce net risk.
→ This piloted approach is planned to guide an expansion of the approach to more sites.

Source: Diageo[43,44,45]

Relevant activities for adaptation planning

→ Climate risk assessment
→ Quantification
→ Prioritization of adaptation actions

Approximate timing of action

→ Activities conducted over four years, with adaptation implementation managed concurrently to address known risks without delay.

Key stakeholders involved

→ **Internal Governance:** Overseen by a cross-functional Climate and Nature Risk Executive Steering Group, including top executives (President of Supply, President of Corporate Relations, Chief Legal Officer, CFO).
→ **Regular updates provided to other Executive-level sponsors** (Chief People Officer, Chief Marketing Officer).
→ **Operational Involvement:** Site leaders, procurement, and R&D teams ensured adaptation plans were developed and integrated into business continuity planning.

Case Study: Transformative Pilot for Sustainable Rice Cultivation – Direct Seeded Rice in India

Bayer is piloting climate-smart agriculture to build resilience across supply chains and landscapes

Pilot Focus: Bayer Crop Science Division has piloted an adaptation solution to improve carbon insetting in rice cultivation by transitioning to mechanized dry direct seeded rice.

Initial Pilot Area: Northern states of India chosen due to significant rice cropping and groundwater depletion.

Co-benefits: This method benefits both adaptation and mitigation measures and can reduce methane emissions by approximately 45% and at the same time reduce the amount of water by approximately 40%.

Pilot Team & Partnerships: Dedicated team mapped crop journey; partnerships formed with input providers and governmental extension services to demonstrate the new system.

Pilot Scale & Expansion: Initial study covered 800 ha, providing insights for further scaling; by the third year, pilot expanded to approximately 20,000 ha.

Collaborative Research: Commissioned a study with the International Rice Research Institute (IRRI) to evaluate regenerative agricultural outcomes and benefits, including water savings, soil health, and socio-economic impacts.

Future Development: Insights from the pilot guide supported tailored strategies for expansion to other regions.

Source: Bayer[46,47,48]

Relevant activities for adaptation planning
- → Adaptation goal setting
- → Integration into business strategy
- → Monitoring and evaluation

Approximate timing of action
- → Ongoing

Key stakeholders involved
- → Global Strategy and Sustainability
- → Regional / Country commercial operations
- → Global R&D
- → External: Input providers, machinery & value chain partners, Government and Institutes

05. Monitoring and *Evaluation*

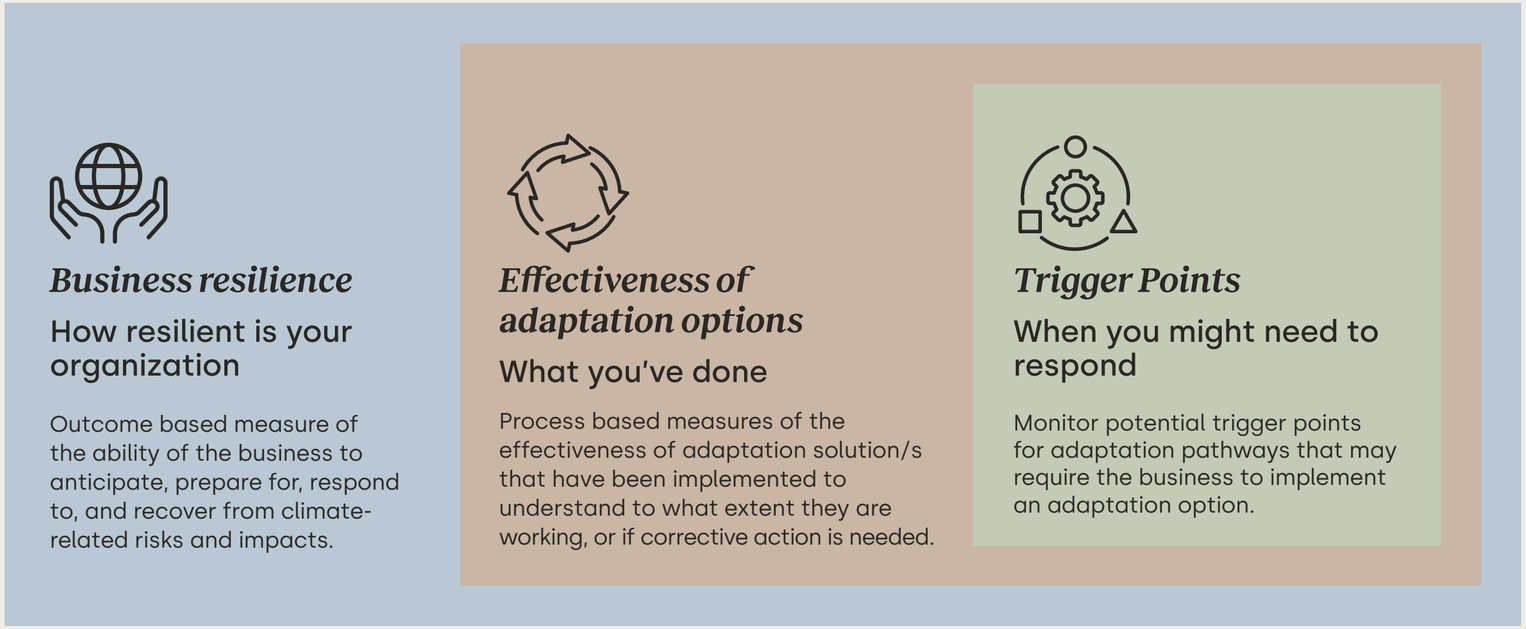
Establish a monitoring and evaluation framework that the business can use to assess, track, and learn from the effectiveness of adaptation solutions that have been implemented, monitor areas of uncertainty for potential trigger points, and understand the overall resilience of the business in line with adaptation goals.

