

Insights into climate adaptation in 2025

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A changing climate makes climate adaptation necessary to preserve our institutions and systems.

Probable Futures is a nonprofit climate literacy initiative. We make climate science accessible and understandable so that everyone, everywhere, can think about climate change in practical ways and prepare for what's to come.

Assumptions of stable climate patterns are built into the institutions and systems we all rely on. As our climate changes and we move away from those stable patterns, physical [climate risk](#) from various climate hazards increases. Climate change is making weather more extreme and unpredictable, leading to events like dangerous heat waves, flash floods, extended droughts, and wildfires.

[Climate adaptation](#) is the process of strengthening our systems against these climate risks and helping to preserve those systems into the future. Climate adaptation can save lives, make economies more resilient, protect ecosystems, and more. However, to effectively manage physical climate risk, climate adaptation must be done well.¹

As of 2025, climate adaptation remains a relatively young field. Since 1994, when the United Nations Framework Convention on Climate Change (UNFCCC) came into force, formally including adaptation in its agenda, a growing number of people and organizations have recognized the legitimacy and importance of climate adaptation.² However, most people today still have a limited understanding of who is adapting and how, as well as what kinds of climate adaptation can manage different climate risks.

We set out to research the current state of climate adaptation, learning directly from those currently working on climate adaptation. Based on our research, we created an overview of climate adaptation today to share with others and inform our work on climate literacy.

In 2024, our Director of Climate Adaptation Strategy, Nabig Chaudhry, spoke with individuals working on climate adaptation in different contexts, organizations, and industries. In this report, we share insights into what the private and public sectors are doing to adapt to climate change today, and what the people and institutions in these sectors can do to make climate adaptation more successful.

We organized what we learned around four aspects of climate adaptation: understanding, organizing and structuring, taking action, and evaluating. Although we present these aspects in a linear fashion, climate adaptation efforts do not always follow this order or include every aspect.

We hope this synthesis will help individuals, governments, companies, and organizations everywhere take steps toward adapting well to climate risks.

- 01 In this report, “climate risk” refers only to physical risks, not regulatory risks related to carbon emissions or the transition to a carbon-free economy.
- 02 UNFCCC. (2019). 25 years of adaptation under the UNFCCC. United Nations Framework Convention on Climate Change. https://unfccc.int/sites/default/files/resource/AC_25%20Years%20of%20Adaptation%20Under%20the%20UNFCCC_2019.pdf

Key findings:

- There is no collective, clear definition for climate adaptation, even among those working on adaptation.
- Existing frameworks for climate adaptation are disjointed and unclear.
- Some climate adaptation strategies are more successful than others, and some sectors are working harder than others to adapt.
- Evaluating the success of climate adaptation strategies is necessary but inherently difficult.

Our approach

WE CONDUCTED RESEARCH FROM SEPTEMBER TO DECEMBER 2024.

Who we spoke to

We interviewed 28 industry leaders and climate adaptation experts across academia, consulting, insurance, government, finance, and technology. Some were both industry leaders and climate adaptation experts; everyone we spoke with was engaging with or working on climate adaptation.

Organizations represented in the interviews include Bloomberg Green, Carnegie Endowment for International Peace, Climate Adaptation Partners, Climate Resilience Consulting, Court Street Group, Earth Foundry, Earthena.AI, Environmental Defense Fund, Foreign, Commonwealth and Development Office of the United Kingdom, Gitterman Wealth Management, Harvard Business School (Michael Toffel and Lynn Schenk), Harvard Management Company, Insurance for Good, Lightsmith Group, London Business School, McKinsey & Company (Hamid Samandari), Milliman, Nephila, Neptune Flood, Ontario Teachers' Pension Plan, Prime Coalition, Tailwind Futures, The Intercept, University of California, Berkeley, Vibrant Data Labs, and Woodwell Climate Research Center.

What we read

We also incorporated findings from numerous research publications, news articles, and presentation materials. See [the appendix](#) for the list of consulted resources.

Understanding

Climate adaptation is most successful when understanding is shared across individuals, industries, geographies, and sectors of society.

