CENTER FOR CLIMATE AND ENERGY SOLUTIONS & SYSTEMIQ

CORPORATE CLIMATE RESILIENCE

Climate Resilience as Strategy

Scaling Corporate Action on Physical Risks from Climate Change

June 2026

SUMMARY

Physical climate risk has become a multiplier of every other disruption companies face—shaping earnings, insurability, financing costs, and competitive positioning. Yet by drawing on interviews and dialogues with over 40 organizations, we found that most companies have been unable to translate their recognition of the risks into readiness to act. While 65 percent of public companies now cite physical climate risk in their filings, only 25 percent of those acting have taken genuinely strategic measures to build climate resilience. Conversely, many companies continue to respond to physical risks and impacts event by event. The barrier is not information but the absence of shared financial language, clear ownership, and connected guidance. In this report, we call for a coordinated, practitioner-led effort to build that foundation—a navigable catalog of guidance, a maturity model, a standardized corporate climate resilience framework, and sector-specific playbooks—and we invite companies, investors, standard-setters, and expert organizations to build it with us.

C2ES

SYSTEMIQ

HIGHLIGHTS

Physical climate risk is no longer a tail risk—it is a threat multiplier that makes every disruption that companies experience harder to absorb. For instance, drought deepens supply shortages already constrained by tariffs, and wildfires or flooding compound existing economic uncertainty. Without adapting to the physical impacts from climate change, major companies globally face projected annual losses of $1.2 trillion by the 2050s.

Most companies recognize the risks but lack the organizational infrastructure to act on them at scale. Only 42 percent of companies in S&P Global's 2025 Corporate Sustainability Assessment have adaptation plans, and responsibility is fragmented across sustainability, finance, and operations leaders who rarely share a common language or reporting line.

Translating climate risk into financial terms is critical to scaling corporate action. Companies that have quantified climate exposure as operational downtime, revenue loss, and value at risk, rather than describing climate risk more generally as high, medium, or low, are better able to mobilize investment. And among those that have invested in operational resilience, 82 percent report positive financial or reputational results, including stronger internal buy-in, better insurance terms, and improved access to capital.

We need a coordinated knowledge base and the shared infrastructure to move companies across industry sectors from awareness to scaled action, starting with a navigable catalog of guidance, frameworks, and tools; a corporate climate resilience maturity model; a broadly accepted standardized corporate climate resilience framework; and sector-specific playbooks. The building blocks exist—what is missing is the architecture to connect them. We are calling on companies, investors, and standard-setters to build that foundation together.

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As a fully independent organization, C2ES is solely responsible for its positions, programs, and publications.

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A Note from Our Leaders

The corporate world is navigating a new era of compounding disruptions. Tariffs, geopolitical fragmentation, supply chain upheaval, cyber threats; these are already stretching corporate risk management to its limits.

Most companies have not yet fully reckoned with how physical climate risk runs through all these disruptions, amplifying each one and increasing risk at every turn. Drought can deepen the scarcity of a critical input already constrained by trade restrictions. A wildfire or flood can disrupt logistics for a company already hemmed in by shifting geopolitics. Physical climate risk is more than a sustainability issue—it is both its own distinct risk and a multiplier that makes every other disruption harder to recover from and harder to absorb.

Over the past several months, through interviews, roundtables, and practitioner dialogues with over 40 organizations, including representatives from two dozen companies, we set out to understand what is holding companies back from acting at the scale and speed the risks demand. What we heard was strikingly consistent: companies know the risks are growing, but most are still responding event by event instead of building the enterprise capability to anticipate and absorb compound shocks.

The causes are varied. Ownership of climate resilience is fragmented across functions. The financial case for proactive investment is difficult to make; competing priorities force a trade-off between cost, time, and reliability. Many companies share the same fragile resources, infrastructure, and systems, but invest in them independently or have yet to work together to strengthen these systems. And the guidance landscape on addressing climate risk and building climate resilience, while improving and more developed than many may realize, still leaves most companies without a clear path from risk awareness to funded, strategic action.

This paper offers an assessment of where corporate climate resilience stands today, a structured view of the landscape of corporate-facing resources, and four practical ideas for coalescing today's existing tools, standards, and guidance into a foundational structure that can help companies implement and then scale their climate resilience. Each idea is offered as a starting point for collaborative development.

We are clear-eyed about what it will take to turn these starting points into something durable—a shared foundation with common definitions, connected guidance, and a mechanism that addresses gaps and coalesces the best existing resources into a standardized framework that enables companies to move through the entire process of developing, valuing, and implementing durable climate resilience. We are calling for an effort to build that foundation, recognizing this is something no single organization can do alone. That is why we are committing to convene the stakeholders—companies, investors, standard-setters, and expert organizations—needed to develop it. The good news is that many of the building blocks are already available. What is needed is the architecture to connect them and to fill in the gaps.

We hope this paper makes the case for why that work is timely and urgent; companies that invest in climate resilience now will remain nimble and competitive as the impacts from a changing climate intensify. If you share that conviction, we would welcome the opportunity to build this together.

We hope you'll join us.

Nat Keohane
President, C2ES

Jeremy Oppenheim
Global Managing Partner, Systemiq

Introduction

Physical climate risk is no longer a tail risk. It is a systemic risk shaping corporate performance in an environment defined by simultaneous disruptions, including geopolitical volatility, tariffs, supply chain upheaval, and cyber threats. Physical climate risk cuts across all of these risks and often compounds them. The question is no longer if disruptions will occur, but how organizations are building the capabilities, infrastructure, and technologies to adapt, compete, and deliver through them.

Against this backdrop, C2ES and Systemiq set out to answer the following key questions:

1. **Where are companies in their efforts to build climate resilience today?**
2. **What will it take for more of them to move from awareness of physical climate risk to scaled action on climate resilience, in their own operations, value chains, and in communities where they operate?**

Over several months—through dialogues, roundtables, and first-person interviews—we spoke to over 40 organizations, including representatives from two dozen companies, and heard a consistent story. While many have begun assessing physical climate risk exposure and strengthening business continuity, far fewer are treating climate resilience and adaptation planning as a discipline with the power to shape strategy and deliver a durable competitive advantage. Without harnessing these strategic incentives, scaling climate resilience as strategy remains out of reach. Companies also lack a mechanism that enables them to combine and leverage the different available guidance, tools, and resources in a cohesive way that articulates the value of investing in climate resilience. These gaps matter. Investors, regulators, customers, employees, and communities are increasingly moving beyond asking only what risks a company faces. Now, they are asking how it will address those risks, how it will turn its response into a competitive advantage, and how it will build a more sustainable and resilient future.

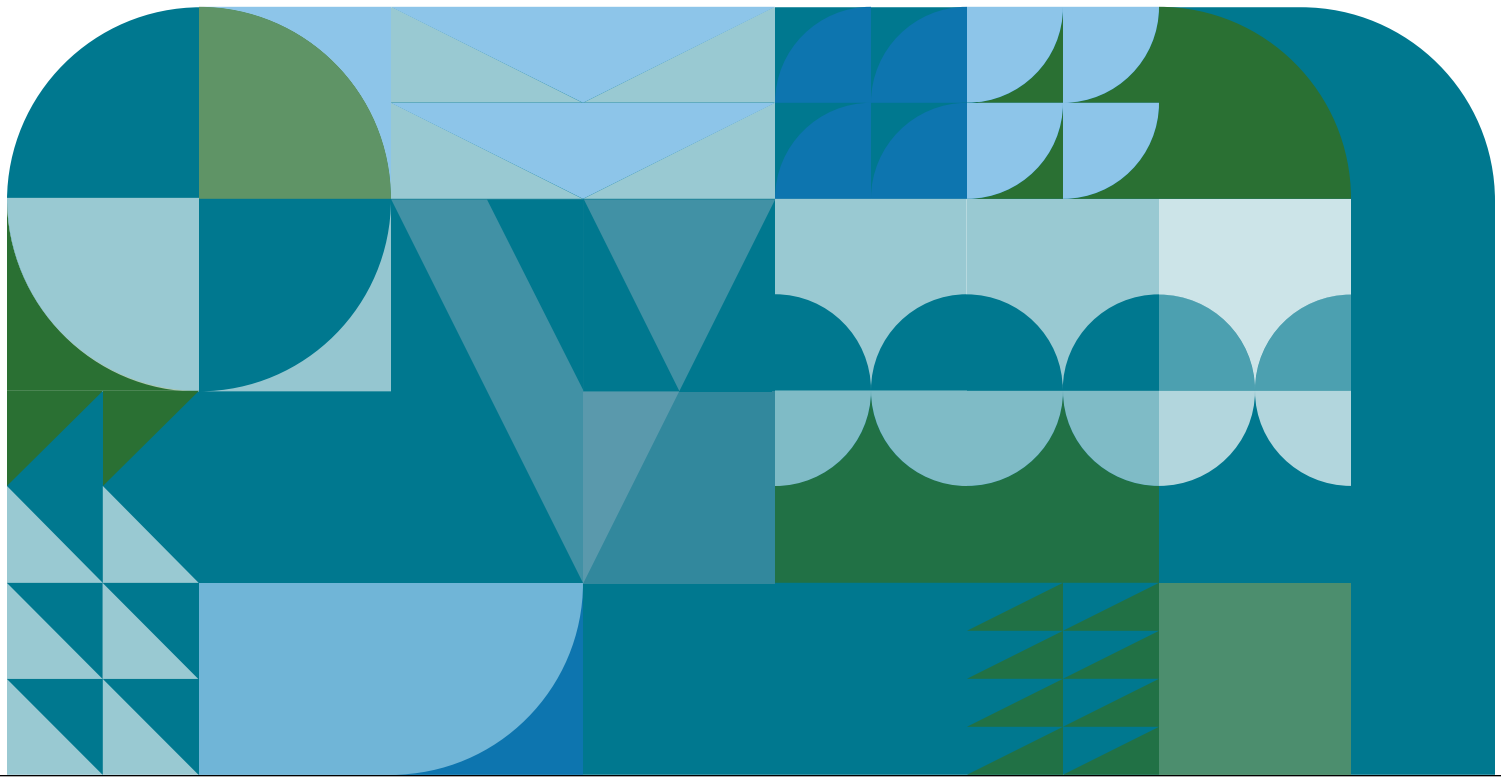
There are some corporate leaders who are working toward decision-ready insights: They quantify downtime, revenue risk, and capital at risk; they consider climate impacts on people, infrastructure, operations, and value chains; they embed climate resilience into governance, operations, risk management, and capital planning; and they break down internal siloes and collaborate beyond their fence lines on the shared systems on which business depends. Still, these leading companies are few in number, and even they have struggled to scale strategies that work for them.

To advance beyond the current state of corporate climate resilience, we need more companies to assess the physical climate risks they face and translate that data into actionable insights. We need companies to understand where independent action is possible and where collective action across and within industry sectors is required. To achieve this, we need to move from qualitative exposure matrices to quantified, decision-ready risk and value-at-risk assessments; we need to expand from narrow continuity planning to enterprise-wide climate risk data and resilience strategies embedded in critical business functions (e.g., finance, operations, and governance); and we need to combine individual action with ecosystem engagement.

Building on the numerous preexisting tools, standards, and frameworks designed to support corporate climate resilience, we propose the following four practical ideas to enable further progress:

- a navigable catalog of current guidance and tools that is continually updated (*c2es.org/Resilience-as-Strategy-Resources)*
- a climate resilience maturity model for companies to assess where they stand, a working prototype of which is available online (*assessment.c2es.org*)
- a broadly accepted, standardized climate resilience framework for use by companies of all sizes and across all sectors, that enables companies to assess, value, and demonstrate how they are integrating resilience across their operations, value chains, and communities where they operate
- sector-specific climate resilience pathways and guidance.

The opportunity to build a durable and adaptive competitive advantage is there for companies that embrace corporate climate risk and resilience as a strategic priority. Our economies and societies depend on it.