5.1 Creating a monitoring and evaluation framework

A monitoring and evaluation (M&E) framework is a key system for ensuring continuous improvement in a business adaptation planning journey. The M&E framework should be **closely linked to the business's adaptation planning goals** to enable the organization to track progress of its adaptation solutions effectively and to provide information needed to adjust course where needed as the plan is implemented. Within the adaptation M&E framework, there are three main areas: **business resilience, effectiveness of adaptation options, and trigger points** for which a business should begin to develop associated metrics and monitoring tools (see Figure 16).

Developing an effective adaptation M&E framework is an iterative process, **requiring significant time and resources**. The framework should be **integrated into day-to-day business operations** and existing M&E frameworks (e.g. ERM). An adaptation M&E framework must be designed to be flexible enough to make sense of highly uncertain data and outcomes that are challenging to quantify (e.g. measuring the effectiveness of solutions, determining cost savings from avoided losses or cost savings). The business will need to **continuously adjust** and refine the monitoring approach to incorporate new business intelligence and improved metrics over time.

Figure 16: Three areas for a business to monitor across its adaptation planning adapted from Boltz, et al.[49]



5.2 Designing adaptation metrics

The **quality of metrics** is the critical factor that will determine the effectiveness of the overall adaptation M&E framework. It is important to understand the key considerations for developing adaptation metrics to ensure they are fit for purpose and can be integrated easily into the overall business M&E processes (Figure 17).

Establishing metrics for adaptation planning requires a dual approach: **developing overarching metrics** that can be applied consistently across all functions, processes, and sites within a business, and creating more detailed **metrics** that allow for a deeper, more granular evaluation of specific processes. **Collaboration is fundamental to this effort,** particularly at the sector level, as it ensures alignment of metrics with shared benchmarks and goals, fostering transparency and enabling comparison between companies. Such transparency is not only a driver for improved adaptation planning but also has broader implications for access to capital and insurance, as financiers and insurers increasingly look for standardized data to assess risk and resilience effectively.

Developing granular metrics is also an opportunity for businesses to **examine how their adaptation planning complements and strengthens other initiatives,** such as mitigation, nature-positive goals, and efforts to enhance social impact. This ensures a unified and streamlined approach across all domains. Box 9 illustrates this, using the example of regenerative agriculture metrics development process—a collaborative effort between WBCSD and over 1,100 businesses.[50] Not only can these metrics inform an adaptation M&E framework, but they also create a holistic approach to monitoring the impact of wider sustainable business transformation.

Figure 17: Considerations for developing adaptation metrics.

Metrics should be **operationalizable** at the business unit or site level, **reflecting local circumstances.** They should be **easy to track, record, interpret** and be **unambiguous.**

Metrics should provide information that is useful for measuring progress in adaptation **aligned to the business context**, ambition and targets. The key is to avoid monitoring an area for the sake of monitoring and rather support decisions to **enhance** business and value chain **resilience.**

Where possible, businesses should **leverage existing business risk and opportunity monitoring processes** to avoid duplication. While these may not be explicitly linked or framed as adaptation metrics, they likely may be able to be leveraged for this purpose.

Source: WBCSD

Box 9: Developing a monitoring approach and reporting adaptation outcomes of Regenerative Agriculture

Step 1: Scope and Goals

→ Risk assessment identified physical risks over the long term related to **sourcing of key ingredients,** resulting from climate change driving changes in growing conditions (extreme heat, precipitation) – resulting in a loss of yield, reduced security of supply

Step 2: Design Solutions

→ **Support transition to regenerative agriculture** for most impacted commodities

→ **Adaptation options:** Nature-based Adaptation and Value Chain Adaptation

→ Alongside **broader adaptation solutions** (crop diversification, engagement with policymakers and local landscape actors)

Step 3: Build and Implement Plan

→ Financing

→ Pilots to scale

→ Aligned with transition plan

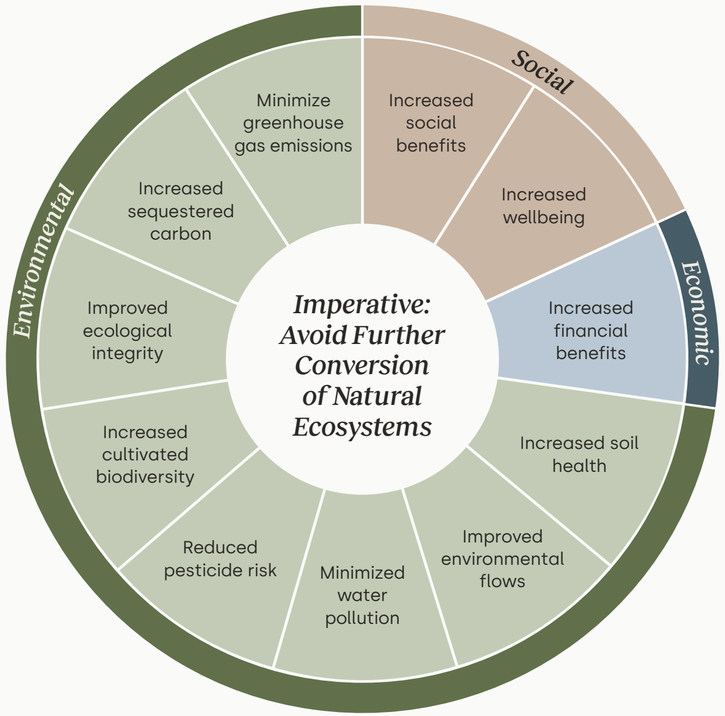
→ Integrate with existing supplier engagement plan

Step 4: Monitor & Report

→ To accelerate the transition into resilient and regenerative agricultural models, WBCSD has worked to drive widespread **value chain alignment** on an integrated measurement architecture

→ 1,100+ businesses were engaged to align on **11 holistic metrics** to measures the outcomes of regenerative agriculture

→ These metrics provide a consistent way for businesses to **measure the resilience of agricultural production landscapes** in the face of climate related changes. Visit the website for further details of this initiative.