KEY FINDINGS

- 1 (a) There is no shared definition of climate adaptation among leaders we interviewed or publications we reviewed.
- 1 (b) Industry leaders and climate adaptation experts highlighted that many people don't understand how climate adaptation is relevant to their job or industry.
- 1 (c) Industry leaders and climate adaptation experts who do understand the role of climate adaptation in their work consider adaptation a kind of climate risk reduction.
- 1 (d) Industry leaders and climate adaptation experts believe that better communication, education, and standards are essential to advancing successful climate adaptation.

Climate adaptation is most successful when there is shared understanding among individuals. We asked industry leaders and climate adaptation experts about their current understanding of climate adaptation and what it might take to improve shared societal understanding.

Findings:

1 (a) There is no shared definition of climate adaptation among leaders we interviewed or publications we reviewed.

Unlike climate mitigation or decarbonization—ideas that governing bodies and international organizations have clearly defined and disseminated—there is no shared, cohesive definition of climate adaptation, even for people working in defined climate adaptation roles. We found that people working across sectors, including the leaders we interviewed, define climate adaptation in various ways, such as disaster response, infrastructure protection, adjusting to changing conditions, and safeguarding or hardening against climate impacts.

The terminology associated with adaptation varies across different publications and organizations, as well as between the leaders we spoke to. Commonly referenced or associated terms include “hazard,” “exposure,” “vulnerability,” “sensitivity,” “adaptive capacity,” “impact,” and “risk.” We also observed “climate resilience” and “climate adaptation” used interchangeably or as overlapping concepts by the leaders and experts we spoke to and within publications we reviewed.

From the experts we spoke to:

“People on the front lines, like site managers, don’t call their work ‘adaptation’ even though they are taking steps to adapt to the climate and extreme weather.”

—Executive, Earthena.AI

“No one outside of the climate world knows what climate adaptation is.”

—Editor, Bloomberg Green

“Risk identification, management, and reduction are core to [climate] adaptation.”

—Executive, Lightsmith Group

1 (b) Industry leaders and climate adaptation experts highlighted that many people don't understand how climate adaptation is relevant to their job or industry.

There are many jobs that help society prepare for floods, improve disaster response, or install green infrastructure. The people doing these jobs, however, rarely identify their role as one in climate adaptation. According to our research, even leaders at companies that are addressing climate adaptation-related issues often don't fully recognize or embrace the term "climate adaptation." Instead, they use language like "disaster response," "climate-proofing," or "hazard resistance."

Through our interviews and literature review, we found that many people working in climate adaptation efforts don't see themselves as part of a unified field, and are instead working without a broader, coordinated vision. Government officials, public agency representatives, community organizations, insurance and actuarial professionals, climate tech professionals, and investors often engage in climate adaptation through specific projects, not as a core focus. Individuals in certain roles, like academic researchers, consultants, and Chief Heat or Resilience Officers, focus their work on climate adaptation. But for many others, taking steps to adapt to climate change is just one part of a broader set of responsibilities.

1 (c) Industry leaders and climate adaptation experts who do understand the role of climate adaptation in their work consider adaptation a kind of climate risk reduction.

One unifying element across the many definitions of climate adaptation was that of managing risk. Fundamentally, climate adaptation is a form of risk management and aims to reduce climate risk, whether that's for an individual, a town or municipality,

or a business. Some industry leaders and adaptation experts indicated that, in their own work on climate adaptation, they see three primary approaches to adaptation-focused risk management: accepting a certain level of climate risk, transferring climate risk to another entity via insurance or other financial measures, or reducing climate risk by lowering exposure or vulnerability to climate hazards.

The leaders and experts we spoke to also highlighted that, in their experience, when people understand climate risk, they are likely to be more motivated to take action to manage and reduce those risks, integrating climate adaptation into their everyday decisions. Clearly labeling these risk reduction strategies as “climate adaptation” can prompt people to allocate time and resources to the work.

1(d) Industry leaders and climate adaptation experts believe that better communication, education, and standards are essential to advancing successful climate adaptation.

From our interviews and publications reviewed, we found that there is opportunity to improve how we as a society collectively communicate and describe climate adaptation. Beyond having a shared definition of what climate adaptation is, individuals and organizations would benefit from educational outreach explaining climate change and its impacts.