A Note on Definitions

The following terms are used throughout this paper. Definitions draw on established resources from the science and business communities.*

- **Climate hazard** is a climate-related event or trend with the potential to cause loss of life, injury, or other health impacts, as well as damage and loss to property, infrastructure, livelihoods, service provision, ecosystems, and environmental resources. This term encompasses both acute events (e.g., floods, storms, wildfires) and chronic conditions (e.g., rising temperatures, sea-level rise, shifting precipitation patterns).
- **Exposure**, in a business context, is the presence of people, assets, operations, or value chains in locations or conditions where they could be affected by a climate hazard. Broadly, exposure is the presence of people; livelihoods; infrastructure; species or ecosystems; environmental functions, services, and resources; or economic, social, or cultural assets in places and settings that could be adversely affected by climate change.
- **Vulnerability** is the predisposition of an exposed person, asset, or system to be adversely affected, reflecting both sensitivity to harm and capacity to cope.
- **Physical climate risk** is the potential for adverse consequences, calculated as the interaction between climate hazard(s), exposure, and vulnerability to physical impacts of climate change. Physical climate risk includes risk to facilities and infrastructure, impact on operations, water and raw material availability, and supply chain disruptions arising from climate change impacts and climate-related hazards. The specific risks a company may face are highly context-dependent: Two companies facing the same climate hazard can have very different levels of physical climate risk depending on where they operate, what they depend on, and how well-prepared they are.
- **Adaptation** is the action taken to reduce risks from today's changed climate conditions, climate hazards, and physical climate risks, and to prepare for further impacts in the future.
- **Adaptation planning** refers to the strategic process of identifying and addressing immediate and long-term priorities for building resilience to climate change.
- **Resilience** is the ability of interconnected social, economic, and ecological systems to prepare for threats and hazards, adapt to changing conditions, and withstand and recover rapidly from adverse conditions and disruptions. Climate resilience is the organizational capacity to absorb and recover from the impacts of climate hazards, built through sustained adaptation efforts and forward-looking planning to reduce physical climate risk. A climate-resilient business can adapt to climate-related hazards to maintain business continuity and identify and build upon opportunities in the transition to a less carbon-intensive economy, while collaborating with surrounding communities in the context of local environments to create value and ensure that no negative impacts occur.

According to Paul Munday from S&P Global Ratings, which has conducted research on corporate action on adaptation and resilience, many companies "don't know they're doing adaptation," because "adaptation" reads as an IPCC term rather than a business one.† That's part of why defining these terms is important. By establishing a shared vocabulary, it becomes easier to apply lessons and resources from other spheres, like government, international development, and academia, to climate resilience efforts in the private sector (and vice versa).

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* These definitions draw on ISO 14090:2019 Adaptation to climate change: Principles, requirements and guidelines, World Business Council on Sustainable Development's (WBCSD) Adaptation Planning for Business (2025), the Intergovernmental Panel on Climate Change (IPCC) Sixth Assessment Report, and the Fifth National Climate Assessment (NCA5) (2023).

† Dr. Paul Munday, interview by Louis Woodall, Climate Proofers, podcast audio, April 7, 2026, https://www.climateproof.news/podcast/s/climate_proofers/paul_munday_on_corporate_adaptation_planning.

Key Findings

Across our research and interviews, five interconnected findings stood out.

#1 Corporate climate resilience efforts remain underdeveloped relative to risk.

Awareness is no longer the biggest challenge: 65 percent of public companies now reference physical climate risk in their annual filings,[1] and many more are taking one-off actions to reduce physical climate risks.[2] But recognition has not translated into enterprise readiness. S&P Global reports that only 42 percent of companies have adaptation plans, and fewer than half of those target implementation within the next decade.[3] Of companies that have begun to act, only 25 percent have taken measures that are "strategic" in nature (e.g., adapting products, services, or delivery models for climate impacts), while most remain focused on business continuity and engineering controls.[4]

#2 Companies lack the tools and language to treat climate resilience as a financial discipline.

Even where adaptation plans exist, most lack financial rigor. The central problem is valuation: Companies often cannot express the benefits of climate resilience investments (e.g., avoided losses, operational continuity, competitive durability) in terms that decision makers trust. Nor are the benefits—such as developing a durable competitive advantage—made clear. The structural mismatch between planning cycles and hazard dynamics compounds this problem: Corporate budgeting favors short payback periods, while physical climate risks evolve on multi-year timescales. An MSCI Institute survey of high-exposure companies finds that 68 percent assess physical risks over a two-to-five–year horizon, and only 10 percent look beyond a decade.[5] There is growing evidence that building climate resilience improves financial performance,[6] but until corporate resilience initiatives speak the language of the investments with which they compete, they will remain underfunded.

Additionally, companies often set a high bar for what counts as a financially material risk. When companies are willing to accept significant projected losses from physical climate risks, there is little incentive to invest in adaptation to avoid those losses. The dearth of laws and regulations for climate risk disclosure in the United States again compound this challenge. While more jurisdications globally are asking companies to disclose their climate risks, these requirements are often loosely defined. For example, the EU's Corporate Sustainability Reporting Directive (CSRD) only requires companies to disclose financially material risks, leaving it up to the company to determine what level of physical climate risk it is willing to accept.[7]

#3 Action on climate resilience is limited by a lack of organizational integration and often lacks a necessary internal convening champion.

Even if the challenges above were solved, it still would not be clear who "owns" climate resilience, or whether most companies have the capabilities and staff needed to act. Most corporate climate resilience efforts remain siloed and organized by risk domain: geopolitical risk often in strategy or enterprise risk, physical climate risk often in sustainability, operational risk in facilities. Each risk has separate owners, budgets, and governance, and the functions that assess physical climate risk, manage it, and finance it rarely share a common language or reporting line. Though climate resilience is often "real" at the facility level, where teams harden assets and refine response plans, physical climate risk is not a standalone domain; it is a cross-cutting threat multiplier that intensifies exposure across all these categories. In other words, companies that do not integrate—and then operationalize—climate resilience are solving an incomplete version of the problem.

Critically, responsibility most commonly sits with sustainability leaders who lack control over the levers that can strengthen climate resilience: capital allocation, procurement, and operations. There is rarely a top-down mandate that can drive enterprise-wide action. Companies often report that a senior-level leader is necessary to drive climate resilience across departments. Without an internal champion to coordinate and activate stakeholders and elevate climate resilience across the organization, implementation efforts may remain siloed.

#4 Action on climate resilience remains reactive to individual disruptions rather than integrated across enterprise-level strategy.

Compounding these challenges is a lack of integration of climate resilience activity at the enterprise level. The MSCI Institute finds that 89 percent of large- and mid-cap companies show at least one hazard-specific resilience activity.[8] But these are largely isolated efforts rather than part of a coherent strategy backed by clear priorities, realistic risk tolerances, and capital planning. Thus, the pattern that emerges is reactive: hardening assets after a wildfire or reassessing supply chains after a drought affects crop yields. Companies respond to each disruption individually but do not build the enterprise capability or management practices needed to absorb compounding and concurrent shocks to the systems on which they depend.

#5 The guidance landscape is expanding but fragmented and challenging to navigate.

The range of frameworks, standards, tools, and analyses available to companies has grown significantly in recent years, but the landscape of guidance and legal requirements remains fragmented. Guidance is strongest for hazard identification, risk exposure assessment, and disclosure. It is weakest where companies most often get stuck: valuing climate resilience investments, connecting adaptation plans to capital allocation decisions, assessing very complex systems, building financeable pipelines of interventions, and coordinating action across organizational and sectoral boundaries. Some

companies have expressed the need for new resources that can help them build climate resilience when they depend on other sectors or public infrastructure or help them navigate win-wins and trade-offs in efforts to both build climate resilience and decarbonize their operations and value chains. Guidance is also rapidly proliferating, often with limited input from practitioners, and no single resource provides end-to-end support, which means companies must piece together guidance from multiple sources, each developed for different audiences, sectors, and purposes. The transaction costs fall heaviest on the teams that most need help. The result is that many are unable to easily move beyond assessment and the initial steps of building climate resilience.

The Path Forward

Companies themselves can be the most powerful catalyst for this work. Indeed, companies must lead in developing many of the tools that can forge a path forward. A more collective, practitioner-led effort is now needed to build shared infrastructure that can tackle the most critical problems in advancing climate resilience among companies across sectors. A map of existing frameworks, standards, and tools will make it easier to find the right resources in the fractured and complex guidance landscape. A holistic maturity model grounded in observable practice will help companies gain a better understanding of how well they are improving their climate resilience across their entire organization and provide clear next steps. A consensus-based standardized framework that coalesces existing resources and fills in any gaps, will help companies take coordinated, enterprise-wide action from risk assessment to implementation to decision-useful disclosures to their key stakeholders. Sector-specific guidance will provide companies with implementation-ready information that is tailored to the unique risks and challenges associated with their assets and value chains.

The most effective shared infrastructure in adjacent domains, from the Forest Stewardship Council's common standard for sustainable forestry to the International Financial Reporting Standard's adoption of the Task Force on Climate-related Financial Disclosures' (TCFD) framework for climate risk disclosure, was built by practitioners who were willing to define what good practice looks like, test it in the real world, and share what they learned. When companies commit collectively to set public goals and road-test new approaches, the tools to implement those commitments improve more quickly. Transparency itself creates competition to demonstrate business leadership, driving adoption. We invite companies to share what works, help build the necessary tools that don't yet exist, and make the path to robust climate resilience visible.

Why It Matters: Climate Resilience Impacts Corporate Profits

Physical climate hazards—heat, drought, flood, wildfire, storms, and sea level rise—are increasingly shaping corporate performance and testing corporates' abilities to absorb and adapt to correlated, concurrent, and systemic shocks. Recurrent extreme climate-related events are now more an expected operating headwind than a tail risk.

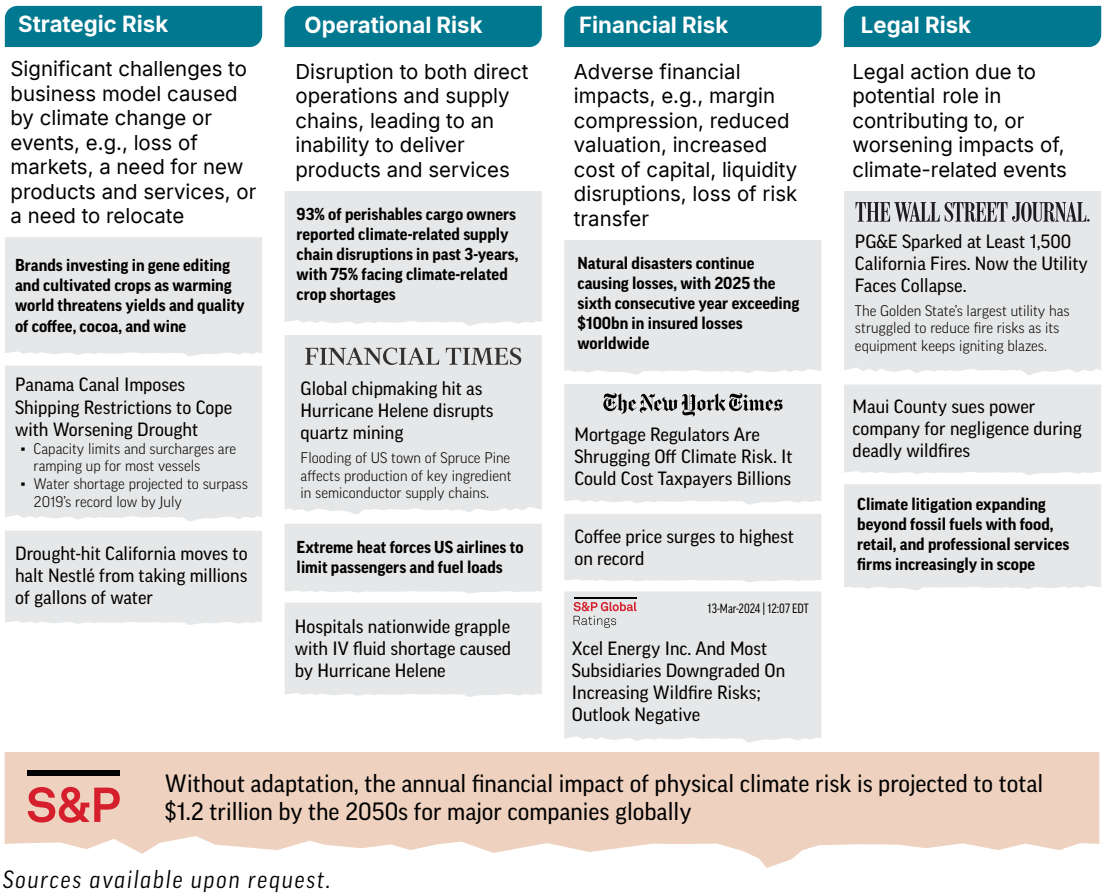
The number of recorded weather-, climate-, and water-related disasters increased fivefold from the 1970s to the 2010s, and global economic losses increased sevenfold over the same period.[9] NOAA estimates that 2024 alone brought the United States 27 separate billion-dollar disasters totaling about $182.7 billion in damages (and 23 in 2025).[10] Swiss Re estimates 2024 global economic losses from disasters at about $320 billion and insured losses at about $140 billion, leaving a substantial protection gap.[11]

These disasters are increasingly affecting corporate operations and driving earnings volatility. According to the MSCI Institute, more than 80 percent of companies report that extreme weather events have disrupted operations or added to operational costs in the past five years,[12] with large- and mid-cap companies experiencing average annual losses of $88 billion in asset damage and $1.1 trillion in business interruption.[13] A recent First Street report highlights that 65 percent of public companies now cite physical climate risk as a material factor in annual filings, more than double the share in 2001, and profit warnings triggered by extreme weather events have grown more than 6.5 times over the same period.[14] Additionally, 60 percent of the businesses who responded to WBCSD's Business Breakthrough Barometers anticipate increased costs from physical risks within the next 12 months.[15]

These hazards create cascading impacts and risk across companies, not just for owned physical assets (see **Figure 1**):

- **Strategic risk** emerges where reliability becomes a competitive differentiator and where portfolio and location decisions must adapt to changing risks.
- **Operational risk** shows up through operational downtime, facility shutdowns, workforce heat constraints, supply chain and other logistics disruptions, and utility interruptions.
- **Financial risk** extends beyond direct damage to include downtime, revenue loss, higher operating costs, rising insurance premiums or reduced availability, a higher cost of capital, and earnings volatility. First Street analysis of U.S. Security and Exchange Commission (SEC) filings shows that following a weather-related disclosure, over half of companies miss revenue growth expectations within a year, and stocks underperform by an average of 2.7 percent within 30 days.[16] Sophisticated investors, many of whom are subject to stress testing, are beginning to ask companies how they are managing climate risk.
- **Legal and compliance risk** evolves as disclosure requirements sharpen expectations and as litigation tests whether risk statements align with reality. This is especially true as regulatory frameworks in Europe and other jurisdictions increasingly ask companies to explain not only their physical risk exposure, but how those risks are being managed.

