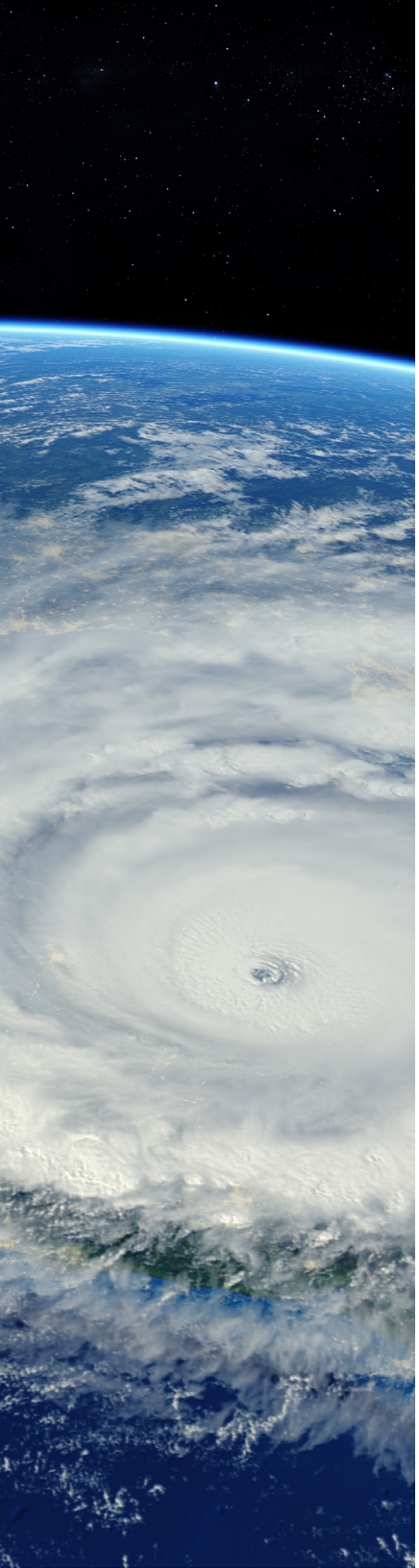
Ceres

Investing in Resilience

3 Investor Case Studies in Climate Adaptation

June 2025



As the financial toll of climate change escalates, adaptation—adjusting to the current and future impacts of a changing climate—is emerging as a critical focus area for investors. Hurricanes, wildfires, drought, and sea level rise are already disrupting business, damaging infrastructure, devaluing coastal assets, straining agriculture, and causing delays and shortages across supply chains.

$1.2 trillion by 2050

The annual losses the world's largest companies face without adaptation

Adaptation isn't just a necessary risk management strategy for ensuring long-term business viability; it's also a significant market opportunity, representing a multi trillion-dollar market. However, the financial sector faces challenges in capitalizing on risk management and investment opportunities of adaptation.

Based on a round table discussion with investors from Ceres' Investor Network, this brief lays out how leading investors are navigating climate risks and identifying adaptation opportunities, highlighting emerging best practices for investors seeking to protect portfolio value while ensuring a more resilient economy.

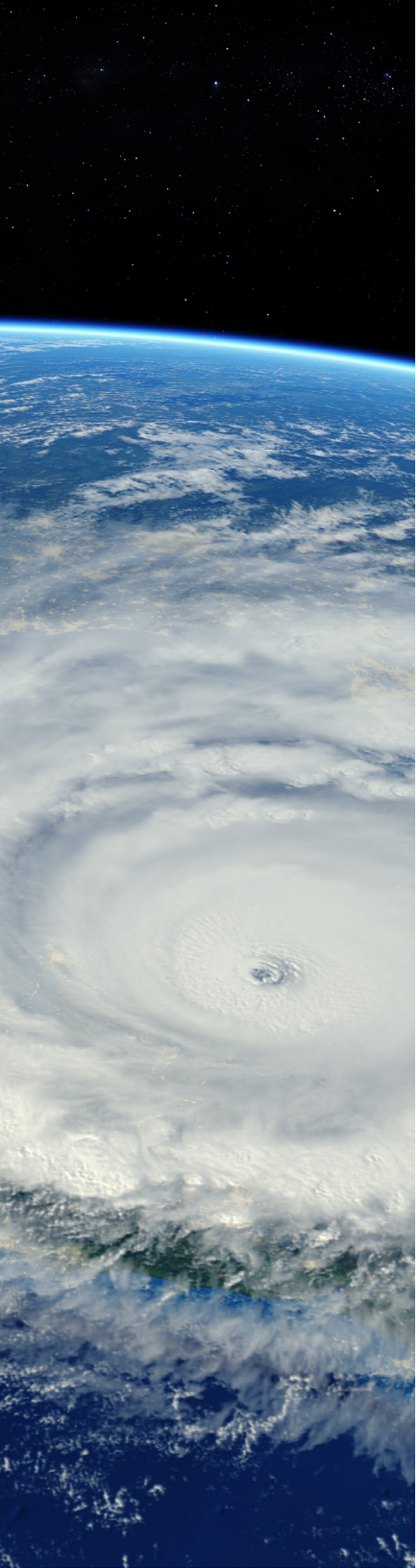
The discussions reveal that, while investor awareness of physical climate risks has improved significantly, substantial challenges remain when it comes to risk assessment, disclosure quality, and adaptation financing.