Outcomes	How this metric supports adaptation & resilience
Minimize greenhouse gas emissions	
Increased sequestered carbon	
Improved ecological integrity	Natural / semi-natural habitat is a signal of ecosystem stability and water regulation when climate conditions become unpredictable
Increased cultivated biodiversity	Cultivated biodiversity helps crops withstand, adapt to, and recover from stressors like pests, diseases, and extreme weather
Reduced pesticide risk	
Minimized water pollution	
Improved environmental flows	
Increased soil health	Soil health is a key indicator for agricultural systems ability to adapt to the impacts of climate change (e.g. through water and flood retention, drought resistance, erosion control)
Increased financial benefits	Measures financial resilience of farmers and producers
Increased social benefits	
Increased wellbeing	

When developing overarching metrics during the early stages of implementing adaptation solutions, it may not be possible for businesses to track outcomes of adaptation activities. In these cases, **tracking process-related steps** for adaptation planning (covered in this guidance) can provide a starting point. As the business progresses over time, it can move toward tracking business resilience, overall effectiveness of the adaptation solutions, and defining trigger points for future adaptation investments may be required (See Figure 18).

Figure 18: Example of the metrics a business can build out over time as it matures on its adaptation planning journey.

Getting started: establish metrics for adaptation planning and strategy

Track the progress of the adaptation planning and strategy development and monitor roll out across the business.

Example metrics:

- → Assessed and prioritized risks and opportunities across all business units.
- → Established adaptation options library
- → Set adaptation goal
- → Published adaptation plan
- → #Staff trained in disaster response

Doing the basics: track impacts of physical risks and opportunities across the business

Monitor major trends in acute and chronic physical risks over time and identify high-level business impacts.

Example metrics:

- → Climate-related events (#flood events, #wildfire events, #heatwaves etc.)
- → Financial impact / cost of inaction ($ losses per event or hazard)
- → Downtime (# days)
- → Health & Safety (# incidents or injuries)

Maturing understanding: set detailed metrics to monitor business resilience

Develop a detailed set of metrics to understand the business's adaptive capacity.

Example metrics:

- → Operational performance (production uptime #days; supply chain improvements #days of downtime).
- → Employee health and safety (#injury rate; production rate; employee satisfaction

Established approach: monitor effectiveness of adaptation solutions

Understand impacts of the adaptation solutions that have been implemented and demonstrate ROI (financial and wider benefits).

Example metrics:

- → Cost avoidance (reduction in business downtime; reduction in damage to infrastructure, reduction in lost sales)
- → Financial costs for implementing: Financial savings from avoided events
- → Financial costs for implementing: Broader benefits from implemented activities
- → Improved employee health and safety (#reduced injury)
- → Improved reputation (#sales)

Advanced framework: identify trigger points for future intervention

Develop a nuanced understanding of trends in established metrics to identify trigger points for implementing future adaptation solutions.

Example metrics:

- → Assets evaluated for resilience to anticipated impacts and stressors
- → Adaptation pathways developed

5.3 Evaluating the overall resilience of the business

One common challenge that businesses face with designing adaptation metrics is to determine the right level of **granularity**. With adaptation metrics often being site or product level specific, these don't always scale or can lose granularity when consolidated into group level metrics. Businesses have the additional challenge of understanding how individual actions are contributing to the resilience of the whole organization. In this instance, the business can use a measure such as a **resilience score** to understand the overall resilience of the organization, while using measures such as effectiveness metrics to understand site level resilience.

A **resilience score** can be a helpful tool to help businesses understand their overall resilience. Box 10 provides an example of a resilience scoring system that could be performed at either the business unit or enterprise level of the organization.

While the resilience score is a useful tool, it is **not essential** for businesses in the early phases of adaptation planning. A resilience score is recommended for organizations that have already implemented adaptation solutions across multiple parts of the business and seek to track their cumulative impact or report resilience progress in an aggregated way.

Businesses using this resilience scoring system should consider the following points to calculate a credible resilience score and ultimately build business resilience:

- → Business areas and functions where adaptation planning solutions have been implemented.
- → The success or failure of solutions that have been implemented.
- → Business areas and functions where adaptation solutions have not been implemented and why not.
- → Learnings from implemented solutions and unforeseen impacts identified.
- → Adjustments needed to overall adaptation planning process to build business resilience.

Box 10: Establishing a resilience scoring system to monitor overall resilience across the business

This scoring system suggests four minimum categories across the business that should be considered to assess resilience. Businesses may elect to add additional categories should they feel they are needed. The resilience score identifies the key indicators a business considers important for monitoring the rollout of adaptation solutions across different processes or sites and may be linked to specific metrics developed throughout this process. Where businesses already have an internal scoring mechanism for other rating processes, they can align this to the resilience scoring system and decide on a weighting of the scores that aligns with their business strategy and adaptation goals.