FIGURE 1: 'RIPPED FROM THE HEADLINES' EXAMPLES OF PHYSICAL CLIMATE RISK



Sources available upon request.

Financial risk is also being reshaped by structural shifts in insurance markets, including rising costs, more restrictive terms, and widening coverage gaps. So-called "secondary" perils (e.g., wildfires, severe convective storms, floods) now account for 92 percent of global insured catastrophe losses,[17] and the risks companies most need covered (e.g., non-damage business interruption, chronic and systemic risks, stranded asset value) are precisely those that remain largely uninsurable in any market. Compounding this, the insurance renewal process and enterprise risk management tend to operate independently in most organizations, meaning insurance coverage may not be updated in line with growing company risk exposure.

First Street finds that nearly 44 percent of companies say commercial coverage is too costly to fully protect their exposed assets, and one in four companies discloses reliance on self-insurance, meaning a growing share of climate-driven disruption is landing directly on corporate balance sheets.[18] An Aon-led report adds the insurer perspective: When companies fail to provide documentation of climate risk assessment and mitigation measures, 40 percent of insurers apply more conservative terms and 24 percent require additional internal review.[19] A large majority of insurers surveyed (76 percent) expect resilience measures to play a bigger role in underwriting decisions within three to five years.[20]

Companies that act to mitigate these risks can build real value. According to an MSCI Institute survey of high-exposure companies, among those that have invested in operational resilience, 82 percent report positive financial or reputational results, 68 percent cite increased investor interest, 67 percent report improved insurance terms, and 56 percent say they have secured better lending conditions.[21] Indeed, over the past decade, companies in the Dow Jones Industrial Average with insignificant rates of physical climate risk exposure have generated returns approximately 1.7 times higher than peers with moderate exposure,[22] a premium that reflects investors pricing operational resilience into long-term valuations.

Mapping the Corporate Journey to Building Climate Resilience

Where Companies Stand Today: Recognition Without Readiness

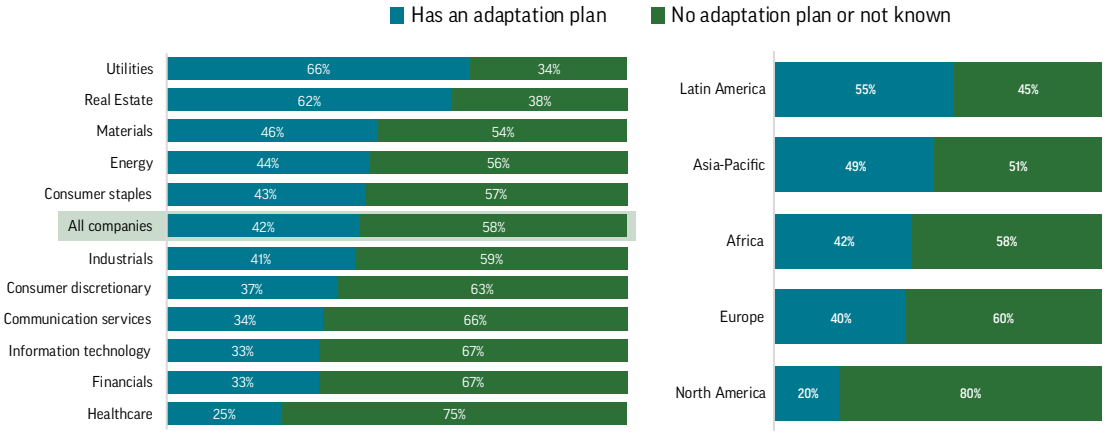
Despite growing exposure and early evidence that investors seek to reward resilience to climate risk, most companies have not yet built the enterprise capability to manage physical climate risk as a strategic priority. The pattern we heard across interviews is one of recognition without readiness: Many (although certainly not all) companies accept that the risks are real, but struggle to translate that knowledge into repeatable decisions, funded investments, and measurable outcomes. For the few companies that had experienced catastrophic physical and financial impacts due to extreme weather, the experience spurred a build out of regional or corporate-wide strategies to address future risks.

Many companies have a start, but few have gone far enough.

Many organizations have pockets of strong practice, traditionally grounded in engineering and business continuity. But S&P Global finds that only 42 percent of companies have shared adaptation plans publicly.[23] A recent S&P Global deep dive into investment-grade European companies found that none of the disclosed adaptation plans include advanced planning, such as adaptation targets, monitoring frameworks, or metrics to track progress.[24] Of the companies that have begun to act publicly, only 25 percent have taken strategic measures (e.g., adapting products, services, or delivery models), while most remain focused on continuity planning, disaster response, or structural improvements to infrastructure.[25] Action thus far reflects where risks are most obvious: Utilities, real estate, and consumer staples lead, while healthcare, communications, and financials lag (see **Figure 2** for a global view and **Figure 3** for a deep dive into European companies).

A few caveats based on our discussions with companies can provide additional context. First, it is possible that more companies have developed internal climate resilience plans than is publicly known, as some of the companies with whom we spoke have developed them but have not disclosed them publicly. Additionally, as not all plans lead to implementation, greater understanding is needed on how planning and execution are linked. Finally, for some companies, a lack of (or a rollback of) regulatory requirements to disclose climate risks and a lack of guidance for setting climate resilience and climate adaptation targets may also explain the current state of corporate climate resilience across sectors.

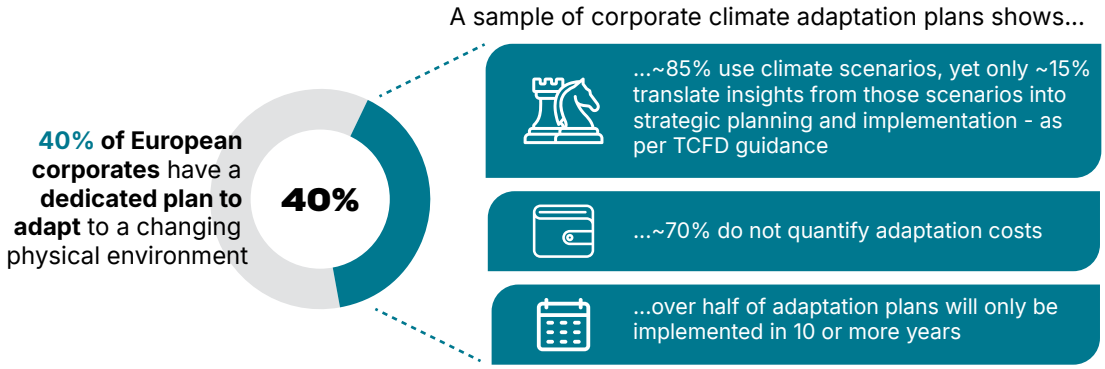
FIGURE 2: CORPORATE ADAPTATION PLANNING



These graphs show the percent of companies by sector (left) and by region (right) that have an adaptation plan for physical climate risks. Based on 1,466 companies disclosing an adaptation and resilience plan to S&P Global's 2025 Corporate Sustainability Assessment (CSA).

Source: S&P Global 2025 Corporate Sustainability Assessment

FIGURE 3: EUROPEAN CORPORATE ADAPTATION PLANNING



Per S&P Global, the "sample [for Mercury Rising] contains 70 investment-grade European corporate entities from sectors considered particularly sensitive to climate hazards and with limited geographic diversification outside Europe. Utilities and infrastructure companies, and sectors with too few represented companies, are excluded."

Sources: S&P Global 2025 Corporate Sustainability Assessment (CSA); S&P Global, Mercury Rising: European Entities Show Some Adaptation Gains As Physical Risks Mount (2026)

The climate risks companies face are outpacing the development of tools to manage them.

Across our interviews and practitioner dialogues, leaders described a widening gap between the pace at which climate hazards are changing and the pace at which corporate systems change. Physical climate risk does not arrive with a single owner: It presents simultaneously as an operational reliability problem, a capital planning problem, a supply chain problem, a workforce health and safety problem, and a customer and revenue continuity problem. As a result, even where strong technical assessments exist, many organizations lack the capacity, ownership, and cross-functional coordination needed to translate those assessments into concrete action.

Maturity varies widely and the gap between the leaders and the rest is growing.

A small number of companies are moving from hazard maps to decision-ready insights: quantifying downtime and value at risk, embedding climate resilience into governance and capital planning, considering worker safety, and

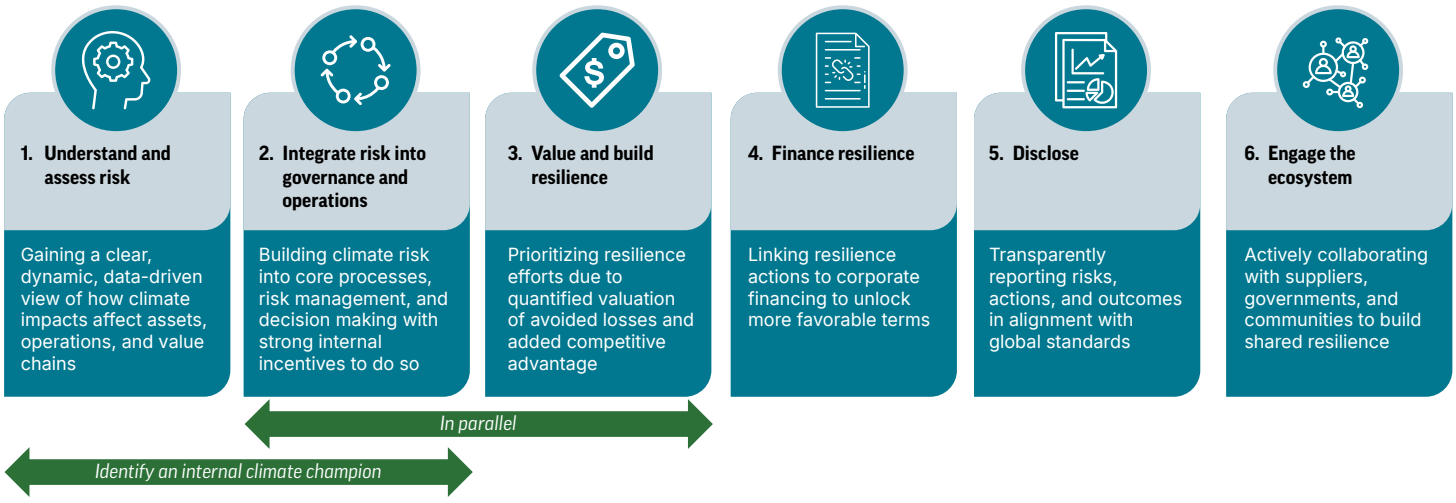
collaborating beyond their fence lines on shared risks. But these leaders remain the exception. The more common pattern is fragmented, reactive, facility-level, and single-hazard focused; and it is increasingly insufficient given the pace and compounding nature of physical climate risk.