These obstacles help explain why adaptation remains underfunded. More than 90% of global climate finance still goes to mitigation and, while adaptation investment has increased, it is projected to cover only one-sixth of expected physical climate risk costs by 2030.

Up to

$43 for each $1 spent

Potential return on adaptation investment



Common Themes Across Case Studies

The case studies from IFM Investors, Breckinridge Capital Advisors, and Impax Asset Management reveal several common themes, along with lessons from first-hand experience in addressing risks and unlocking investment opportunities.

- **Markets misprice tomorrow's climate realities today**
  All three investors see major mispricing in today's markets, creating significant barriers to adaptation funding but golden opportunities for smart long-term investors who act now.
- **Yesterday's data won't save tomorrow's assets**
  These investors rely on forward-looking climate projections, not outdated historical trends that miss how quickly risks are accelerating.
- **Awareness without action is worthless**
  Knowing climate risks exist isn't enough. Investors need hard dollar figures showing exactly what these threats will cost their portfolios.
- **Think beyond your own backyard**
  One of the biggest missteps investors make is focusing only on direct operations—ignoring the supply chains, infrastructure networks, and communities that can suffer severe climate impacts and deliver financial shocks across entire portfolios.

The Value of Investor Peer Exchange Through Ceres

For investors looking to discuss practices for integrating climate risks and opportunities into investment decision-making, the Ceres Investor Practices Working Group provides a venue for peer exchange for asset owners and managers to share case studies and frameworks. By building on the insights from pioneering investors like those featured in this brief, Ceres' Investor Network will continue advancing practices that protect portfolio value while supporting the transition to a more resilient economy.

Case Studies

1
IFM Investors

How infrastructure investors can create long-term value through strategic adaptation investments

2
Breckinridge Capital Advisors

How municipal bond specialists are incorporating forward-looking climate data into credit assessments

3
Impax Asset Management

How asset managers can develop strategies for effectively engaging with companies to improve risk disclosure and management

Challenge

IFM Investors, a global investment fund and asset manager based in Australia with approximately $150 billion under management across infrastructure equity and other asset classes, faces physical risk challenges, given its infrastructure equity portfolio of critical long-term assets including ports, airports, toll roads, and pipelines. These assets are particularly vulnerable to the growing frequency and intensity of extreme weather events, ranging from floods to wildfires, with exposure levels varying significantly by geographic location. Because infrastructure assets are often held for decades within IFM's infrastructure equity portfolio, comprehensive physical risk management is essential to protecting long-term value.

> "If you're a long-term investor, there's more you can do if you're in a really climate vulnerable zone because it's more material and more financially advantageous for you to take more action sooner"
>
> *Eric Maltzer*
> *Director of Sustainable Investment*
> *IFM Investors*

Approach

IFM implements a two-pronged approach to managing the risk in its infrastructure equity portfolio of the physical damage caused by weather hazards and changing climate. First, the firm conducts rigorous climate risk screening during due diligence, employing multiple data tools to assess physical vulnerability.