Minimum recommended categories

1 Business Category	2 Indicator	3 Score	4 Weight	5 Weighted Score
Identify categories within the business that affect the overall business resilience	Identify specific indicators for each of the categories that can be rated	Score each of the indicators based on an assessment of how well or poorly the business is performing in these areas e.g. 1 = Very low, 5 = Very High	Assign a weighting to each of the indicators based on their relevant importance to the business	Apply the weighting to the score to calculate the weighted score per indicator
Infrastructure Physical buildings, transportation networks, and utilities needed for business	Condition of critical infrastructure + Maintenance schedules	4 + 3	X 0.30 =	2.1
Operations Areas that affect the ability of the business to continue its operations during disruptions	Effectiveness of business continuity plans + Recovery times	3 + 1	X 0.25 =	1
Workforce The preparedness and readiness of employees to respond to climate impacts	Health and safety measures + Employee training programs	4 + 5	X 0.25 =	2.25
Value chain The ability to manage risks associated with suppliers, logistics and communities	Supplier climate risk assessment scores + Community resilience scores	2 + 2	X 0.20 =	0.8

Illustrative examples

Source: WBCSD

5.4 Monitoring the effectiveness of implemented adaptation solutions

Measuring the effectiveness of an adaptation solution that has been implemented allows the business to understand whether it has moved closer to its related adaptation goal. However, measuring the effectiveness of an adaptation solution can be complex, not only because of the **difficulty of measuring an impact** that may not have occurred *because of the action,* but particularly related to the difficulty in measuring how much of the reduction or change in that impact can be *attributed to the adaptation solution.*

To measure the effectiveness of adaptation solutions, the organization will need to develop specific metrics to measure risk reduction, avoided risk, and adaptation opportunities. Businesses will also need to consider the Return on Investment (ROI), illustrated in Box 11.

Box 11: The Return on Investment (ROI) for adaptation solutions

Compared to mitigation, practices to estimate the ROI for adaptation efforts can be more challenging. This is often because of:

→ The costs of implementing most measures happen in the **short term** while the benefits often arise in the **medium-long term** and are discounted, making them hard to justify.

→ The **Uncertain nature** of climate impacts and therefore uncertainty in actual risks faced.

→ Difficulty in developing the projects and quantifying indirect and non-financial benefits due to **high information needs.**

Calculating the ROI in traditional terms, especially through calculations such as Net Present Value (NPV) or Internal Rate of Return (IRR) will often lead to a **negative ROI.** Where possible, companies may begin to explore adjustments to the NPV calculation method and accounting for wider co-benefits of adaptation solutions.

While the challenge with ROI and IRR remains, there is nevertheless some initial guidance provided by the IIGCC and its **Physical Climate Risk Assessment Methodology (PCRAM)** on how to estimate the IRR from adaptation investments.[51] Their approach involves:

→ **Baseline IRR:** Calculated without adaptation measures, assuming current or business-as-usual climate conditions.

→ **Adapted IRR:** Incorporates the costs of adaptation and the benefits of avoided losses and improved performance under future climate scenarios.

By comparing these two, investors can see whether adaptation enhances or preserves the IRR of a project. In many cases, even if upfront costs are higher, the adapted IRR tends to be more stable and less volatile, especially under high-risk climate scenario.

Source: WBCSD

Monitor & Evaluate
continued

In tracking the effectiveness of adaptation solutions that have been implemented, businesses can benefit from **sharing learnings** across the business for areas where certain adaptation solutions were effective and where they were not. This can assist future financial planning within the business, potentially avoiding the need to pilot the same solution across different areas of the business. Criteria that can be useful to other parts of the business include:

→ The **reason** for selecting the solution that was implemented.

→ The **geographic context,** including the location and climate conditions.

→ **Stakeholders** involved in the process and if applicable, stakeholders that should have been involved.

→ Short- and long-term **impacts,** both positive and negative and including maladaptive impacts.

→ **Lessons** learned, including successes, failures and recommendations.[52]

To support a business in developing its process for measuring the effectiveness of its solutions the points below should be considered to assess if the M&E framework incorporates essential minimum requirements relating to the effectiveness of the implementation of the adaptation solutions:

→ Baseline expectation of losses to selected business area without the implementation of adaptation solution.

→ Resultant change from baseline on the resultant business area that can be ascribed to the adaptation solution.

→ Cost of implementation vs return/benefit.

→ Lessons learned from implementation.

→ Maladaptive impacts identified.

5.5 Identifying trigger points

If businesses have developed adaptation pathways, they should identify, monitor, and evaluate potential **trigger points** to understand adaptation investment needs over time. As illustrated in Figure 19, trigger points can be both external and internal to the business which may trigger an inevitable adjustment in the overall adaptation planning approach or the individual adaptation solution.

These internal and external trigger points can appear through different stressors and drivers. Figure 20 provides examples of potential categories and example trigger points that could require a review of the business adaptation planning approach.

Figure 19: Internal and external trigger points for a business.