An Organizing Structure for the Journey: Six Modules from Awareness to Action

To characterize corporate maturity, understand gaps, and assess how existing guidance, tools, and resources can help companies integrate climate resilience at the enterprise level, this analysis is organized through the lens of six modules that are key to building climate resilience (see **Figure 4**). The modules build on frameworks others have developed (notably WBCSD's Adaptation Planning for Business and Physical Risk and Resilience in Value Chains: CEO Handbook for Executive Engagement) while adding nuance drawn from our own practitioner interviews and research on what is needed to move from awareness to comprehensive action, and map to the key themes present in the frameworks, guidance, and tools we assessed (see "The Guidance Landscape: Valuable but Fragmented" on page 16).

The journey across the six modules is not strictly linear. Although some companies may follow the sequence described below, progress is most often iterative: Steps occur in different orders, capabilities develop in parallel, and setbacks in one module can reshape priorities in another. This organizing structure, while not prescriptive, provides a common language for diagnosing where both companies and the broader guidance landscape stand, what aspects of climate resilience remain stuck, and what it would take to enable progress across all aspects of implementing climate resilience.

FIGURE 4: AN ORGANIZING STRUCTURE FOR UNDERSTANDING CORPORATE MATURITY ON IMPLEMENTING CLIMATE RESILIENCE



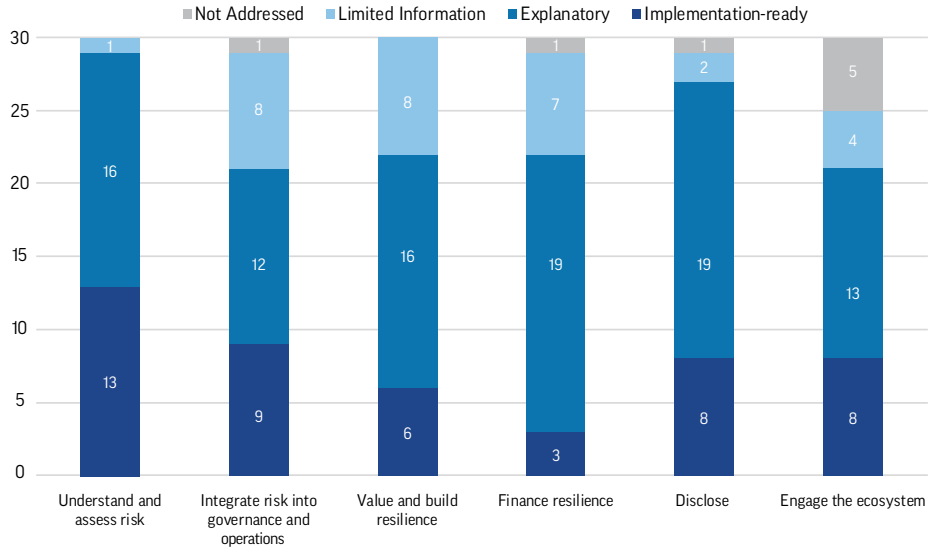
The next two sections apply this journey first to the guidance landscape, and then to the state of corporate practice today, offering deeper dives on both for interested readers.

The Guidance Landscape: Valuable but Fragmented

Across our interviews, climate resilience practitioners shared that they seek guidance that connects risk assessment to operating standards, investment decisions, and measurable outcomes across business functions. To understand what resources are already available, C2ES and Systemiq conducted a structured assessment of 30 frameworks, standards, tools, and market analyses, spanning international standards bodies, investor-facing frameworks, practical guidance from business coalitions, commercial risk analytics platforms, and independent research. These include (i) disclosure and reporting standards; (ii) management frameworks and technical standards; and (iii) analytic tools and market studies that translate climate science into decision inputs (see **Figure 5**). **Appendix 1** lists all sources assessed, and **Appendix 2** offers a heatmap of our anonymized assessment of the current corporate climate resilience guidance landscape.

Each resource was evaluated against the same six dimensions that structure the corporate climate adaptation and resilience journey, with the goal of mapping where guidance is mature, where it is still developing, and where gaps most affect companies trying to act on climate resilience.

FIGURE 5: MATURITY OF CORPORATE GUIDANCE BY MODULE



The landscape has grown significantly, but it remains fragmented and hard to navigate.

This analysis examined standards that provide structured, end-to-end guidance for companies building formal adaptation planning processes; disclosure frameworks for communicating climate-related exposure; commercial analytics platforms that offer asset-level physical risk modeling; and investor-facing frameworks. The guidance landscape on corporate climate resilience has developed quickly; nearly all of the guidance materials included in our analysis were published in the last five years. However, these resources are not all oriented toward the same goal, and they do not map to each other in ways that guide a practitioner from one stage of the journey to the next.

Guidance is strongest at the start and end of the journey and weakest where companies most often get stuck.

The landscape is well-stocked with implementation-focused resources at the start of companies' climate resilience journeys and progressively thinner toward the end, aside from a few more resources on public disclosure. The

ecosystem reliably supports hazard identification, exposure assessment, and disclosure. There are far fewer resources available for valuing climate resilience investments in ways finance teams trust, connecting adaptation plans to capital allocation or financing mechanisms, building financeable pipelines of interventions, and coordinating action across organizational and sectoral boundaries. Few resources assessed provide tested, replicable methods for quantifying the return on adaptation spending or making the case for climate resilience capital in a corporate context and in terms that compete with near-term growth investments.

The result is many starting points but no definitive path through.

Since no single standard or framework provides end-to-end support, companies must piece together multiple frameworks, tools, and analyses, creating added work that requires connecting teams that rarely collaborate: risk, operations, engineering, procurement, finance, real estate, and sustainability. The transaction cost falls heaviest on the companies that most need support, and the gap between awareness and scaled action remains wide.

A Closer Look at the Landscape

Among existing standards and frameworks, the following stand out as highly implementable:

- WBCSD's *Adaptation Planning for Business* stands out as the strongest corporate-facing resource overall, and the only end-to-end guidance explicitly designed to walk a company from risk identification through governance integration, investment prioritization, and implementation. WBCSD's CEO Handbook offers practical guidance for the C-Suite.
- ISO 14090 and ISO 14091 provide rigorous international standards for adaptation management and climate risk assessment, valuable for companies seeking a formal, auditable process architecture, though limited on financing and investor-facing disclosure.
- TCFD and its successor ISSB S2 have done more than any other standards to make physical climate risk a board-level priority. However, the guidance was not designed to tell companies how to build resilience.
- The Taskforce on Nature-related Financial Disclosures (TNFD), while primarily nature-focused, offers one of the most operationally complete frameworks in the landscape and is highly applicable for companies with material dependencies on water, agriculture, or ecosystems.
- On the investor and financing side, the IIGCC's Climate Resilience Investment Framework is the most financially rigorous resource in the landscape. Its asset-level appraisal methodology offers corporate practitioners a useful window into the financial language and metrics investors
- The Climate Bonds Resilience Taxonomy defines what counts as a resilience investment in capital markets and provides the certification infrastructure companies need to access adaptation-labeled green finance. While both require translation to serve internal corporate purposes, they can act as key references for companies seeking to understand the investor demand signal or build a pipeline of financeable investments.

The tools and analytics platforms represent a rapidly maturing market but share a common limitation. Jupiter Intelligence, XDI, Moody's RMS, MSCI's Climate Value-at-Risk, S&P's RiskGauge, and First Street offer increasingly sophisticated asset-level risk modeling, with outputs tailored to TCFD and ISSB disclosure requirements. But they are optimized for risk identification and quantification; they do not tell a company what to do with the results. That integration is largely left to the user.

Corporate Climate Resilience: Pockets of Strong Practice, but Short of Enterprise Readiness

To assess where companies stand across each module, we drew on practitioner interviews, industry convenings, and desk research. The maturity model prototype used here, summarized in **Figure 6**, reflects what we would expect to see at each level of practice across the six modules. A version of this model, developed further with practitioners, could become a practical tool for companies to assess where a company stands and identify next steps. *A working prototype is available online*.

FIGURE 6: CORPORATE MATURITY ACROSS MODULES

	Increasing Maturity		
Modules	**Reactive / Aware** *Early-stage; isolated efforts, limited visibility*	**Integrated** *Embedded in core processes; building strategic capability*	**Strategic** *Resilience as competitive advantage; fully enterprise-integrated*
1. Understand and assess risk	‣ Asset-level hazard mapping using external data ‣ Focus on acute risks only	‣ Dynamic scenario analysis across multiple time horizons and geographies for operations and select supply chain nodes ‣ Internal climate champion identified to understand risk across organization	‣ Dynamic, multi-scenario analysis across full supply and value chains and time horizons ‣ Nature, social, and system dependencies integrated; data continuously stress-tested
2. Integrate into governance and operations	‣ Climate risk managed as a sustainability issue ‣ Limited board visibility ‣ Risk registers updated infrequently	‣ Physical risks integrated into ERM ‣ Cross-functional groups in strategic planning, capital allocation, and performance metrics developed or forming ‣ Worker health and safety part of planning ‣ Internal climate champion coordinating action and information sharing across organization	‣ Resilience embedded in ERM, strategic planning, capital allocation, and performance metrics ‣ Board-level oversight ‣ Cross-functional ownership linked to incentives ‣ Worker health and safety considerations integrated
3. Value and build resilience	‣ Adaptation viewed as cost avoidance or compliance ‣ No valuation of resilience benefits	‣ Business case linking resilience to profitability, with clear levers defined and flagged for prioritization ‣ Framing for resilience ROI and other metrics in financial planning being developed	‣ Clear business case linking resilience to profitability, innovation, and competitiveness ‣ Resilience ROI tracked in financial planning ‣ Full set of possible adaptation levers defined and prioritized
4. Finance resilience	‣ Opportunistic or reactive investment with limited to no dedicated budget ‣ Insurance used post-event	‣ Dedicated resilience budgets emerging ‣ Cost-benefit and payback analysis applied to key projects	‣ Dedicated resilience budgets with cost-benefit and payback analysis ‣ Innovative instruments deployed (resilience bonds, parametric insurance); integrated with sustainability financing
5. Disclose	‣ Qualitative TCFD-style disclosures ‣ No adaptation KPIs or third-party assurance	‣ Physical risk and adaptation are incorporated into reporting (e.g., ISSB S2, TNFD)	‣ Quantitative adaptation and resilience metrics; targets validated (e.g., ISSB S2, TNFD, CSRD) ‣ Integrated with transition and nature reporting; continuous improvement tracked
6. Engage the ecosystem	‣ Ad hoc ecosystem engagement ‣ Supplier outreach limited to compliance requirements	‣ Participation in industry initiatives ‣ Beginning to engage key suppliers on shared risks ‣ Community resilience part of planning	‣ Active co-leadership of joint initiatives with peers, governments, and financiers ‣ Open knowledge sharing; adaptation aligned with ecosystem-level resilience goals ‣ Active engagement with communities

The following steps can help companies move from reactive to strategic on climate resilience:

- transitioning from qualitative risk exposure assessments to quantified, decision-ready risk assessments
- moving beyond narrow continuity planning to enterprise-wide climate resilience strategies embedded in finance, operations, and governance
- progressing from isolated, individual action to ecosystem engagement.

In our conversations with companies and our analysis of available data, most companies appear to have started to implement these shifts, but are not yet mature in their resilience efforts. Incremental progress is expected and should be viewed positively. Companies will move through this process in different ways and on different timelines, but eventually, the goal is for companies to be on the mature end in all modules.

Across the six modules, companies face limitations, not from a lack of information (companies are adept at acting on imperfect information), but due to the absence of the financial language, organizational ownership, and cross-functional infrastructure needed to turn information into decisions. These barriers, described below, will require improved methodologies, commitment from corporate leaders, and collective action to overcome.

1. **Understand and assess risk:** Most companies can describe their hazards, but very few can express those hazards in the financial terms (downtime, revenue loss, probability-weighted impact) that drive decisions. Here, the lack of an internal champion can make it difficult to coordinate and elevate the results of the risk assessment to senior leadership and to generate executive buy-in for advancing climate resilience.
2. **Integrate risk into governance and operations:** Physical climate risk has no natural owner in most corporate structures, and the fragmentation is structural; the functions that assess it, manage it, and finance it rarely share a common language or reporting line. Again, the absence of an internal coordinating champion, especially at this stage, also limits progress at the enterprise level.
3. **Value and build resilience:** The range of available interventions is broader than most companies realize, but without a consistent method to value and compare them, investment defaults to what is easiest to justify rather than what is most material.
4. **Finance resilience:** The business case for resilience investment is rarely built proactively; funding tends to be released after a loss event rather than embedded as a durable program, even as capital markets increasingly price the cost of inaction.
5. **Disclose risk and resilience action:** Public disclosure is maturing faster than the management practice behind it. Companies are building reporting architectures to satisfy regulators in certain jurisdictions without yet making the underlying decisions on investing in climate risk mitigation or resilience building that would give those disclosures real substance.
6. **Engage the ecosystem:** Both the risks that are hardest to manage and the solutions with the highest returns often sit outside the four walls of individual companies, namely in shared public infrastructure and in communities where the workforce resides. However, most companies have not yet developed the organizational muscles or external relationships to build climate resilience that factors in those external dependencies.

