

CLIMATE SCIENCE INSIGHT

WHEN CLIMATE SHOCKS BECOME SYSTEMIC FINANCIAL RISKS

Dr Sophie Lewis, Chief Scientist - Engagement

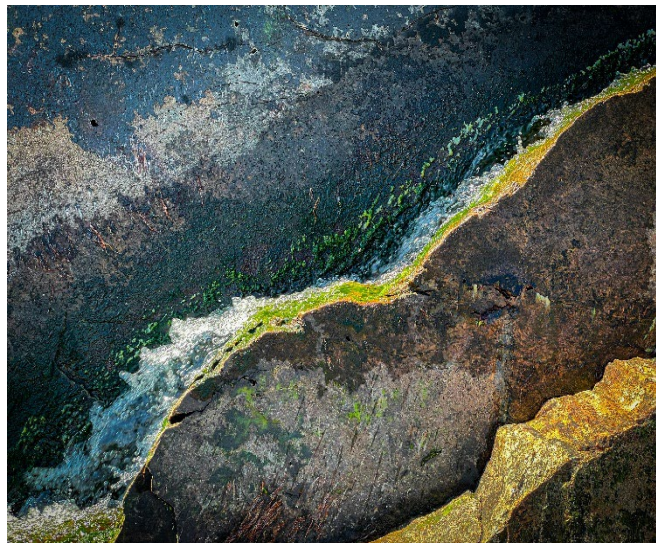
20 May 2026



ABOUT US

ACCR is a not-for-profit, philanthropically funded shareholder advocacy and research organisation.

We focus on protecting long-term portfolio value while mitigating systemic and physical climate risks. Using our expertise in shareholder strategy, we enable investors to engage and escalate with major heavy-emitting listed companies, and influence change at sector and value-chain levels. Our research team combines finance, investment, industry, and climate science expertise to deliver actionable insights to institutional capital.



DISCLAIMER

This document has been prepared by the Australasian Centre for Corporate Responsibility Inc. ("ACCR").

Copyright

Any and all of the content presented in this report is, unless explicitly stated otherwise, subject to a copyright held by the ACCR.

No reproduction is permitted without the prior written permission of ACCR.

No distribution where licence would be required

This document is for distribution only as may be permitted by law. It is not directed to, or intended for distribution to or use by, any person or entity who is a citizen or resident of or located in any locality, state, country or other jurisdiction where such distribution, publication, availability or use would be contrary to law or regulation or would subject ACCR to any registration or licensing requirement within such jurisdiction.

Nature of information

ACCR is not providing financial product advice. The purpose of this communication is not to provide financial product advice. Readers should consider obtaining independent advice before making any financial decisions. None of ACCR, its officers, agents, representatives or employees holds an Australian Financial Services Licence (AFSL), and none of them purports to give advice or operate in any way in contravention of the relevant financial services laws. ACCR, its officers, agents, representatives and employees exclude liability whatsoever in negligence or otherwise, for any loss or damage relating to this document or its publications to the full extent permitted by law. This document has been prepared as information or education only without consideration of any user's specific investment objectives, personal financial situation or needs. It is not professional advice or recommendations (including financial, legal or other professional advice); it is not an advertisement nor is it a solicitation or an offer to buy or sell any financial instruments or to participate in any particular trading strategy. Because of this, no reader should make any financial decisions without having obtained independent advice. By receiving this document, the recipient acknowledges and agrees with the intended purpose described above and further disclaims any expectation or belief that the information constitutes investment advice to the recipient or otherwise purports to meet the investment objectives of the recipient.

Information not complete or accurate

The information contained in this report has been prepared based on material gathered through a detailed industry analysis and other sources and although the findings in this report are based on a qualitative study no warranty is made as to completeness, accuracy or reliability of fact in relation to the statements and representations made by or the information and documentation provided by parties consulted as part of the process. The sources of the information provided are indicated in the report and ACCR has not sought to independently verify these sources unless it has stated that it has done so. ACCR is not under any obligation in any circumstance to update this report in either oral or written form for events occurring after the report has been issued. The report is intended to provide an overview of the current state of the relevant industry or practice. This report focuses on climate related matters and does not purport to consider other or all relevant environmental, social and governance issues. Any prices stated in this document are for information purposes only and do not represent valuations for individual securities or other financial instruments. ACCR does not represent that any transaction can or could have been affected at those prices, and any prices do not necessarily reflect ACCR's internal books and records or theoretical model-based valuations and may be based on certain assumptions. Different assumptions by ACCR or any other source may yield substantially different results.