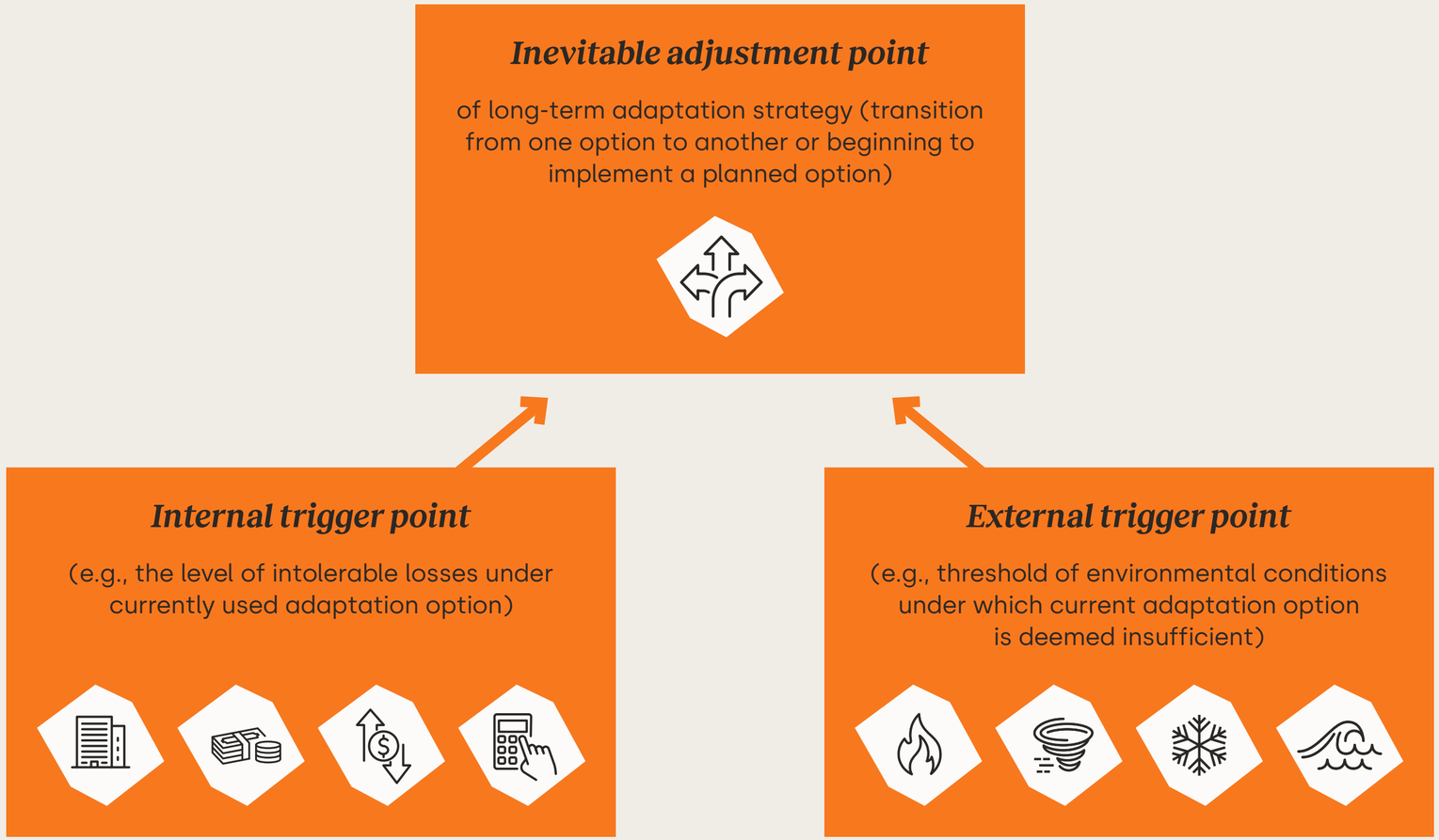


Figure 20: Examples of the likely categories across which trigger points may be experienced and need to be monitored.

Internal drivers

Business structure

Change in the business strategy, products and services or the company structure.

e.g. sale/acquisition of part of the business resulting in a change in operating structure.

Physical assets

Changes to physical infrastructure supporting business activities.

e.g. increase in pollution control dam overflows due to increase in flooding events.

Employees

Changes in employee behavior, effectiveness.

e.g. drop in employee productivity due to weather disruptions such as increased heat days.

Supply chain

Changes to the company's procurement strategy or external suppliers impacts.

e.g. Decision to procure from a new region with unconsidered climate risks.

External drivers

Climate & nature

Changes in frequency or severity of chronic and acute climate events and associate natural resources.

e.g. reduced rainfall (chronic) and increased wildfires (acute)

Regulation

Changes to or new regulations in jurisdictions the organization operates.

e.g. National Adaptation Plan requires businesses in a country to adopt certain adaptation activities

Technology

Changes in technologies that can support adaptation efforts.

e.g. new technologies entering the market or changes in pricing for existing technologies making them more attractive.

Finance & insurance

Changes in access to finance or insurance which may reduce risk or unlock new solutions.

e.g. new financial solution enters the market that supports investment in adaptation solution.

Information

New or updated studies, datasets or information.

e.g. a new global climate study that changes the understanding of how climate risks will affect the business.

Communities

Changes to local communities and social structures, which can influence business operations and reputation.

e.g. migration of workforce to avoid climate impacts.

Customers

Change in customer needs or preferences requiring a change to adaptation planning.

e.g. Key customer requires products sourced from a new region with different climate risks.

Source: WBCSD

Monitor & Evaluate
continued

At first glance, Figure 20 can be overwhelming when considering the resources needed to monitor the potential trigger points in these categories. However, many businesses will likely already be monitoring a number of these trigger points throughout different areas of the business, although they may not be overtly identified as relevant for adaptation and resilience efforts yet. For example, businesses may already be monitoring for changes in customer needs or preferences to adapt their product offering to meet these needs. The key then is not to create a parallel monitoring process, but to **harness the existing monitoring process** where possible. The Central Taskforce should ensure that operational teams have access to specific training and information to understand the potential physical risks and triggers to watch for and are able to feed that information back to the risk and sustainability teams who can assess the potential need to alter the existing adaptation plan.

Where no existing monitoring processes are in place, it is important to assign accountability for monitoring trigger points across the organization. **Risk owners** (who led the development of adaptation solutions) may naturally be assigned to monitor trigger points over time where appropriate.

A business can use the checklist below to ensure it has considered certain minimum requirements concerning trigger points in its M&E system:

→ Identification of potential external and internal trigger points.

→ Where appliable, baseline or criteria to be met or exceeded to consider a trigger point being triggered or crossed.

→ Business areas that are already monitoring these / can build this monitoring into their monitoring programs.

→ Guidance on steps to follow should a trigger point be identified or crossed.

06. Call to Action: *Risks are Opportunities in Disguise*

Everyday new studies are released that more accurately understand and quantify the potential impact of a changing climate on our environment, businesses and ultimately our societies. The message is clear – urgent action is needed to manage the risks businesses are already facing and will continue to face.

While this may seem daunting, embedding adaptation planning within an organization is not merely about preserving the status quo of the business, as not acting will erode business value, but rather about unlocking new and improved behaviors, ways of work, products and services that can ultimately create a competitive advantage and a more profitable company. As businesses are a key pillar of the global economy, ensuring they can thrive, ultimately ensures that the economies and communities in which they operate can thrive.