According to Eric Maltzer, Director of Sustainable Investment: "Given the same characteristics, if an asset is on the coast and hasn't done anything [about climate adaptation]... all else equal, we're going to buy the inland asset." Second, IFM requires every acquired asset across its infrastructure equity portfolio to develop and implement a climate transition plan addressing both emissions reduction and adaptation to accurately assess how companies are evaluating climate risk and what they are doing to address them.

As a majority equity owner in several infrastructure equity investments, IFM seeks to leverage its governance position to ensure portfolio companies implement robust adaptation strategies. IFM believes its long-term investment perspective, with no forced exit timeline, creates a strategic advantage, allowing it to pursue adaptation investments that might not deliver immediate returns but seek to protect and enhance asset value over the long run.

Results

IFM's approach is yielding tangible benefits, particularly in Australia where investments in protecting and bolstering infrastructure have historically demonstrated positive performance during extreme weather events. Maltzer highlighted the case of New South Wales port in Sydney, which remained operational during severe storms while surrounding infrastructure failed. Because investments were made to help the port withstand extreme weather, it was able to take on redirected cargo traffic, significantly boosting the asset's value and demonstrating the financial benefit of adaptation investments.

Across its portfolio, IFM has observed that proactive adaptation can reduce maintenance costs, minimize revenue disruptions, and enhance asset values. The firm's experience contradicts the common perception that climate adaptation is purely a cost center rather than a value creator.

Lessons Learned

IFM's experience offers several key insights for other infrastructure investors.

1. Adaptation investments appear to deliver strong returns when they match investors' time horizons, making them particularly valuable for long-term holders like pension funds.
2. Resilience can become a competitive advantage during extreme weather events when other assets fail.
3. IFM believes adaptation investments should focus on three value drivers: increasing asset value, enhancing returns, and mitigating catastrophic losses.

Most importantly, IFM has learned that waiting for climate risks to be fully priced by markets before acting is dangerous. Proactive investors can gain competitive advantage by addressing physical risks before they materialize.

$2 trillion annually

The amount the adaptation market could reach by 2026.

Breckinridge Capital Advisors

Breckinridge Capital Advisors, an asset manager based in the U.S., assesses and manages physical climate risk across its $37.9 billion (as of 5/31/25) in tax-efficient bond assets, which includes over 3,500 individual municipal issuers. Many of these issuers, particularly those in coastal areas and the Southern United States, have high exposure to hurricanes, flooding, wildfires, heat, and drought.

Despite these risks, the municipal market has historically failed to price this risk into bond valuations, creating potential mispricing that could affect long-term returns. Additionally, disclosure of climate-related financial risk or resilience planning among municipal issuers varies dramatically, with many smaller issuers lacking the resources or expertise to assess and report their vulnerabilities.

Approach

Breckinridge implemented a comprehensive approach to integrating these risks into its municipal credit assessment process. This process relies on third-party data providers that offer forward-looking risk projections under various climate scenarios, allowing the firm to assess risks that correspond to each municipal bond's maturity date.

The firm's analysis extends beyond direct climate hazards to evaluate issuer characteristics that influence resilience, including "what the issuers are doing about their physical climate risk and other community attributes which we think are important in addressing physical climate risk," according to Senior Research Analyst Erika Smull.

> "If you're truly just starting out with physical (climate) risk, the first piece is to start with forward-looking data."
>
> *Erika Smull*
> *Senior Research Analyst*
> *Breckinridge Capital Advisors*

These include the size (tax base as well as geographic footprint), as well as the health and wealth profiles of the communities which impacts their exposure to single event risk and their ability to finance necessary upgrades. This holistic approach allows Breckinridge to adjust its credit assessments based on both the bond issuer's exposure to risk and capacity to adapt to it.

Breckinridge also engages independently with companies, municipalities, and other issuers. While municipal engagements differ from corporate engagement due to the public nature of municipal issuers, they provide valuable insights into how issuers understand and address climate risks. During these engagements, Breckinridge encourages issuers to disclose and quantify their material sustainability risks in financial terms and demonstrate how adaptation measures are reflected in budgets, financial statements, or capital improvement plans.

Results

Through its engagement efforts, Breckinridge has observed improvements in municipal climate risk disclosure. Mentions of "climate change" in official municipal bond market offering statements increased from approximately 5% to 30-35% over the last decade. While still not standardized across the market, disclosure quality has improved substantially, particularly among larger, more sophisticated issuers.