Deep Dive: A Module-by-Module Assessment of Corporate Performance

This section provides a deeper dive into our findings, illustrated by vignettes from our interviews and practitioner roundtables.

1. Understand and assess climate risk

Most companies have some awareness of their climate risk exposure, but many only have a qualitative understanding rather than putting risks into financial terms. Marsh finds that 78 percent of respondents conduct or are conducting identification, evaluation, and monitoring of extreme weather impacts: 40 percent assess risks qualitatively, 38 percent assess risks beyond a qualitative level, and the remaining 22 percent do not assess future extreme weather impacts at all.[26] The MSCI Institute's global analysis of large- and mid-cap companies found that the three climate hazards most commonly driving corporate risk management activity are drought (65 percent of companies), flooding (57 percent), and extreme heat (43 percent).[27] Rising insurance premiums and tightening coverage terms are themselves a signal worth incorporating into risk assessment, as they reflect insurers' own views of asset-level exposure.

Interviewees consistently said that their organizations could characterize risk in terms of hazards but struggled to express it in operational and financial terms that match how executives make decisions. Companies commonly rank hazards on a scale of high, medium, or low risk to the company, which can be useful for identifying priority hazards, but is insufficient for capital allocation or supply chain redesign. An additional challenge is that different decisions operate on very different time horizons: Hardening a facility against flood risk is a near-term capital decision with relatively clear payback, while redesigning a supply chain for a 2-degree-C warmer world is a 10 to 20 year strategic commitment whose benefits accrue gradually, often to parts of the organization that did not bear the cost. The scenario analysis most companies have undertaken does not bridge this gap: even where scenario analysis is now standard practice for disclosure, the scenarios used are typically long-horizon and calibrated for external reporting rather than near-term operational decisions. Without a consistent set of organization-specific risk units (e.g., downtime, expected outage days, probability-weighted loss) applied across time horizons, different functions can reach different conclusions from the same signals.

Vignette: From hazard screening to quantified downtime

In a digital infrastructure-heavy business, leaders described moving beyond qualitative scoring by estimating operational downtime for critical facilities and translating that downtime into financial impact (i.e., revenue loss plus repair cost). They reported that this shift made climate risk understandable to asset owners and finance leaders, changing which interventions were prioritized.

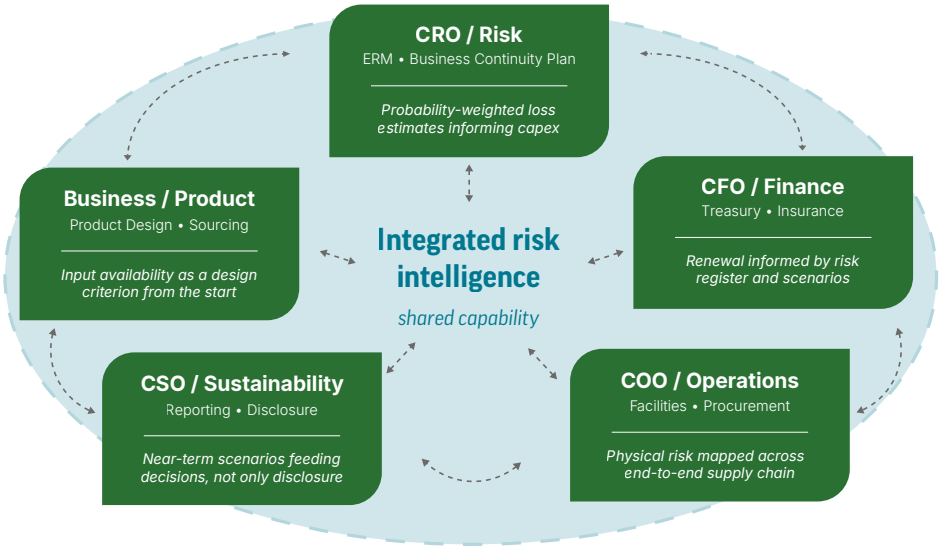
2. Integrate climate risk into governance and operations

How companies integrate resilience—and who owns it—varies significantly. Marsh finds that responsibility most commonly sits with sustainability leaders (54 percent) or risk leaders (28 percent), meaning the person nominally accountable for resilience rarely controls the levers that drive action.[28] Capital allocation and insurance usually sit with the chief financial officer (CFO). Facilities hardening often sits with the chief operations officer (COO). Supplier continuity sits with procurement. Climate risk disclosure often sits with sustainability. Interviewees consistently highlighted that each function partially addresses physical climate risk within its own silo, but none covers it in full.

This is more than just a structural problem. It is a language problem. Each function operates with its own analytical framework: treasury manages risk through financial instruments and short feedback loops; enterprise risk management (ERM) through qualitative likelihood-and-impact registers on annual cycles; facilities through engineering standards and maintenance schedules; sustainability through disclosure frameworks and regulatory timelines. Even when risk signals are strong, they often fail to translate into coordinated action because the functions receiving those signals are working from different analytical starting points with no shared mechanism to reconcile trade-offs and connect them. Without a strong top-down mandate or a senior-level owner to drive cross-functional integration, enterprise climate resilience is structurally and linguistically difficult to achieve.

Figure 7 illustrates how climate resilience could be integrated into existing risk management infrastructure across different business functions through an integrated risk intelligence approach.

FIGURE 7:EMBEDDING CLIMATE RESILIENCE ACROSS BUSINESS FUNCTIONS BY IMPLEMENTING INTEGRATED RISK INTELLIGENCE



Vignette: Standardizing resilience as enterprise risk

One large organization described a nascent effort to make physical climate risk "just another standardized enterprise risk" where local facility and operations leaders across the organization use standard, scaled tools and data sources to identify and track risk. Today, identifying and tracking physical climate risk is still highly dependent on individual reporting methods and expertise, limiting scalability across regions.

3. Value and build resilience

Even when companies have climate resilience plans, many lack strategic and financial rigor and few link adaptation and resilience actions to core decisions, quantify costs and returns, or align timing with accelerating risk. The MSCI Institute finds that, while 89 percent of large- and mid-cap companies in the global MSCI ACWI index show evidence of at least one hazard-specific activity to build the resilience of internal corporate operations, fewer than half are selling products or services that help their customers build resilience.[29] Forty percent of companies are not considering relocating assets or operations to reduce exposure to extreme weather.[30]

These findings highlight a key disconnect: resilience is being treated as a set of incremental risk controls rather than a value-creating strategic capability. As a result, investment decisions default to what is easiest to justify instead of what may be more material, leaving companies exposed.

In practice, the range of available interventions is broad.

- **Engineering and hardening measures** can include improving airflow and cooling systems to protect workers and equipment from heat stress, elevating or flood-proofing critical infrastructure, and implementing nature-based solutions, such as restoring coastal wetlands to reduce storm surge.
- **Operational changes** can include building redundancy into logistics networks, pre-positioning inventory ahead of forecast disruptions, diversifying sourcing geographies, and relocating from high-risk areas.
- **Strategic moves** can include reformulating products to reduce dependence on threatened inputs, redesigning products and services to perform reliably under more volatile conditions, and seeding initiatives to act on the ground and in concert with partners. More ambitious companies are creating resilience-enabling products, from physical infrastructure and hardware (e.g., flood monitoring devices, HVAC systems, engineered coastal protection) to digital platforms, climate risk analytics, insurance and structured finance products, and engineering and consulting services (see **aside**).[31,]

Singapore's GIC estimates that annual global revenues from a subset of climate adaptation solutions could grow from approximately $1 trillion today to around $4 trillion by 2050.

The challenge is not a lack of options; it is the absence of a consistent method to compare and prioritize them against each other and against competing capital uses. And not every resilience action requires a major capital commitment: many valuable moves are operational shifts that can be taken incrementally, within existing budgets and approval processes. Progress along the maturity journey matters more than leaping to the most ambitious interventions.

Vignette: Reliability framing accelerates investment approval

A facilities leader described resilience investments getting internal traction when framed as reliability upgrades, especially when paired with near-term cost pressures such as rising energy prices, rather than as climate projects. The leader emphasized that anchoring the ask for a resilience intervention in core operational performance metrics could mean the difference between stalling and approval.

4. Finance resilience

CPI data show that adaptation finance reached an all-time high of $63 billion annually in 2021/22, though this remains far short of estimated needs. Tracked private adaptation finance is especially limited: CPI estimates annual average private adaptation finance at $4.7 billion for 2019–2022, up from a previously tracked figure of approximately $1 billion, and notes that actual flows are likely significantly higher due to severe underreporting.

Only 60 percent of respondents in the Marsh survey believe they have sufficient money and resources to respond to future extreme weather impacts, while 40 percent do not.[32] Even among those planning increased investment, timing often stretches many years into the future. At an absolute level, private sector investment in adaptation remains limited (see **aside**),[33] and we suspect that the need is greater than what practitioners surveyed by Marsh estimate.[34]

In interviews, this showed up less as a denial of need and more as a capital-allocation and business-case problem. Because resilience investments compete with other projects, benefits are often framed as avoided losses, which are difficult to justify to finance teams. Additionally, funding for resilience investments is frequently episodic and reactive to a damaging event or a near miss rather than embedded as durable, multi-year programs. Several companies described having strong site-level engineering ideas but no clear mechanism to aggregate them into an enterprise portfolio, set investment thresholds, and protect budgets through planning cycles. Others pointed to insurance as a partial backstop, although many noted that rising premiums, higher deductibles, exclusions, and tighter terms make insurance less reliable.

This framing misses the competitive advantage story: Companies that build resilience ahead of their peers are not just avoiding losses, they are building the operational reliability, supplier relationships, and strategic optionality that become genuine sources of durable advantage as physical climate risk intensifies.

There is also evidence that lower physical climate risk exposure reduces financing costs for companies. A Bloomberg study of 2,900 companies found that those with 10 percent higher physical climate risk exposure faced a weighted average cost of capital 22 basis points higher than peers.[35] Still, a recent finding from S&P Global Ratings notes that physical climate risk has driven rating actions on only about 1 percent of rated entities globally, attributing this to uncertainty about timing and magnitude.[36] Together, these findings suggest capital markets are beginning to price resilience into financing terms, even if the signal is not yet systematic.

Vignette: Capital markets can help fund resilience under the right conditions

A major financial institution described rising investor attention to physical risk and pointed to early market experiments, such as the Tokyo Resilience Bond, where resilience-linked structures attracted demand.* At the same time, they emphasized that labeled markets and resilience taxonomies remain inconsistent, creating challenges for scaling.

* "Tokyo Resilience Bonds," Tokyo Metropolitan Government, updated February 27, 2026, https://www.english.metro.tokyo.lg.jp/w/006-101-000968.

Vignette: Working with an insurer to enhance resilience

A large multinational described how their property insurer became a partner in their physical resilience program. The insurer connected the company with its in-house engineering team, which conducted site assessments and issued recommendations on vulnerabilities. When the company acted on those recommendations, it secured a reduction in its annual premium, creating a business case for resilience.

This model is gaining traction at scale. FM, a mutual commercial property insurer, has issued annual "resilience credits" since 2022. These are premium offsets that clients reinvest in engineering improvements identified by FM's own technical teams. By 2026, the program had grown to $825 million, equivalent to a 10 percent premium offset for eligible policies, and had driven a potential reduction in economic impact of nearly $80 billion. The structure works because it aligns incentives: When clients reduce their risk profile, the mutual performs better, and those gains flow back to policyholders.*

* FM, "FM Announces Enhanced Resilience Credit of US$825 Million to Support Client Investment in Resilience," press release, November 6, 2025, https://newsroom.fmglobal.com/releases/fm-announces-enhanced-resilience-credit-of-us-825-million-to-support-client-investment-in-resilience; Insurance for Good, "Resilience Credit for FM Clients: Q&A with Joe Dimitriadis," August 21, 2025, https://www.insuranceforgood.org/blog/fm-resiliencecredits.

5. Disclose risk and resilience action

Risk disclosure is now an expectation for large companies, driven by expanding regulatory requirements and investor demand. In parallel, voluntary disclosure continues at scale, with nearly 23,000 companies now disclosing through CDP,[37] reinforcing the direction of travel even where requirements remain in flux.