The adaptation planning guidance presented in this document is intended to support businesses in exactly this, leveraging existing processes and aligning internal resources to avoid duplication and unnecessary resource use and support long-term planning in uncertain circumstances to drive businesses forward in making the most sustainable choices, for themselves and those they impact.

While there is an urgency to act now, businesses face a myriad of challenges including cost pressures, uncertain operating environments, and changing customer demands. Within this context it is difficult and unrealistic for a business to commit to developing a full adaptation plan today, across all its operations, in a way that will ensure its sustainability in the future. Businesses should recognize this and approach their adaptation planning journey in a phased approach: learning and monitoring when there are high levels of uncertainty, testing, piloting and iterating when resources allow, and acting and implementing where the risks and opportunities are the highest.

Ultimately, collaboration and relationship building are key. A successful adaptation planning process for a business will not be the result of a single individual team. It will require buy-in and action across the business and value chain—from encouraging senior level support through appropriate remuneration and incentive targets, encouraging collaboration across the different departments, regions or business units to solve as a whole, and working with local communities, employees, suppliers and stakeholders to understand the on the ground impacts, avoid maladaptation, and share learning and successes across the organization as well as with external stakeholders.

In doing this, we believe that businesses will be able to enhance their existing risk management processes, unlock the strategic value a changing climate will bring in aligning with their broader sustainability strategies, and ultimately contribute to a more resilient society, where jobs are protected, employees are kept safe, and the economy can thrive.

Key enablers that are needed to unlock greater business resilience – and ultimately broader economic and community resilience:

1. **More business uptake of adaptation planning** – only 35% of businesses have adaptation plans, and of those plans, very few are approaching adaptation systemically across the whole business to increase baseline resilience or consider the opportunities.[53] We wrote this guidance to address this, to provide a benchmark for how to establish the processes to generate these plans and encourage greater uptake of adaptation planning by businesses.

2. **Greater integration of adaptation planning into transition plans** – a holistic climate response considers both mitigation and adaptation. Transition plans need to include more consideration for adaptation. This is because businesses need to consider both how they transition to manage their impact and how they transition to operate in a world with increased physical risks. There also needs to be greater capability building to enable this – this guidance is intended to be a start to this but alignment, collaboration, and transparency among adaptation ecosystem players are key to catalyzing this.

3. **Financial institutions & insurers action** – adaptation planning is risky by its nature but the opportunities for business are significant. Financial institutions need to price in adaptation actions to reduce some of this risk and incentivize greater uptake of adaptation planning by business. This should not be done from a purely altruistic perspective, but because of the business opportunities in new products and services, as well as the threat many of their own customers' businesses face, which will ultimately affect their bottom lines. Providing lower premiums and greater access to capital for businesses implementing adaptation solutions, strengthens the business case.

4. **Aligning Business Adaptation Plans with National Adaptation Plans** – Business Adaptation Plans provide an avenue for business to communicate to governments what they need to build resilient businesses that support a resilient economy. At the same time, businesses cannot develop their plans in isolation of NAPs. To aid this alignment, NAPs must be improved to provide a benchmark for business decision-making and action. NAPs should be fully costed, provide a consistent approach across countries, and demonstrate a clear understanding of the expected role of business.

5. **Develop more nuanced adaptation metrics and monitoring** – every adaptation solution is unique to some extent – involving different risks, geographies, businesses, stakeholders. However, to track success—within and between businesses—more nuanced adaptation metrics are needed, particularly at a sector level, and aligned with the UAE- Belém work program on indicators.[54]

Annexes

Annex 1: Glossary of Terms[55]

1 ***Acute physical risk*** – physical risks that are event-driven, including increased severity of extreme weather events, such as cyclones, hurricanes, or floods (TCFD).

2 ***Adaptation*** – The process of adjustment to actual or expected climate change and its effects in order to moderate harm or exploit beneficial opportunities (IPCC).

3 ***Adaptation option*** – A specific strategy or measure that can be implemented to reduce the risks associated with climate change or to exploit potential benefits (IPCC).

4 ***Adaptation pathway*** – A series of adaptation choices involving trade-offs between short-term and long-term goals and values. These are processes of deliberation to identify solutions that are meaningful to people in the context of their daily lives and to avoid potential maladaptation (IPCC).

5 ***Adaptation planning*** – The strategic process of identifying and addressing immediate and long-term priorities for building resilience to climate change. Adaptation planning includes the financing, design, and implementation of adaptation solutions to address climate impacts and build resilience.

6 ***Adaptation solution*** – Practical actions, technologies, or policies that help communities, ecosystems, or economies adjust to climate impacts. These can include infrastructure changes, policy reforms, or nature-based approaches. (UNEP).

7 ***Business Adaptation Plan*** – An actionable plan to navigate the uncertainty of emerging climate impacts by changing business models, processes and practices to reduce risk and unlock opportunities associated with climate change across a company's value chain. This may be integrated into a Transition Plan.

8 ***Business case for adaptation planning*** – A justification for investing in adaptation, typically highlighting avoided costs, risk reduction, and long-term resilience benefits. It often includes cost-benefit analysis and alignment with corporate risk management.

9 ***Baseline*** – The state against which change is measured (IPCC).

10 ***Co-benefits*** – A positive effect that a policy or measure aimed at one objective has on another objective, thereby increasing the total benefit to society or the environment. Co-benefits are also referred to as ancillary benefits (IPCC).

11 ***Chronic physical risk*** – longer-term shifts in climate patterns (e.g., sustained higher temperatures) that may cause sea level rise or chronic heat waves (TCFD).

12 ***Collective resilience*** – The capacity of a group—such as a community, sector, or network of businesses—to absorb, recover from, and adapt to climate-related shocks and stresses together.

13 ***Exposure*** – The presence of people, livelihoods, species or ecosystems, environmental functions, services, and resources, infrastructure, or economic, social, or cultural assets in places and settings that could be adversely affected (IPCC).