Market pricing of climate risk is also evolving, though slowly. Smull noted that while the primary municipal bond market has not historically applied price penalties for the risk exposure, this may be changing following recent events: "The Los Angeles wildfires were a bit of a turning point... There was very significant spread widening in the secondary market with those bonds."

Combined with changes in insurance market availability and uncertainty around FEMA funding, these events could signal the beginning of more appropriate pricing around these risks.

Breckinridge has also identified a growing number of adaptation investments across the municipal market, particularly in water utilities that are responding to precipitation extremes such as flood or water scarcity challenges. These include projects to reduce sewer overflows in coastal areas and expand water supply in drought-prone regions, often funded through a combination of municipal bonds, federal programs, and state revolving funds.

Lessons Learned

Breckinridge's experience offers several valuable insights for fixed income investors.

1. Forward-looking data on physical risk is essential, as historical information does not capture future risks in a changing climate.
2. Engagement with issuers, while challenging in the municipal space, can provide crucial qualitative information about resilience strategies that supplement quantitative risk data.
3. Perhaps most importantly, Breckinridge has learned that the municipal market requires increased transparency in how climate risks can impact financial statements.

As Smull emphasized, investors need issuers to "put a dollar value to that flood risk" and show "where in your budget or financial statements or capital improvement plan you have done anything or are planning to do anything about that flood risk." This financial translation of these impacts is critical for appropriate risk pricing.

Impax Asset Management

Challenge

Impax Asset Management, an asset manager based in the UK, faces a critical challenge in its sustainable investment approach: a significant gap between the information investors need to effectively price physical risk and what companies currently disclose.

Despite five years of focused corporate engagement on these risks, Julie Gorte, Senior Vice President for Sustainable Investing, observes that while "disclosure is getting better... it's not rising as fast as the risk." Most companies say that they are aware of the risks they face from weather disasters and risks such as rising seas and droughts, but provide minimal specific information about what kind of methodologies they use to assess their vulnerabilities, what assets are at risk, or what kind of concrete adaptation measures they are adopting to address those risks.

This disclosure gap creates a challenge for investors to accurately price risk or identify which companies are developing meaningful climate resilience.

Approach

Impax pioneered a systematic approach to getting the decision-useful information it needs to manage its risks, ranging from working directly with companies in its portfolios to petitioning the SEC to mandate risk reporting. The firm's corporate engagement strategy has evolved from initially requesting basic geolocation data on vulnerable assets to a more sophisticated approach of asking companies "what they're doing to understand, adapt, and build resilience to physical risk."

> "Disclosure that investors need to price physical risk is getting better... but it's not rising as fast as the risk"
>
> *Julie Gorte*
> *Senior Vice President for Sustainable Investing*
> *Impax Asset Management*

Impax developed clear expectations for adequate risk disclosure, including:

1. Geolocation data for company-owned assets and key value chain hubs where damage would constitute a material event.
2. Transparent disclosure of methodologies used to assess value at risk, including scenario analysis to prepare for events that may never have happened before.
3. Specific actions and capital expenditures allocated to building resilience against identified risks.
4. Contingency planning for key supply chain vulnerabilities.

Strategically, the firm focused its initial engagement efforts on particularly vulnerable sectors, including utilities and semiconductors, seeking to establish best practices that can be extended across other industries.

Results

Impax's engagement is yielding important insights into the state of corporate physical climate risk management. The firm has identified a small group of companies—primarily utilities that have already experienced climate disasters—that are providing exemplary disclosure. For example, utilities regulated by the California Public Utilities Commission produce detailed "climate adaptation vulnerability assessments" that thoroughly address both risk exposure and concrete adaptation measures.

However, most companies' disclosures remain insufficient for investors to appropriately assess risk. Gorte explains that when most companies are pressed for specifics on the action they've taken on adaptation, "disclosure thins out almost to the point of invisibility." This pattern reveals a reactive rather than proactive approach to the risk their businesses face, with comprehensive planning typically occurring only after experiencing significant losses from disasters such as floods, rising seas, or droughts.

Impax's engagement has highlighted just how vulnerable critical points in the supply chain are to extreme weather. Take, for example, the damage from Hurricane Helene, which caused flooding and road closures that halted and then impacted for months the mining capacity of a high-purity quartz mine in North Carolina that supplied 80% of global demand for semiconductor manufacturing. This single point of failure impacted companies throughout the supply chain. This case demonstrated how local weather disasters can create material risks for entire industries as a result of the concentration of critical inputs.