A recent analysis covering the full MSCI ACWI universe—roughly $96 trillion in market capitalization—found that while 89 percent of companies have identifiable resilience activities, these activities are largely not visible through standardized reporting frameworks.[38] Unlike emissions data, where 79 percent of listed companies now disclose and 60 percent have decarbonization targets, climate adaptation and resilience disclosures remain fragmented, often buried in operational descriptions rather than surfaced in structured financial filings.[39]

Companies can become "reporting mature" without becoming "decision mature" if disclosures are not connected to management decision making. In interviews, teams described the "crosswalk problem": building reporting architectures to satisfy multiple regimes while the harder work—agreeing on decision rights, setting operational thresholds, and embedding resilience into capital planning and procurement—lags. Several practitioners noted that disclosure deadlines create urgency, but unless CFOs and operational owners are accountable for underlying decisions and controls, reporting improves faster than resilience performance.

One technology company described how shared and public infrastructure and local workforce resilience can become the binding constraint on delivery even when owned assets are relatively modern; a utility pointed to grid vulnerability and water availability as enterprise risks that require coordination well beyond a single company's footprint; and a chemicals manufacturer stressed that water resilience is fundamentally "outside the fence line," requiring sustained engagement with communities and other water users.

6. Engage the ecosystem

Across interviews, leaders emphasized that many of the largest risks and highest-return solutions depend on systems outside corporate control. Companies can harden facilities and strengthen continuity plans but still face material exposure when public infrastructure fails or disruptions cascade across shared supplier geographies (see **aside**). In our roundtables, leaders described a recurring "beyond our control" dynamic that can stall action.

Because these are collective-action problems, moving from awareness to action often requires pre-competitive cooperation—including, at times, with direct competitors—and sustained public-private collaboration to align incentives and invest in shared resilience. This is as true for supply chains as it is for physical infrastructure: When climate hazards threaten shared sourcing geographies, no single buyer can address the underlying risk alone. This requires companies to build new muscles and modes of engagement that can be unfamiliar but may be among the areas most ripe for innovation.

Vignette: Nature-based protection requires outside-the-fence coordination

A company operating large assets near a coast described working with external stakeholders on resilience investments. With these external stakeholders, the company was able to improve reliability by restoring wetlands to reduce storm surge impacts and other watershed-based measures. The story illustrates both the opportunity and the governance challenge: Outcomes depend on ecosystem and stakeholder coordination beyond the corporate boundary.

Vignette: Pre-competitive coalition tackles tropical commodity supply risk

A coalition of buyers of a tropical commodity faced a shared sourcing crisis: falling yields, climate-driven habitat loss, widespread farmer poverty, and fragmented, duplicative sustainability programs that were too costly to scale individually. Working together, they developed a centralized delivery platform to implement common environmental standards and coordinated agronomy, community welfare, and cooperative professionalization programs across shared supply chains. The effort unlocked significant joint investment, established a scalable operating model, and strengthened partnerships with governments and standard-setters. It illustrates a broader point: Supply chain resilience is often a collective-action problem that no single company can solve from within its own fence line.

What's Needed Next

Companies that recognize and assess their physical climate risks currently face dual challenges of implementing and integrating climate resilience at the enterprise level. Climate resilience efforts need to be coordinated across business units, rather than competing for attention and resources as a parallel climate program.

Companies need a clearer path from physical climate risk insight to strategic and operational action. They need guidance that works across sectors, aligns with evolving disclosure expectations, is realistic to implement for teams with limited time and capacity, and can connect climate risk to the geopolitical, operational, and financial risks that already sit on the board agenda. Making solutions clearer and more widely known among industry peers can encourage lagging companies to assess and begin to act on their exposure to physical climate risks.

Below we offer four ideas to help corporate leaders and the broader ecosystem make climate resilience more practical, comparable, and scalable. We recognize that there is already excellent work underway; the below is meant to build on that and focus efforts where there are opportunities to shift the field.

1. A navigable catalog of current guidance and tools

Even sophisticated companies struggle to navigate today's crowded ecosystem. A practical first step would be creating a single source of truth that maps disclosure regimes, standards, tools, and sector references to concrete decisions; one that is built specifically for companies (a comparative starting point is the UN Environment Programme Finance Initiative's (UNEP FI) excellent *database* of tools for financial institutions). Whether such a resource would be an all-encompassing meta-framework or a more streamlined navigator tool, it would need to be more than a library. It should point users to decision pathways (e.g., site selection, asset design standards, supplier resilience requirements, continuity planning, investment cases) with an indication of which tools and standards support each step. Such a tool would reduce duplication and help practitioners find what resources they need at their specific stage in advancing climate resilience in their companies. Our *cataloging of current guidance* is a first step; more work and additions from others as new resources are developed will be needed to make it practical and usable.

2. A climate resilience maturity model and benchmarking to define what "good" is

While only a few resources define best practices across the full corporate climate resilience journey, there are some strong starting point, such as the ACT Framework developed by ADEME, the French Agency for Ecological Transition, and partners.

Many companies lack a clear entry point for what "good" corporate action on climate resilience looks like in practice (see **aside**). A holistic corporate climate resilience maturity model, developed with technical experts and corporate practitioners, could provide a simple way for companies to assess where they are on their climate resilience journey and how to progress. It would translate best practice into observable indicators across governance, strategy, operations, procurement, finance, and disclosure. These best practices could be, for example, including climate resilience as a regular topic for board review, procurement engaging critical suppliers on physical risk and mitigation, or capital planning including climate resilience thresholds and triggers.

As a prototype, we created an online corporate climate resilience self-*assessment tool* to begin the conversation with companies and key stakeholders, inviting discussion on how such a tool could be strengthened, updated, and widely used.

Over time, pairing the maturity model with benchmarking could help create a "race to the top," giving companies a clearer sense of whether they are leading or lagging peers and where to focus investment and capability building. Such an approach also ensures that disclosures are closely tied to practices that work. Organizations that already collect and standardize corporate climate data, such as CDP and the Science Based Targets Initiative (SBTi), could be logical partners to host such benchmarking, as could other actors focused on organizational resilience, such as the Federation of European Risk Management Associations (FERMA) in Europe.

3. A broadly accepted holistic corporate climate resilience framework

A common framework for how to assess, integrate, value, and disclose decision-useful climate resilience measures in a corporate context would help align boards, executives, risk leaders, operators, and finance teams around the same questions: what climate resilience means for the enterprise, how it is measured, and how investments are prioritized. In practice, this implies converging on a small set of core measures (e.g., service continuity, downtime, asset criticality) and a consistent approach to quantifying both downside protection and upside value creation (e.g., reliability, customer trust, regulatory performance, strategic optionality). It also implies guidance on how to handle uncertainty and non-linear risks.

We need not start from scratch. One pragmatic way forward is to begin by coalescing the strongest elements of what already exists across disclosure regimes, risk methods, guidance on implementing climate resilience and adaptation, and emerging climate resilience metrics. Key gaps identified through that work could be addressed through a stakeholder process, ultimately leading to a holistic, overarching framework. That shared foundation could then support more targeted sector guidance and pathways, improving comparability while still allowing companies to tailor decisions to their assets, geographies, and operating realities. This approach could build on the experiences of other industry-led guidance processes, such as TCFD and TNFD.

The TNFD offers a useful process model here. It was developed through four iterative rounds of real-world piloting across more than 200 institutions, building credibility and adoption by incorporating practitioner feedback directly into each version. A climate resilience equivalent—piloted with companies across sectors, refined through iteration, and published with the backing of those who tested it—would carry far more weight than a framework developed in isolation.

4. Sector-specific climate resilience playbooks

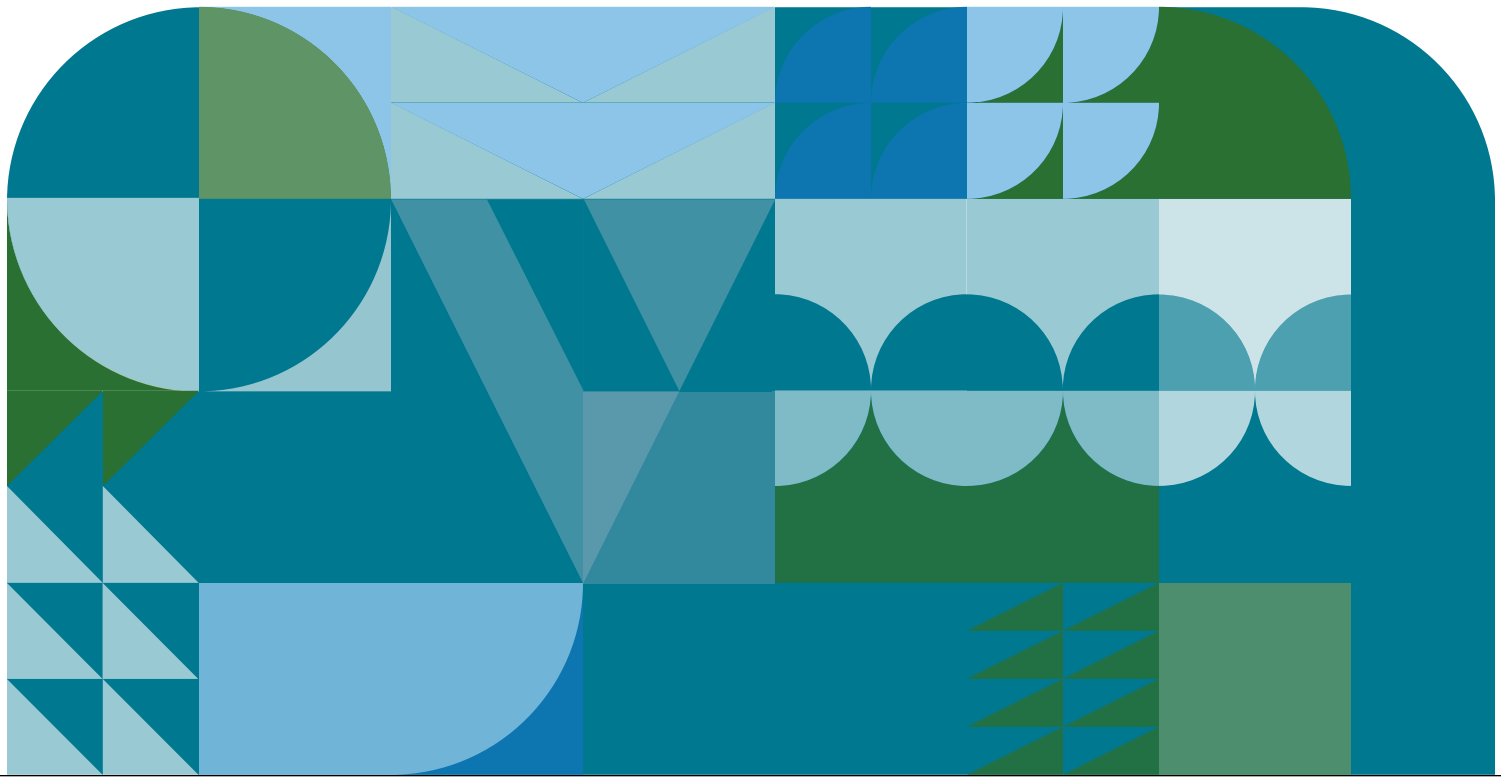
Again, leveraging existing guidance would yield dividends. WBCSD published *Adaptation Planning for Business - Navigating uncertainty to build long-term resilience* in 2025, which provides an excellent "starter kit" for companies. It includes a structured process to set scope and goals, prioritize risks, design and score adaptation solutions, build and implement a plan, and monitor progress, alongside practical guidance on mobilizing internal support and a starter menu of measures.

The next frontier is making that guidance sector ready. Sector playbooks would translate the general adaptation planning process into industry-specific pathways outlining what works in a specific industry for specific assets. We are starting to see early movement in this direction. For example, the Resiliency

Company, alongside JLL, Ryan, and the Urban Land Institute, developed a climate risk management *playbook* for commercial real estate,[40] and Marsh generated sector-focused guidance on strengthening supply-chain resilience in the manufacturing sector.[41] However, most sectors still lack comparable, high-aspiration pathways that reference a common foundational framework.

After they are developed, these sector playbooks would then need to be paired with regionally-specific approaches. A recent *report* from the Council on Energy, Environment and Water (CEEW) lays out a detailed vision for this approach in the Indian context.

An additional illustrative example is the Mission Possible Partnership, which aims to accelerate the decarbonization of hard-to-abate sectors through shared sector "transition strategies" with common milestones across companies, finance, and policy makers. A climate resilience equivalent could help sectors agree on priority disruption scenarios, "standard moves," and outside-the-fence collaboration needs. Then it could pilot, refine, and publish pathways that companies can pick up and use.



Conclusion

The companies that will perform best through physical climate risks and disruptions are the ones that have built the organizational capability to absorb shocks, protect continuity, and make confident decisions under uncertainty. Sophisticated climate models and detailed disclosure reports will not be sufficient.