Leaders and experts we interviewed stressed the need for training, guidance, and storytelling around climate adaptation, especially for individuals, business leaders, and decision-makers who do not know where to begin, even once they have an awareness of climate change.

Suggested approaches for public and private sector leaders

Below are suggested approaches for leaders in the private and public sectors to clarify understanding around climate adaptation:

- Develop consistent terminology and standardized language and share across different sectors.
- Center terminology and standardized language on climate risk. Clearly label risk management and risk reduction strategies as “climate adaptation” to prompt those concerned about climate risk to prioritize time and resources toward climate adaptation.
- Allocate time and resources to climate adaptation as its own area of work, not just an aspect of existing areas.

Organizing and structuring

Frameworks can help individuals and organizations working on climate adaptation to organize concepts and processes, inform their decision-making, and identify climate adaptation strategies.

KEY FINDINGS

- 2 (a) Climate adaptation efforts are happening, but they aren't organized or centralized.
- 2 (b) Experts call for consistent, practical climate adaptation frameworks to support climate adaptation efforts.
- 2 (c) Climate adaptation experts described climate migration as a challenging and overlooked part of climate adaptation.
- 2 (d) There are no widely recognized and well-established networks for people working in climate adaptation.

Climate adaptation frameworks are similar to a playbook to help governments, private companies, and organizations follow steps to manage climate risk and adapt to climate change. Depending on the context, steps might include assessing current and future risks, developing strategies to prepare for those risks, taking action to reduce those risks, and monitoring results. We explored how existing frameworks and guidance are working for people engaged in climate adaptation efforts.

Findings:

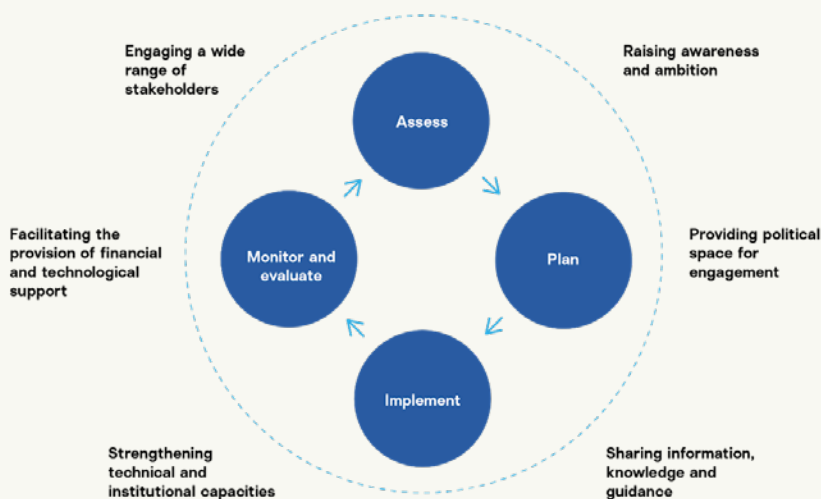
2 (a) Climate adaptation efforts are happening, but they aren't organized or centralized.

In our conversations, people working on climate adaptation reported feeling isolated and that they are operating without a common vision or coordinated structure. Across our interviews and the publications we reviewed, we found that climate adaptation efforts are underfunded, relative to the importance of the work, and people working on climate adaptation lack the resources and networks to collaborate with peers.

2 (b) Experts call for more consistent, practical climate adaptation frameworks to support climate adaptation efforts.

Many people we spoke to who are working on climate adaptation described widely used frameworks, such as those by the [United Nations \(UN\)](#) or [Intergovernmental Panel on Climate Change \(IPCC\)](#), as confusing or disconnected from real-world decision-making. They described the differences between frameworks as challenging—some frameworks focus on reducing risks, while others encourage

managing climate impacts, building adaptive capacity, or addressing the root causes of vulnerability. We heard that varying definitions, terminology, and guidance make it difficult to apply the frameworks consistently and that, when it comes to local decision-making, existing frameworks don't help to identify what climate adaptation strategies are available or appropriate. Instead, frameworks are leaving local decision-makers unsure of what they can or should do next.



An example of a climate adaptation framework

2(c) Climate adaptation experts described climate migration as a challenging and overlooked part of climate adaptation.