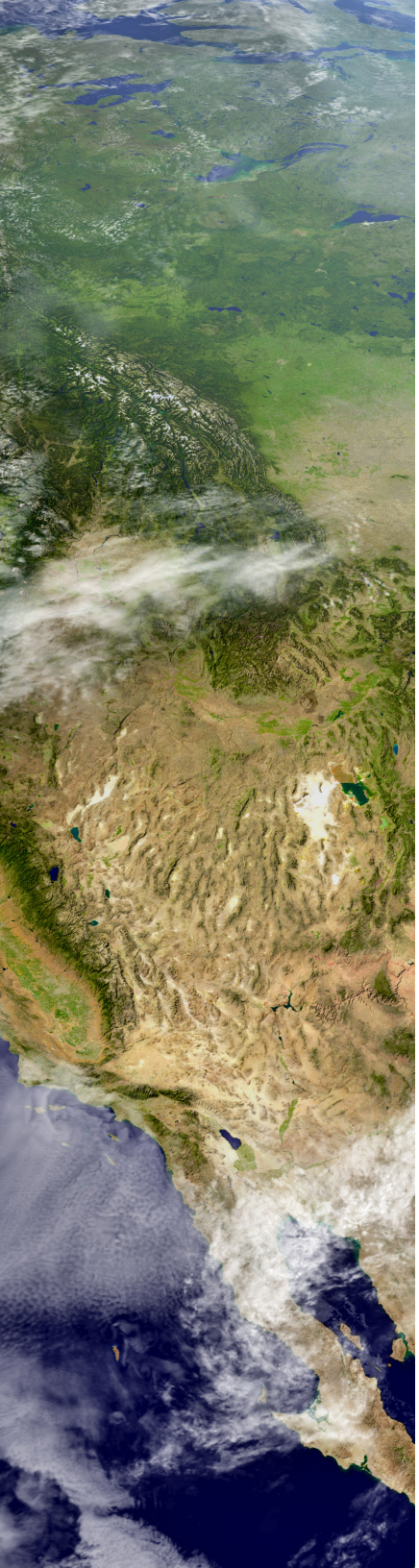
Lessons Learned

Impax's engagement work offers several critical lessons for investors.

1. Comprehensive risk assessment requires looking beyond direct operations to identify vulnerable links in the supply chain, what Gorte terms "key value chain nodes for which significant damage or loss would be a material event."
2. Current corporate approaches remain predominantly reactive rather than proactive, with Gorte observing that "people can only apparently see these things in the rearview mirror." This suggests investors should question whether companies are adequately prepared for future climate impacts, even if they haven't yet experienced losses.
3. Investors should scrutinize the methodologies and scenarios companies use in risk assessments, as many rely on optimistic climate scenarios that no longer reflect reality. As Gorte noted, many companies use "RCP 2.6, which is based on a temperature rise of 1.5°C, and we've already broken through that threshold."
4. Finally, Impax has experienced firsthand how sector-specific regulatory requirements can drive meaningful improvements in disclosure quality, underscoring the key role policy advocacy has to play alongside direct corporate engagement. As regulatory frameworks evolve-including potential mandatory climate disclosure rules from financial regulators-investors can help shape effective standards that yield decision-useful information.