Recognition of physical climate risk is growing among companies, but their readiness to respond to disruptions lags in pace and scale. Physical climate risk is already shaping earnings, insurance terms, financing costs, and competitive positioning, not as a standalone hazard but as a multiplier of every other disruption companies face. Three shifts remain incomplete across the corporate landscape: from qualitative exposure matrices to quantified, decision-ready risk assessments; from narrow continuity planning to enterprise-wide climate resilience strategies embedded in finance, operations, and governance; and from isolated action to ecosystem engagement. The gap between what growing climate risks demand and what corporate systems can deliver is widening, and most companies still lack a clear answer to the question that matters most: What do we do now?

Yet progress is emerging. A small but growing number of companies are moving from physical risk assessments to decision-ready insights, from facility-level hardening to enterprise-wide resilience initiatives, and from isolated action to cross-sector collaboration. These companies are beginning to break down internal silos and recognize that climate resilience is not a sustainability workstream—it is a core business capability.

Realizing that potential across industry sectors at a global level will require additional complementary, systems-level efforts working in parallel. For example, there will need to be improved leadership education that establishes a shared baseline on physical climate risk at the board level, investor engagement that rewards credible action with better access to capital, and place-based coalitions that bring companies, utilities and other infrastructure providers, local governments, and communities together to address shared regional vulnerabilities no single organization can solve alone.

Underlying all of these is the need for a shared foundation—a common language and methodology that enables companies to assess, value, and implement climate resilience consistently and at scale. That foundation does not yet exist in full, but building it is the essential next step. What is required now is the collective will to do so, and the transparency to share what works along the way.

Appendix 1

The following table summarizes the frameworks, standards, tools, and market analyses reviewed as part of the landscape study. This represents a broad cross-section of what is available today (as of March 2026) but should not be taken as fully comprehensive. Organized by category type, each entry identifies the resource's primary use case, key differentiators, and areas where coverage is less complete or a work in progress relative to an aspirational, fully comprehensive corporate adaptation and resilience approach.

Guidance – Standards and frameworks				
Resource	**Overview**	**Best use-case**	**Differentiators**	**Assessed limitations**
ISO 14090:2019 *Adaptation to Climate Change: Principles, Requirements and Guidelines (link)* *Standard*	An international standard setting out the core principles, requirements, and management processes for adaptation, applicable across organization types and sizes.	Creating formal adaptation planning and governance structures.	Covers the full adaptation management cycle from risk identification through to implementation, monitoring, and review. Strong on integrating adaptation into governance, ERM, and management systems with clear accountability structures.	Limited sector or regional specificity. No quantitative valuation tools, financing mechanisms, or alignment with investor-facing disclosure frameworks such as TCFD or ISSB.
ISO 14091:2021 *Guidelines on Vulnerability, Impacts and Risk Assessment* (*link*) *Standard*	An ISO standard providing a structured methodology for assessing climate impacts, vulnerabilities, and risks across different systems and contexts.	Providing a standards-based method for climate risk assessment.	Detailed, scenario-based methods for assessing asset, value chain, and system-level risks. Supports participatory approaches with broad applicability across sectors and geographies.	Limited sector or regional specificity. Does not embed into ERM or corporate governance, provide valuation or financing guidance, or align with investor-facing disclosure standards.
ISO/TS 14092:2020 *Adaptation Planning for Local Governments and Communities* (*link*) *Technical Specification*	A guidance document for adaptation planning at local government and community level, with relevance for companies co-investing in shared infrastructure or place-based resilience.	Supporting place-based and multi-stakeholder adaptation planning.	Strong multi-stakeholder engagement framework with explicit private sector roles. Includes cost-benefit analysis discussion and references green bonds and climate finance as potential mechanisms.	Designed primarily for local governments; companies appear as secondary actors. Does not address corporate risk assessment, ERM integration, or investor-facing disclosure.
ISO/DIS 22316:2026 *Organizational Resilience: Guidelines (Draft)* (*link*) *Draft Standard*	A draft standard integrating operational, financial, social, and environmental resilience into a single organizational management framework.	Embedding resilience into governance, measurement, and investment decisions.	Comprehensive corporate governance integration architecture, covering board oversight, resilience indicators, target-setting, and ERM integration. Substantively addresses budgeting, capital allocation, and financial materiality.	Final form pending. Disclosure architecture lacks harmonized metrics for investor-facing frameworks. Environmental resilience dimension does not yet address physical climate risk dependency mapping at the depth of frameworks such as TNFD.

Guidance – Standards and frameworks				
Resource	**Overview**	**Best use-case**	**Differentiators**	**Assessed limitations**
ISO 14001:2026 *Environmental Management Systems: Requirements with Guidance for Use, fourth edition* (*link*) *Standard*	The world's most widely implemented environmental management standard—covering 670,000+ certified organizations in 175+ countries—updated in 2026 to make climate change, extreme weather events, natural resource dependencies, and biodiversity a mandatory part of how organizations define their environmental context, identify risks, and plan management actions. Three-year transition window to 2029. Replaces ISO 14001:2015.	Embedding physical climate risk consideration into corporate governance at scale; establishing auditable ERM architecture for adaptation as a compliance obligation rather than a voluntary choice.	A potential mechanism for mainstreaming physical climate risk into corporate governance globally. The 2026 revision formally integrates climate change as an explicit requirement in risk identification (Clauses 4.1, 4.2, and 6.1), extends risk assessment scope to full value chains, and strengthens leadership accountability (Clause 5.1) to prevent delegation to environmental departments alone. A new change management clause (Clause 6.3) embeds adaptive governance, and the three-year global recertification cascade to 2029 represents a significant implementation event.	Specifies what must be done, not how: Companies must determine their own risk assessment methods, so assessment quality varies across certified organizations. Does not provide quantitative valuation tools, financing mechanisms, or harmonized metrics for investor-facing disclosure. Certification remains primarily an internal management and audit instrument with no mandatory external reporting.
ACT Adaptation Methodology v2.0 *ACT Initiative / ADEME, October 2023* (*link*) *Standard / Assessment Methodology*	A structured, independently verifiable assessment and rating methodology that scores the quality and completeness of a company's adaptation strategy across three dimensions: governance and strategy, physical climate risk assessment, and adaptive capacity and adaptation activities. Version 2.0 is the finalized methodology—published following testing with 13 companies across multiple sectors.	Auditing and rating the quality of a company's adaptation strategy; providing a third-party-verified, comparable output for investor and stakeholder communication.	The only framework in this assessment designed to assess, score, and rate an adaptation strategy rather than guide its development—functioning as an audit methodology with five progressive maturity levels from Basic (0) to Best Adaptive Practice (1).	Does not connect to external financing instruments or capital markets: assesses whether companies have the processes for resilience valuation, not whether they have produced quantified ROI analyses. While v2.0 references CSRD/ESRS E1, direct interoperability with ISSB S2 metrics remains limited. Assessment quality depends on assessor expertise.
IFRS S2 (ISSB) *Climate-related Disclosures* (*link*) *Disclosure Standard*	A global baseline standard for climate-related financial disclosure covering governance, strategy, risk management, and metrics and targets.	Standardized climate disclosure for investor and financial reporting use.	The primary investor-facing climate disclosure standard, with strong and growing regulatory adoption across jurisdictions. Mandates scenario analysis, harmonized metrics, and governance disclosure that enables investor comparison across companies.	Limited methodological guidance on how to conduct risk assessments or embed adaptation into ERM. No valuation tools, financing mechanisms, or direction on external ecosystem engagement.

Guidance – Standards and frameworks				
Resource	**Overview**	**Best use-case**	**Differentiators**	**Assessed limitations**
TCFD Recommendations *Task Force on Climate-related Financial Disclosures* (*link*) *Disclosure Framework*	The foundational climate disclosure framework covering governance, strategy, risk management, and metrics and targets; the basis for ISSB S2 and many national disclosure requirements.	Embedding climate into board oversight, enterprise risk management, and disclosure.	Explicitly embeds climate risk into governance processes and connects risks to financial performance metrics. Provides a robust, harmonized framework for disclosing climate risks and management responses that has driven significant improvements in corporate transparency globally.	Limited how-to guidance for risk assessment methodology or ERM integration. No ROI valuation tools or financing guidance. Disclosure of adaptation plans has been identified as a gap. Minimal direction on external stakeholder or community engagement.
TNFD Recommendations v1.0 *Taskforce on Nature-related Financial Disclosures* (*link*) *Disclosure Framework*	A nature-related disclosure framework with the LEAP methodology for assessing and disclosing physical risks arising from nature degradation and ecosystem service loss.	Providing a well-rounded operating framework across assessment, governance, and disclosure, focused on nature risk.	Operationally tested by 200+ institutions across 36 countries. Provides physical resilience metrics and starts to operationalize financial materiality of physical dependencies. Fully aligned with ISSB, TCFD, GRI/ESRS, and GBF Target 15.	Nature-focused rather than climate-adaptation-specific; requires conscious application to the physical climate risk subset. Nature-related data gaps remain significant relative to climate metrics.
TISFD Conceptual Foundations *Taskforce on Inequality and Social-related Financial Disclosures (under development)* (*link*) *Emerging Framework*	An emerging framework connecting social vulnerability and inequality to financially material outcomes, with a focus on how physical climate impacts flow through to workforce and community exposure.	Bringing workforce, community, and social vulnerability into resilience and disclosure discussions.	Introduces a dimension absent from most corporate climate frameworks, specifically, how physical climate impacts on people translate to financial materiality. Backed by major institutional investors and designed for interoperability with ISSB, CSRD, GRI, TNFD, and TCFD.	Currently at the conceptual stage; no operational methodologies, assessment tools, or disclosure metrics yet available. Quantification methods and ERM integration guidance are deferred to a 2026 beta framework.
Extreme Heat Risk Reduction Framework *UNDRR / WMO / GHHIN* (*link*) *Pre-framework Consultation Report*	A pre-framework consultation report documenting expert input toward a global governance architecture for extreme heat risk reduction across sectors and institutions.	Coordinating cross-sector action on heat risk.	Compelling systems-level framing of extreme heat risk with documented macro-economic evidence. Strong multi-stakeholder convening process across governments, international organizations, and academia.	Governance guidance is directed at national and subnational governments, not corporate actors. No corporate risk assessment methodology, ERM integration tools, or sector-specific corporate guidance. Corporate-to-capital-market linkage remains aspirational at this stage.
IIGCC CRIF & PCRAM 2.0 *Climate Resilience Investment Framework and Physical Climate Risk Appraisal Methodology* (*link*) *Investor Framework*	An investor-facing framework designed to make physical climate risks financially material within investment decision-making. CRIF provides the governance architecture; PCRAM 2.0 provides the asset-level appraisal methodology.	Describing investor expectations for corporate climate resilience management and disclosure.	Squarely aimed at investors, not corporates, it is nonetheless one of the most complete physical climate risk assessment methodologies available, aiming to support Climate Case and Resilience Case cashflow forecasts with IRR comparisons, insurability analysis, and credit quality implications.	Current coverage limited to real estate and infrastructure; corporate assets are to follow. An investor-facing framework describing external expectations rather than an inside-out corporate management system. Does not provide standardized disclosure indicators.