Climate adaptation experts we spoke to said that current frameworks and guidance for climate adaptation do not adequately address the challenge of climate migration and relocation. This is in part because climate migration is a complex systemic response to climate hazards and there simply aren't many strategies shown to effectively manage

migration. Through these conversations and publications reviewed, we also learned that climate adaptation frameworks often overlook the climate migration management strategies that do exist, such as strategic retreat, assisted relocation, and buyout of homes and residences to facilitate retreat.

2 (d) There are no widely recognized and well-established networks for people working in climate adaptation.

Many people working on climate adaptation efforts feel disconnected from their peers working on the same challenges. In the absence of strong, visible networks, they rely on informal, personal relationships for support and collaboration.

While some professional networks are beginning to emerge, such as the National Adaptation Forum and the Adaptation Professionals Network, many people working on climate adaptation efforts are unaware of or unengaged in these networks and their conferences. In our interviews, climate adaptation professionals expressed a desire for more opportunities to connect across roles, sectors, and disciplines and an interest in peer learning, shared resources, and structured spaces for collaboration.

Suggested approaches for public and private sector leaders

Below are suggested approaches for leaders in the private and public sectors to strengthen organization and structure for climate adaptation efforts:

- Identify frameworks with processes that can guide climate adaptation decision-making and that include well-documented climate adaptation strategies.
- Organize strategies in publicly accessible and comprehensive knowledge bases for easy access.
- Develop and share clear, practical guidance for applying nationally or internationally oriented climate adaptation frameworks to local realities.
- Strengthen local or industry-specific climate adaptation professional networks to help colleagues collaborate, share relevant knowledge, and advance their climate adaptation strategies.

Taking action

Taking action describes implementing or putting into motion a proposal or strategy to adapt and reduce climate risk.

KEY FINDINGS

- 3 (a) Climate adaptation efforts are most successful when they are local, iterative, and continuous.
- 3 (b) Local, regional, and national governments are implementing more climate adaptation strategies than the private sector.
- 3 (c) Climate adaptation is underfunded and financial investments are poorly tracked compared to climate mitigation.

The end goal of climate adaptation is to reduce climate risk. Taking action describes implementing or putting into motion a proposal or strategy to adapt and reduce climate risk—for example, expanding city drainage infrastructure to accommodate greater volumes of water from storms or implementing a community plan to check up on vulnerable residents during a heat wave. Through our research, we gathered findings on best practices and pitfalls in climate adaptation action, as well as who is leading the effort to adapt to climate change.

Findings:

3 (a) **Climate adaptation efforts are most successful when they are local, iterative, and continuous.**

The leaders and climate adaptation experts we spoke to recognized that, to be successful, climate adaptation strategies need to be flexible and iterative so that those taking action can adjust to changing conditions and suggested improvements. Just as climate hazards are ongoing, we heard from leaders and experts that taking action on climate adaptation should be a continuous effort to manage and reduce risk. We heard that the most successful climate adaptation was often ongoing and preemptive, not reactive, and designed with local understanding of needs, risks, risk tolerances, and context in mind.

From the experts we spoke to:

“I’m having more conversations about [climate] adaptation [with private sector firms] who wouldn’t have given me the time of day a few years ago.”

Executive, Tailwind Futures

3 (b) Local, regional, and national governments are implementing more climate adaptation strategies than the private sector.

A large and growing number of cities and governments have put into motion climate adaptation plans and strategies. As of 2023, according to McKinsey Sustainability, about two-thirds of countries had developed a national adaptation plan, which together, represent just over 60% of the global economy.³ Some industry leaders and adaptation experts noted that public sector institutions are often more actively involved in climate adaptation because they are rooted in a place. Unlike most businesses that can relocate operations, governments generally cannot move as environmental conditions change or after a disaster.

Some private companies are currently engaged in climate adaptation efforts or have climate adaptation plans. S&P Global reports that 23% of firms currently engage in climate adaptation, and 21% have an adaptation plan.⁴ We observed that private sector companies are expressing growing interest in climate adaptation. In particular, some companies are beginning to explore climate adaptation strategies that minimize business-related operational disruptions or risks from climate shocks.