Links to Other Websites

This document may contain links to other websites not owned or controlled by the ACCR and ACCR assumes no responsibility for the content or general practices of any of these third party sites and/or services whose terms and conditions and privacy policy should be read should you access a site as a result of following a link cited in this report.

CLIMATE SCIENCE INSIGHT: WHEN CLIMATE SHOCKS BECOME SYSTEMIC FINANCIAL RISKS

What happens when climate shocks cascade through economic and financial systems?

Physical climate risks are no longer hypothetical. Extreme heat, drought, storms and floods are already affecting assets, supply chains and communities.

However, many climate risk assessments still treat these climate events in isolation, evaluating impacts on individual companies, sectors or regions. This approach risks underestimating the most disruptive form of climate risk: systemic risk driven by cascading climate shocks.

From a climate science perspective, planning for systemic risks is crucial. Complex systems rarely fail in neat, linear ways. Instead, shocks propagate across them, amplifying impacts far beyond the initial climate event. As climate extremes become more intense and more frequent, these cascading effects become increasingly likely.

From physical shocks to financial instability

Climate impacts do not stop at the point of physical damage. A single extreme event can trigger a sequence of secondary effects that can then spread across the economy. Consider an extreme heatwave combined with drought. Agricultural yields fall sharply, driving food price inflation. Higher food prices exacerbate social and political instability, especially in vulnerable regions. Insurance losses escalate, leading insurers to withdraw coverage or re-price aggressively. Asset values re-price abruptly as risks that were once considered remote become unavoidable.

“ This is the nature of climate financial cascades: physical shocks trigger economic stress, which in turn drives financial instability.

Importantly, these are not slow, incremental impacts. They are often rapid and compounding, affecting multiple asset classes and geographies simultaneously.

Why traditional climate risk analysis falls short

Much of today's climate risk analysis is still grounded in a relatively narrow risk framework. Analysis tends to focus on direct physical damage to assets, sector-specific exposure, or damage functions that assume gradual, smooth and predictable changes over time.

These approaches struggle to capture three features of real-world climate risk.

1. **Compound events.** Multiple hazards can coincide or occur in quick succession, pushing systems beyond their design limits. A heatwave followed by drought and wildfire can be far more damaging than any one event alone.
2. **Feedback loops.** Climate impacts can amplify existing economic and financial vulnerabilities. Rising insurance losses reduce coverage availability, increasing exposure to future shocks, which in turn drives further losses.

3. **Threshold effects.** Systems often absorb stress up to a point, then fail abruptly. Once critical thresholds within a system are crossed, recovery may be slow or impossible within investment timeframes.

Systemic climate risks are now on the radar

The threat climate change poses to financial stability is no longer theoretical.

Climate scientists are researching the importance of cascading risks. A growing body of research shows that climate impacts cascade through critical systems, including energy, food, water, transport and finance. Disruption in one system increases the vulnerability of others.

Central banks and financial regulators are also increasingly recognising that climate risk is not just an environmental issue, but a macro-financial one. And now the Network for Greening the Financial System is [exploring](#) systemic climate scenarios that explicitly incorporate spillovers across sectors and borders.

What remains underdeveloped is investor understanding of how these dynamics translate into portfolio-level risk.

Why this matters for investors

Investors tend to be comfortable analysing firm-specific risks. Climate-driven systemic risks will always be harder to understand, model and price as they involve interconnected exposures, correlated losses, feedback loops and sudden regime shifts.

These shared system dependencies and interconnections undermine the possibility of diversification, but can't be ignored until they materialise. Climate-financial cascading risks include:

- Insurance market retreat from high-risk regions, leaving assets effectively uninsurable
- Infrastructure failures across power, water or transport systems that disrupt multiple sectors
- Commodity price spikes from simultaneous crop failures across key producing regions

Asking better questions about climate risk

The greatest financial risks from climate change may not come from damaged assets, but from destabilised systems. We need to ask: what happens if multiple adverse events occur at once?

As climate extremes intensify, the probability of cascading failures will rise. Investors who fail to incorporate this perspective risk being blindsided by shocks that cannot be understood through asset-by-asset analysis alone.

Understanding systemic climate risk does not require precise prediction of the next crisis. It requires recognising that [the tail risks matter](#), interconnections amplify risk, and resilience depends on system-level robustness.

Useful questions to ask now include:

- Where are the critical nodes in the system?
- Which exposures are likely to amplify shocks rather than absorb them?
- Where do portfolio companies sit within climate-sensitive systems, such as energy, food or water, rather than as standalone entities?
- At what point could repeated climate shocks trigger abrupt financial repricing?