14 ***Hazard*** – The potential occurrence of a natural or human-induced physical event or trend that may cause a loss of life, injury, or other health impacts, as well as damage and loss to property, infrastructure, livelihoods, service provision, ecosystems and environmental resources (IPCC).

15 ***Impacts*** – The consequences of realized risks on natural and human systems where risks result from the interactions of climate-related hazards (including extreme weather/climate events), exposure, and vulnerability. Impacts generally refer to effects on lives, livelihoods, health and well-being, ecosystems and species, economic, social and cultural assets, services (including ecosystem services), and infrastructure. Impacts may be referred to as consequences or outcomes and can be adverse or beneficial (IPCC).

16 ***Likelihood*** – The chance of a specific outcome occurring, where this might be estimated probabilistically (IPCC).

17 ***Maladaptation*** – Actions that may lead to increased risk of adverse climate-related outcomes, including via increased vulnerability to climate change, diminished welfare, or increased greenhouse gas (GHG) emissions, now or in the future. Most often, maladaptation is an unintended consequence (IPCC).

18 ***Mitigation (of climate change)*** – A human intervention to reduce the sources or enhance the sinks of greenhouse gases (IPCC).

19 ***Multi-criteria analysis*** – Integrates different decision parameters and values without assigning monetary values to all parameters. Multi-criteria analysis can combine quantitative and qualitative information. Also referred to as multi-attribute analysis (IPCC).

20 ***National Adaptation Plan*** – A process established under the UNFCCC to help countries identify medium- and long-term adaptation needs and develop strategies to address them (UNFCCC).

21 ***Nature-based Solution*** – Actions to protect, sustainably manage, and restore natural or modified ecosystems that address societal challenges effectively and adaptively, while providing human well-being and biodiversity benefits (IUCN).

22 ***Off-radar risks*** – Climate-related risks that are not currently identified or prioritized in risk assessments but may become apparent or significant over time.

23 ***Residual risk*** – The risk related to climate change impacts that remains following adaptation and mitigation efforts. Adaptation actions can redistribute risk and impacts, with increased risk and impacts in some areas or populations, and decreased risk and impacts in others (IPCC).

24 ***Resilience*** – The capacity of social, economic and environmental systems to cope with a hazardous event or trend or disturbance, responding or reorganizing in ways that maintain their essential function, identity and structure. Resilience is a positive attribute when it maintains capacity for adaptation, learning and/or transformation (IPCC).

25 ***Resilience Strategy*** – A resilience strategy refers to a set of actions, plans, and measures put in place to enhance the resilience of individuals, organizations, communities, or systems in the face of challenges, disruptions, or adverse events. A Business Adaptation Plan is an essential part of an organization's resilience strategy (focused on climate change impacts).

26 ***Risk*** – In the context of climate impacts, the term is often used to refer to the potential for adverse consequences of a climate-related hazard, or of adaptation or mitigation responses to such a hazard. Risk results from the interaction of vulnerability (of the affected system), its exposure over time (to the hazard), as well as the (climate-related) hazard and the likelihood of its occurrence (IPCC).

27 ***Risk assessment*** – The qualitative and/or quantitative scientific estimation of risks (IPCC).

28 ***Risk management*** – Plans, actions, strategies or policies to reduce the likelihood and/or magnitude of adverse potential consequences, based on assessed or perceived risks (IPCC).

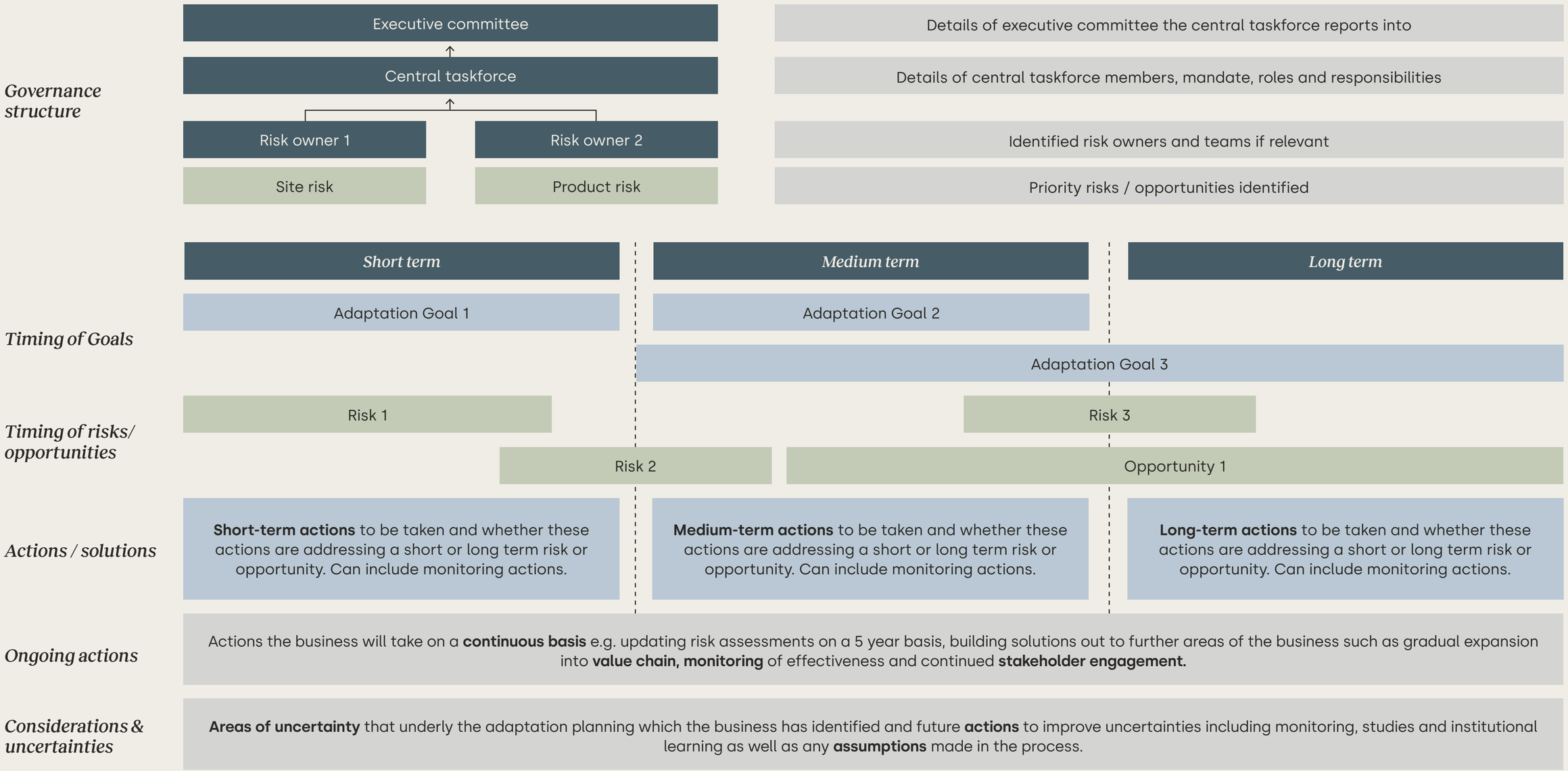
29 ***Systemic resilience*** – The ability of interconnected systems (e.g., supply chains, infrastructure networks) to withstand and adapt to climate-related disruptions (OECD).