Our interviews and publication reviews revealed key challenges private sector companies are facing, including a lack of awareness around climate adaptation, confusion over which sector is responsible for climate adaptation, difficulty quantifying climate

03 Trittipi, A., Samandari, H., Hatami, H., & Mysore, M. (2023, November 27). *Paving the way to resilience: Strengthening public sector adaptation planning and execution*. McKinsey & Company. Retrieved July 28, 2025, from <https://www.mckinsey.com/capabilities/sustainability/our-insights/paving-the-way-to-resilience-strengthening-public-sector-adaptation-planning-and-execution>

04 Munday, P., Georges, P., & Baddeley, C. (2024). Risky business: Companies' progress on adapting to climate change. S&P Global Ratings. <https://www.spglobal.com/ratings/en/research/pdf-articles/240403-sustainability-insights-research-risky-business-companies-progress-on-adapting-to-climate-change-101595538>

risks, limited focus on second- and third-order climate risks, challenges in integrating long time horizons into business operations, and a prevailing focus on decarbonization and climate mitigation.

3 (c) **Climate adaptation is underfunded and financial investments are poorly tracked compared to climate mitigation.**

Publicly available investment data shows that far more money is invested in climate mitigation and managing risks related to the transition to decarbonization than in climate adaptation. In 2024, the UN Environment Programme estimated that the gap between what's needed for adaptation and what's actually being provided was between \$187 and \$359 billion per year.⁵ Adaptation investments can also be hard to track. Both public and private investments that might be relevant to climate adaptation are often not labeled or tracked as such, contributing to an overall underreporting of climate adaptation investment.

In developing countries, for example, some leaders we interviewed highlighted that economic development is an effective climate adaptation strategy, as it builds resilience against climate shocks. The World Bank defines climate adaptation as a mix of equitable economic development and targeted solutions, emphasizing that addressing poverty and improving infrastructure are key to climate adaptation.⁶ However, those same leaders noted that the role of economic development in climate adaptation is often overlooked, particularly by those working in climate-related or sustainability sectors who favor climate-specific interventions.

05 United Nations Environment Programme. (2024). Adaptation Gap Report 2024. <https://www.unep.org/resources/adaptation-gap-report-2024>

06 World Bank. (2024). Rising to the Challenge: Success Stories and Strategies for Achieving Climate Adaptation and Resilience [Report]. World Bank. <https://www.worldbank.org/en/publication/rising-to-the-challenge-climate-adaptation-resilience>

Suggested approaches for public and private sector leaders

Below are suggested approaches for leaders in the private and public sectors to make climate adaptation action more effective:

- Build an understanding of the local context when developing climate adaptation strategies, such as who is adapting and why, what risks they face, what level of risk they're willing to accept, and what trade-offs they're prepared to make.
- Implement climate adaptation strategies on an iterative, ongoing basis and with flexibility, so that actions can be preemptive, not reactive, and can adapt to changing conditions.
- Clearly define what constitutes climate adaptation investment in both the public and private sector, including approaches like economic development.

Evaluating

Evaluation is crucial to identifying how successful or unsuccessful a climate adaptation strategy is.

LIST OF FINDINGS:

- 4 (a) Evaluating the success or failure of climate adaptation strategies and efforts is challenging and requires clearer metrics.

Evaluation measures the success of a climate adaptation strategy and can help demonstrate how to improve it. However, unlike emissions reductions, which are relatively straightforward to quantify, we can't use a single global metric to evaluate climate adaptation efforts. We explored how people working on climate adaptation are trying to evaluate adaptation strategies and what could improve this aspect of climate adaptation.

Findings:

4 (a) Evaluating the success or failure of climate adaptation strategies or efforts is challenging and requires clearer metrics.

The leaders and experts we interviewed shared that measuring adaptation is inherently difficult because the focus of different metrics vary. Some climate adaptation evaluation metrics focus on the value of specific outcomes like avoided losses, damage prevented, cost savings, or lives protected. Other metrics focus on the value of broader indicators of human well-being or the functionality of systems like the economy. Leaders and experts emphasized that different communities have different priorities and that no one-size-fits-all indicator can capture the full value of climate adaptation.