Adaptation Insight

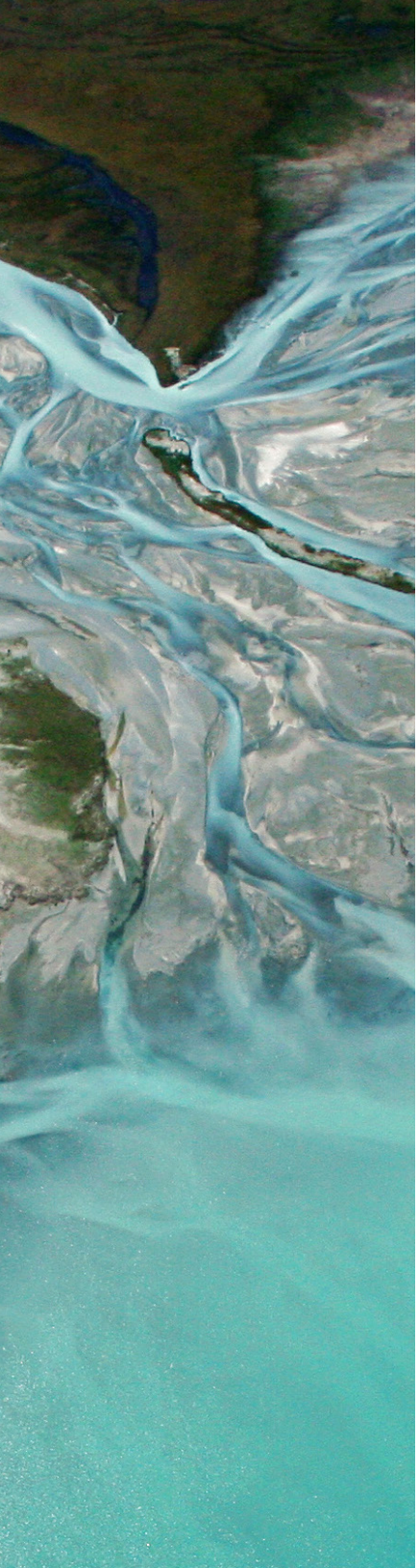
Whether it's the impact from disasters like the Los Angeles fires in early 2025 or Hurricane Helene in 2024 or long-term challenges from rising sea levels and intensifying heat waves, investors require more sophisticated approaches for assessing, pricing, and managing these risks—and for identifying promising adaptation opportunities. Beyond obvious infrastructure plays, these opportunities span agriculture technology, resilient communications networks, industrial process optimization, emergency response systems, energy efficiency solutions, and innovative insurance products.



Recommendations for Investors

Based on insights from the investor session and Ceres' broader research on physical climate risk, investors should consider the following actions:

1. Incorporate forward-looking climate data into investment processes across asset classes, recognizing the limitations of historical data in a changing climate.
2. Expand risk assessment beyond direct physical impacts to include supply chain vulnerabilities, infrastructure interdependencies, and systemic economic effects.
3. Engage with portfolio companies and issuers to improve risk disclosure, focusing on specific adaptation actions rather than general acknowledgment of risks.
4. For long-term investors, recognize adaptation investments as potential sources of competitive advantage and value creation rather than merely risk mitigation.
5. Develop sector-specific expertise on vulnerabilities and adaptation strategies, recognizing that risks and opportunities vary significantly across industries.
6. Advocate for improved regulatory frameworks that promote standardized risk disclosure and appropriate risk pricing in financial markets and government policies that incentivize climate adaptation investments.



Resources

- Leading with Transparency: A Guide to Strengthening Climate Disclosure and Resilience in the Municipal Bond Market (Ceres)
- Building Climate-ready Transition Plans (TPT Adaptation Working Group)
- Physical Climate Risk Assessment and Management: An investor playbook (UNEP FI)
- Consultation: The Climate Resilience Investment Framework (CRIF) (IIGCC)
- Financing Asia's National Adaptation Plans (AIGCC)
- Adaptation Finance (UNEP FI)
- Assessing physical climate risk in private markets: A technical guide (PRI)
- Investing in Tomorrow: A Guide to Building Climate-Resilient Investment Portfolios (Cambridge Institute for Sustainability Leadership (CISL))
- Engaging with companies on Just Resilience: An Investor Toolkit (Schroders)
- Seeking Resilience (Impax)
- Heating Up: The Muni Market Inches Closer To Pricing Climate Risk (Breckinridge)
- For the world's largest companies, climate physical risks have a $1.2 trillion annual price tag by the 2050s - (S&P Global)
- Adaptation & Resilience Impact: A measurement framework for investors (UNEP FI)
- Climate Bonds Resilience Taxonomy Methodology (Climate Bonds Initiative)
- Climate Adaptation Investment Framework (OECD)
- An Introduction to Responsible Investment: Climate Adaptation and Resilience (PRI)

About Ceres

Ceres is a nonprofit advocacy organization working to accelerate the transition to a cleaner, more just, and sustainable world. United under a shared vision, our powerful networks of investors and companies are proving sustainability is the bottom line—changing markets and sectors from the inside out. For more information, visit ceres.org.

Acknowledgments

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