Guidance – Standards and frameworks				
Resource	**Overview**	**Best use-case**	**Differentiators**	**Assessed limitations**
Climate Bonds Resilience Taxonomy (CBRT) *Climate Bonds Initiative (link)* *Taxonomy and Certification Framework*	A taxonomy and certification framework classifying over 1,400 resilience investments across seven themes, enabling credible adaptation-labeled bond issuance.	Accessing green capital markets for adaptation investments and meeting anti-greenwashing standards.	The only framework reviewed whose primary purpose is defining what counts as a resilience investment in capital markets. Certification requires demonstrated reduction in vulnerability and multi-scenario IPCC-aligned assessment.	A debt instrument taxonomy, not a corporate governance or ERM tool. Does not guide corporate-wide risk assessment, management processes, or organization-level disclosure. ROI methodology limited to investment-level certification rather than corporate financial modeling.
Adaptation Planning for Business *WBCSD, 2025 (link)* *Guidance*	A practical corporate guide for moving from climate-risk awareness to adaptation planning, prioritization, and implementation.	Building a full corporate adaptation approach, from risk assessment through governance, prioritization, and action.	Strong on ERM integration and cross-functional governance structures. Provides concrete methods to quantify ROI of resilience investments including IRR comparisons and adjusted NPV guidance. Aligned with TCFD and ISSB and promotes co-financing of community adaptation.	Risk assessment tools stop short of sector- or geography-specific methods. Does not demonstrate how resilience management translates into reduced cost of capital or improved credit terms.
Business Leaders Guide to Climate Adaptation and Resilience *WBCSD / Bain & Company / Jupiter Intelligence, 2024 (link)* *Guidance*	A business-facing guide helping companies identify, assess, and respond to climate adaptation and resilience challenges using practical steps and case examples.	Giving companies a practical starting point for adaptation planning and management integration.	Accessible entry point with clear risk assessment methods, governance integration examples, and business case framing suited to building internal leadership buy-in.	No quantitative valuation or financial modeling tools for resilience investments. Lacks tested connections to capital market pricing and standardized disclosure metrics.
Physical Risk and Resilience in Value Chains: CEO Handbook for Executive Engagement *WBCSD & BCG, September 2025 (link)* *Guidance*	A CEO-level guide making the strategic case for extending physical climate risk management from direct operations to full value chains, developed through 40+ corporate, expert, and financial institution interviews. Paired with Getting Ahead of Physical Risk (WBCSD/BCG, 2025) as a two-part suite.	Activating board and C-suite ownership of physical risk in value chains; connecting resilience strategy to competitive positioning and investor expectations.	The only resource in this assessment explicitly designed to bridge physical risk as a technical ERM topic and a strategic governance issue. Frames cascading value chain risk—across upstream inputs, logistics networks, and demand-side markets—as the central gap in current corporate practice. Makes the value case for resilience through avoided losses, faster recovery, and improved financing terms, with endorsements from Swiss Re, BlackRock, and CPP Investments.	Designed for CEO and board audiences rather than practitioners: introduces the 'what and why' of value chain risk without providing step-by-step risk assessment tools, ERM integration templates, or quantitative ROI methodology. Does not reference specific disclosure frameworks (TCFD, ISSB S2) or provide harmonized metrics. Financing guidance is framed through investor voice rather than instrument-level guidance.
Accelerating Business Action on Climate Change Adaptation *World Economic Forum & PwC, 2023 (link)* *Guidance*	An executive-oriented guide making the business case for adaptation across strategy, finance, disclosure, and partnerships.	Setting leadership direction and framing adaptation as a business issue across strategy and partnerships.	Strong executive framing and business case articulation suited to C-suite and board audiences. Covers strategy, finance, disclosure, and partnership dimensions in an accessible format.	Principles-level throughout; no corporate-ready risk assessment methodology, ERM integration tools, or quantification methods for ROI of adaptation investments.

Guidance – Standards and frameworks				
Resource	**Overview**	**Best use-case**	**Differentiators**	**Assessed limitations**
Model for Organisational Resilience *Resilience First / Cranfield University, 2024* (*link*) *Framework*	A broad resilience framework covering operational, financial, workforce, environmental, and social resilience across the enterprise.	Structuring enterprise-wide resilience management across functions.	Comprehensive multi-dimensional model providing a common language for resilience across business functions. Backed by Resilience First's practitioner network of 500+ organizations.	Limited how-to guidance on physical climate risk assessment, valuation, or financing. Does not address external disclosure. Climate-specific adaptation content is light relative to broader operational resilience.
Climate Adaptation Guidance and Survey Materials *Marsh* (*link*) *Advisory Guidance*	Practitioner-focused adaptation materials combining advisory guidance with survey findings on how companies are responding to physical climate risk in practice.	Grounding physical risk assessment in current corporate practice and maturity.	Grounded in current corporate practice with detailed and tested approaches to physical risk assessment. Bridges risk assessment and risk transfer through insurance and contingent coverage options.	Lacks financial quantification tools for broader resilience investment cases. Has not demonstrated linkage between resilience management and cost-of-capital improvement. No standardized disclosure metrics.
Integrating Adaptation and Resilience into Transition Plans *NGFS / G20 Input Paper, 2025* (*link*) *Policy Guidance*	A policy-oriented paper on embedding adaptation and resilience into transition planning, governance, and financial decision-making.	Connecting physical risk to transition planning, governance, and finance-sector expectations.	Scenario-based methods linking physical hazards to quantified business and financial impacts. Embeds adaptation across five transition-plan pillars with governance and accountability structures relevant to financial sector organizations.	No quantitative valuation methods or tested credit and investment pricing mechanisms. Disclosure metrics aligned conceptually with ISSB and TCFD but lack validated indicators for adaptation-specific reporting.
The Imperative for Business Action on Climate Adaptation *UNICEF / BSR, 2025* (*link*) *Guidance*	A brief encouraging companies to pursue adaptation in ways that support communities and avoid maladaptation, framing adaptation as a shared obligation with co-benefits.	Linking adaptation to community co-benefits, partnership, and action beyond the firm boundary.	Excels at mobilizing companies to collaborate with governments, peers, and communities. Strong shared value and co-benefit framing with compelling evidence on the adaptation finance gap.	Strong on the why, limited on the how. No risk assessment methodology, ERM integration guidance, ROI quantification, or interoperable disclosure metrics.

Tools & Analytics (limited sample)				
Resource	**Overview**	**Best used for**	**Differentiator**	**Assessed limitations**
Jupiter Intelligence Platform *Jupiter Intelligence* (*link*) *Tool*	A physical climate-risk platform providing asset-level hazard analysis across locations, scenarios, and time horizons.	Running granular asset-level physical risk analysis that feeds planning and disclosure.	Location-specific physical risk analytics across heat, storm, and water hazards with multi-scenario modeling. Outputs are tailored to TCFD and ISSB reporting requirements.	Outputs require internal translation to connect to governance decisions. No ROI methodology for resilience investments and no framework for linking risk data to financing instruments.
First Street Enterprise Suite *First Street; global models launched September 2025; Enterprise Suite launched December 2024* (*link*) *Tool*	A peer-reviewed physical climate risk data platform providing property-level hazard analysis—flood, wildfire, heat, cold, wind, and drought—with financially expressed risk quantification under multiple climate scenarios; quarterly data updates and annual model refreshes.	Running asset-level physical risk analysis to support site selection, portfolio exposure assessment, insurance adequacy review, and regulatory disclosure.	A granular and financially expressed physical risk data tool. Property-level resolution enables asset-specific risk quantification directly actionable for resilience investment cases. Average annual loss outputs translate probabilistic hazard data into annualized financial exposure, (a direct available input to resilience ROI analysis) while probable maximum loss calculations support insurance purchasing and capital adequacy decisions.	A data infrastructure tool. Outputs require internal translation to support adaptation decision-making. Connecting property-level risk outputs to internal governance, such as board reporting and strategic planning, or using resilience improvements to access financing would require other guidance.
Climate Lab / Climate Value-at-Risk *MSCI* (*link*) *Tool*	A finance-oriented climate analytics tool that translates climate risk into portfolio and valuation impacts, designed primarily for institutional investors and asset managers.	Quantifying climate risk in financial and portfolio terms.	Strong capability for translating portfolio-level climate risk into financial value terms. Well-suited to investor-facing ESG reporting and TCFD compliance.	Aimed at portfolio-level investor use rather than asset-level corporate risk assessment. Not designed for corporate business operations or ERM integration.
RiskGauge / Climate Risk Tools *S&P Global* (*link*) *Tool*	A climate risk and stress-testing toolset linking climate scenarios to credit, financial performance, and capital-market outcomes.	Stress testing, credit analysis, and financially oriented resilience assessment.	Directly linked to credit and capital models with strong capability for pricing climate risks into financial instruments. Integrated with TCFD-aligned stress test reporting and documentation.	Designed for financial institution use rather than corporate adaptation planning. Does not address broader value creation or the ROI of corporate resilience investments.
Physical Climate Risk Platform *XDI—Cross Dependency Initiative* (*link*) *Tool*	A physical climate-risk analytics platform focused on highly granular asset-level risk and damage implications for built assets.	Producing detailed physical risk diagnostics and cost implications.	Deep, granular asset-level risk analysis across hazards and scenarios. Quantifies financial benefits of resilience measures by modeling damage reduction, providing a practical ROI of adaptation basis. Supports cross-sector data sharing and open benchmarking.	Outputs require integration into broader governance and ERM processes, which the platform does not guide. No organization-wide disclosure framework or standardized reporting indicators.
Climate on Demand / Physical and Transition Risk Solutions *Moody's RMS* (*link*) *Tool*	A climate analytics tool combining multi-hazard physical risk and transition risk insights for finance and risk management workflows.	Integrating climate analytics into finance, portfolio, and risk management workflows.	Strong multi-hazard asset modeling embedded into credit and portfolio workflows. Supports climate-adjusted credit analysis and TCFD-style disclosure.	Limited explicit value chain and systemic risk treatment. No ERM integration guidance for corporate users, no ROI quantification for adaptation actions, and no standardized cross-framework disclosure indicators.

Market Analyses (limited sample)				
Resource	**Overview**	**Best used for**	**Differentiator**	**Assessed limitations**
Climate Risk Landscape Report *UNEP FI, 2024* (*link*) *Market Analysis*	A market scan of climate-risk tools, methodologies, and providers with a strong finance-sector lens.	Comparing the climate-risk tools market and understanding how different analytics approaches support risk assessment and disclosure.	Useful comparative guidance on available climate risk tools with sector specificity. Provides a practical roadmap for risk tool integration into financial institution workflows.	Centered on risk tools and quantification rather than value creation or adaptation action. High-level on ERM integration; does not provide mechanisms for corporate peer collaboration.
Empirically Assessing Corporate A&R Disclosure Using AI *LSE Grantham Research Institute, 2025* (*link*) *Market Analysis*	A benchmarking study assessing the quality of corporate adaptation and resilience disclosure using a detailed indicator framework and AI-assisted analysis.	Benchmarking disclosure quality and spotting where corporate reporting is thin or incomplete.	Rigorous, evidence-based assessment of corporate adaptation disclosure quality across a large sample. Provides a useful benchmark for understanding where reporting on adaptation is most developed and where gaps persist.	Entirely diagnostic. Provides no guidance on how companies should conduct assessments, build governance, quantify value, or access financing. A measurement tool, not a how-to resource.
Climate Services Information System / Early Warnings for All *World Meteorological Organization* (*link*) *Market Analysis / Climate Services*	A public climate-services architecture providing forecasts, hazard information, and early warning inputs relevant to adaptation planning.	Supplying climate intelligence and early warning inputs for risk understanding.	Provides robust, publicly available multi-hazard climate intelligence with broad geographic coverage and strong institutional credibility through international meteorological networks.	Not tailored to corporate contexts. Limited guidance on corporate ERM integration, no firm-level ROI methods, no financing tools, and no alignment with corporate disclosure frameworks.

Appendix 2a

The landscape assessment summarized here was developed to evaluate how well the current ecosystem of guidance equips companies to act on physical climate risk, and to identify where that guidance is mature, still developing, or largely absent. C2ES and Systemiq first constructed a methodology to evaluate the resources based on six modules, mirroring the corporate climate adaptation and resilience journey referenced in this paper: understanding and assessing risk; integrating risk into governance and operations; valuing and building resilience; financing resilience; disclosure; and engaging the ecosystem.

For each module, we defined the conditions a high-quality resource would satisfy—for example, tying risk to corporate realities and offering sector and regional sensitivity under the first module, or linking resilience performance to financing terms under the fourth—and translated these into a three-point maturity scale distinguishing guidance that provides basic information on what is needed (a score of 1, "limited information"), guidance that provides a more thorough explanation of what is needed and minimal detail on how to do it (2, "explanatory"), and guidance that provides detailed, tested, actionable guidance on how to act in corporate contexts (3, "implementation-ready").

While scoring necessarily involved a degree of subjective judgment, we sought to apply the criteria as objectively and consistently as possible across resources, anchoring each score in the level of detail a resource provided and the extent to which it described concretely how a company should take action rather than simply what or why it should act. We then applied this common framework to 30 representative resources, grouped into three categories—standards and frameworks, analytic tools, and market analyses—spanning international standards bodies, investor-facing disclosure frameworks, practical guidance from business coalitions, commercial risk analytics platforms, and independent research. Each resource was scored module by module, with a short and detailed rationale recorded for every score and a summary characterization of its primary use case, distinctive contribution, and areas of weaker coverage.

The assessment drew principally on structured desktop research, complemented and sharpened by practitioner interviews, and is intended as a representative rather than exhaustive snapshot of the guidance available as of early 2026. Read together, the scores reveal a consistent pattern: the ecosystem performs comparatively well on identifying and disclosing risk but remains markedly weaker on valuing resilience, linking it to financing, and coordinating action across the wider ecosystem.

Appendix 2b

Not Addressed | Limited Information | Explanatory | Implementation-ready

Anonymized Resources	1. Understand & assess risk	2. Integrate risk into management & governance	3. Value & build resilience	4. Finance resilience	5. Disclose	6. Engage the ecosystem
1						
2						
3					n/a	
4						
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22				n/a		n/a
23		n/a				n/a
24						n/a
25						
26						
27						n/a
28						
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30						

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