Some leaders and experts we spoke to also noted that climate adaptation evaluation tends to focus on minimizing negatives, such as damages or disruptions, but often overlooks the broader benefits climate adaptation strategy can create, from economic opportunity to public health and environmental improvement. They emphasized that climate adaptation evaluation should account for these co-benefits, such as economic growth, increased public goods,

From the experts we spoke to:

"There is no global metric for adaptation, and there are reasons we think an extremely blunt tool like dollars, damage, or human lives would be ineffective."

Executive, Prime Coalition

improved quality of life, or ecosystem improvements. For example, designing a playground with features that retain stormwater can help reduce flood risk, and at the same time serve as a space for recreation and community gathering.

One concept highlighted by some industry experts and adaptation experts that could help with expanding how we evaluate climate adaptation efforts is the World Resources Institute’s “triple dividend of resilience” concept. The “triple dividend of resilience” captures a broad range of benefits, accounting not only for avoided losses (the first dividend) but also for induced economic or development benefits (the second dividend) and additional social and environmental benefits (the third dividend).⁷

07 Heubaum, H., Brandon, C., Tanner, T., Surminski, S., & Roezer, V. (2022, November 7). *The triple dividend of building climate resilience: Taking stock, moving forward* (Working Paper). World Resources Institute. <https://doi.org/10.46830/wriwp.21.00154>

Suggested approaches for public and private sector leaders

Below are suggested approaches for leaders in the private and public sectors to improve climate adaptation evaluation:

- Use qualitative, holistic metrics in evaluating the success of climate adaptation strategies over simply quantitative ones.
- Tailor metrics according to the strategy or context rather than using a global metric for all climate adaptation efforts.
- Evaluate climate adaptation efforts by incorporating multiple perspectives on the success of a strategy, accounting for short-term and long-term outcomes, and comparing conditions generally between pre- and post-adaptation strategy.

Publications reviewed for this analysis:

- 01 Li, X. (2025). Physical climate change exposure and firms' adaptation strategy. *Strategic Management Journal*, 46(3), 750–789. <https://doi.org/10.1002/smj.3674>
- 02 International Organization for Standardization. (2021). *ISO 14091:2021 – Adaptation to climate change – Guidelines on vulnerability, impacts and risk assessment*. <https://www.iso.org/standard/68508.html>
- 03 International Organization for Standardization. (2019). *ISO 14090:2019 – Adaptation to climate change – Principles, requirements and guidelines*. <https://www.iso.org/standard/68507.html>
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- 06 Regional Plan Association. (2024). *The state of climate adaptation planning today: An analysis of climate resilience and adaptation plans across the country*. <https://rpa.org/work/reports/climate-adaptation-planning-today>
- 07 Gardiner, N., Hutchins, M., Fox, J., Patel, A., & Rhodes, K. (2022). *Implementing the steps to resilience: A practitioner's guide (Climate-Smart Communities Series; Vol. 6)*. United States. National Oceanic and Atmospheric Administration, Climate Program Office. <https://doi.org/10.25923/9hhx-2m82>
- 08 Climate Bonds Initiative. (2021). *Climate resilience taxonomy: Facilitating a future-fit climate bond market*. https://www.climatebonds.net/files/documents/supporting-documents/Climate-Bonds_Resilience-Methodology_2024.pdf
- 09 Trittipi, A., Samandari, H., Hatami, H., & Mysore, M. (2023). *Ten key requirements for a systemic approach to climate adaptation*. McKinsey & Company. <https://www.mckinsey.com/capabilities/sustainability/our-insights/ten-key-requirements-for-a-systemic-approach-to-climate-adaptation>
- 10 Trittipi, A., Samandari, H., Hatami, H., & Mysore, M. (2023). *Paving the way to resilience: Strengthening public sector adaptation planning and execution*. McKinsey & Company. <https://www.mckinsey.com/capabilities/sustainability/our-insights/paving-the-way-to-resilience-strengthening-public-sector-adaptation-planning-and-execution>
- 11 Farnham, L. M., Nothmann, E., & Daniels, C. (2020). *Field building for population-level change*. The Bridgespan Group. <https://www.bridgespan.org/insights/field-building-for-population-level-change>
- 12 Moser, S., Coffee, J., & Macnee, R. (2024). *The tasks of now: Toward a new era in climate resilience building*. Omega. <https://omega.ngo/2025/03/the-tasks-of-now-toward-a-new-era-in-climate-resilience-building/>