30 ***Transition Plan*** – A climate-related transition plan is an aspect of an entity's overall strategy that lays out the entity's targets, actions or resources for its transition towards a lower-carbon economy, including actions such as reducing its greenhouse gas emissions (IFRS).

31 ***Trigger point*** – A predefined threshold or condition that, when reached, prompts a specific adaptation action or policy response. Often used in adaptive management (IPCC).

32 ***Vulnerability*** – The propensity or predisposition to be adversely affected (IPCC).

Annex 2: Example Adaptation Plan on a Page



Annex 3: Additional Resources

Adaptation planning phase	*Author*	*Document*
Setting the Scope and Adaptation Goals	Center for Climate and Energy Solutions	***Principles for Corporate Climate Resilience Leadership***
	Institutional Investors Group on Climate Change (IIGCC)	***Physical Climate Risk Assessment Methodology***
	ISO	***ISO 14090:2019 Adaptation to climate change — Principles, requirements and guidelines***
	Principles for Responsible Banking	***Climate Adaptation Target Setting Guidance***
	Principles for Responsible Investment (PRI)	***Assessing physical climate risk in private markets: A technical guide***
	Task Force on Climate-Related Financial Disclosures (TCFD)	***CEO Handbook Task Force on Climate-related Financial Disclosures (TCFD) recommendations***
	WBCSD	***Applying Enterprise Risk Management to Environmental, Social and Governance-related Risks***
	WBCSD et al.	***Business Leader's Guide to Climate Adaptation and Resilience***
	World Economic Forum	***Accelerating Business Action on Climate Change Adaptation***
Designing adaptation solutions	BSR	***Exit Strategies for Dirty Assets***
	Climate Bonds Initiative	***Climate Bonds Resilience Taxonomy Methodology***
	Deltares	***Pathways Generator***
	Haasnoot et al.	***Lessons from a decade of adaptive pathways studies for climate adaptation***
	NAP Global Network	***The National Adaptation Plan (NAP) Process: Frequently Asked Questions***
	S&P Global	***Ripple Effect: How Value Chains Compound Sector Exposures to Physical Climate Risks***
	Sniffer et al.	***Climate Ready Clyde: Glasgow City Region Climate Adaptation Strategy and Action Plan*** *(Annex 4 – Multi-Criteria Analysis)*
	UNFCCC	***National Adaptation Plans***
	WBCSD	***The NbS Blueprint - Building business cases for Nature-based Solutions***
	WBCSD	*CEO Handbook on physical risk in value chains (forthcoming, 2025)*
	World Bank	***Climate Adaptation Costing in a Changing World***

Adaptation planning phase	*Author*	*Document*
Build the Plan and Implement Adaptation Solutions	Glasgow Financial Alliance for Net Zero (GFANZ)	***Recommendations and Guidance on Financial Institution Net-zero Transition Plans***
	NAP Global Network	***Engaging the Private Sector in National Adaptation Planning Processes***
	Spacey et al.	***Harnessing AI to assess corporate adaptation plans on alignment with climate adaptation and resilience goals***
	Transition Plan Taskforce (TPT)	***Building Climate-ready Transition Plans: An advisory paper from the TPT's Adaptation Working Group***
	Transition Plan Taskforce (TPT)	***Transition Plan Taskforce (TPT) Disclosure Framework***
	UNFCCC	***State of National Adaptation Action*** *(interactive tracker for National Adaptation Planning process, by country)*
	WBCSD	***Moving transition from plans to action: A transition planning primer***
Monitor and evaluate	Bolz et al.	***Developing Key Performance Indicators for Climate Change Adaptation and Resilience Planning***
	Climate Bonds Initiative	***Climate Bonds Resilience Taxonomy Methodology***
	Coalition for Disaster Resilient Infrastructure	***Global Infrastructure Resilience Index (GIRI) Measuring Risk and Resilience in Infrastructure Sectors***
	Econadapt	***The Economoics of Climate Change Adaptation (ROI methodology)***
	Institutional Investors Group on Climate Change (IIGCC)	***Physical Climate Risk Assessment Methodology (ROI case studies)***
	NAP Global Network	***Toolkit for Monitoring, Evaluation, and Learning for National Adaptation Plan Processes***
	WBCSD	***A shared vision for regenerative agriculture***

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