

Executive summary

What climate risks require immediate attention from investors, and what scientific information is available? This first report from CICERO Climate Finance aims to highlight climate risks that require the immediate attention of investors. Taking a starting point in the existing science, the report categorizes climate change risk according to timeframe and probability by region, coupled with a gap analysis on available information for investors. Complementing the recent recommendations from the Financial Stability Board's Task Force on Climate-Related Financial Disclosure to disclose potential impacts of climate-related risks and opportunities under different future scenarios, guidance on scenarios for stress-testing is also provided.

Many physical impacts that scientists had originally anticipated over a much longer time horizon are being observed today across the globe, and will continue or worsen given growing greenhouse gas concentration levels. This is the case for sea level rise, which is also complicated by interactions with extreme weather events like windstorms, sea-surges, floods, droughts and heat waves. An increasing number of events are leading to exorbitant costs as a result of extreme weather events in many regions. Regardless of the future scenario, climate scientists expect that the frequency and/or severity of certain natural hazards will change. Dry regions will likely face increasing drought, whereas traditionally wet regions are expected to get even wetter (with some exceptions) – with resulting impacts on food production can have cross-regional market impacts.

To assess physical impacts in the next 10-20 years, the choice of scenario does not make much difference, but the Shades of Risk provided in this report can indicate impacts with a high probability for a particular region. Physical impacts around mid-century or later are more dependent on policy changes, where stress testing against various scenarios, including extreme scenarios, could be helpful. The upper tail of the probability distribution based on current implemented policies is also useful to consider as a worst-case scenario for physical impacts (4-5°C), especially as the potential for, and impacts of, catastrophic change are not well understood.

Physical climate impacts increasingly confront investors with unplanned and abrupt changes or disruptions to businesses or assets. **Not only physical facilities, but also production processes, markets and supply chains are at risk.** In addition, investors face transition risk, as a result of changes in climate and energy policies, a shift to low-carbon technologies and liability issues. While transition risks tend to have a built-in lead-time for companies to plan and adjust, the abrupt shocks from physical climate change have not received much attention to date.

Transitional impacts such as policy and technology risk are more dependent on scenario choice as they are subject to regulatory and market developments. This is an ideal opportunity to use scenarios to explore key future uncertainties, and to stress test investments for low probability but high impact outcomes. For example, what may be the impact on future climate policies and fossil fuel markets if key technologies, such as carbon capture and storage, do not work as planned?

The Paris agreement has brought forward the horizon of ambition on climate action. It targets limiting global warming to “well below” 2°C, while pursuing efforts to limit warming to 1.5°C. The effectiveness of the agreement hinges on domestic policy implementation and potentially the widespread use of negative emissions technology, such as biomass energy with carbon capture and storage (BECCS). Yet, realistic scenarios assume that negative emissions technology will not be available at the scale that is necessary in time. Our assessment, based on the current climate policies and pledges, is that meeting a **2°C scenario is not the most probable scenario.** The current pledges, if fully implemented, would lead to closer to 3°C

Shades of climate risk – Categorizing climate risk for investors

warming by 2100, whereas business as usual with current policies would lead to even greater global warming.

The more we invest with foresight; the less we regret in hindsight, said Marc Carney, Governor of the Bank of England. Yet nearly half of the world’s biggest asset owners do nothing to mitigate climate risk. Investors that do account for climate risk are reliant on carbon foot printing of companies. **Yet carbon footprints do not provide information on how prepared the company is to adapt to future risks, nor do they account for the risk of physical climate change impacts.**

The challenge is moving from the traditional framing of how a company is affecting the climate through greenhouse gas emissions, to how the climate and related policies can influence a company with a more holistic view of climate risk. This report aims to identify the key climate-related risks as identified in the latest scientific information, with a particular focus on physical impacts, and categorize these risks based on the probability and timeframe of the risks occurring in different regions. ‘Red flag risks’ indicate potential impacts that require the immediate attention of investors, either via target questions in an ownership strategy, or additional analysis at regional, company or asset level.

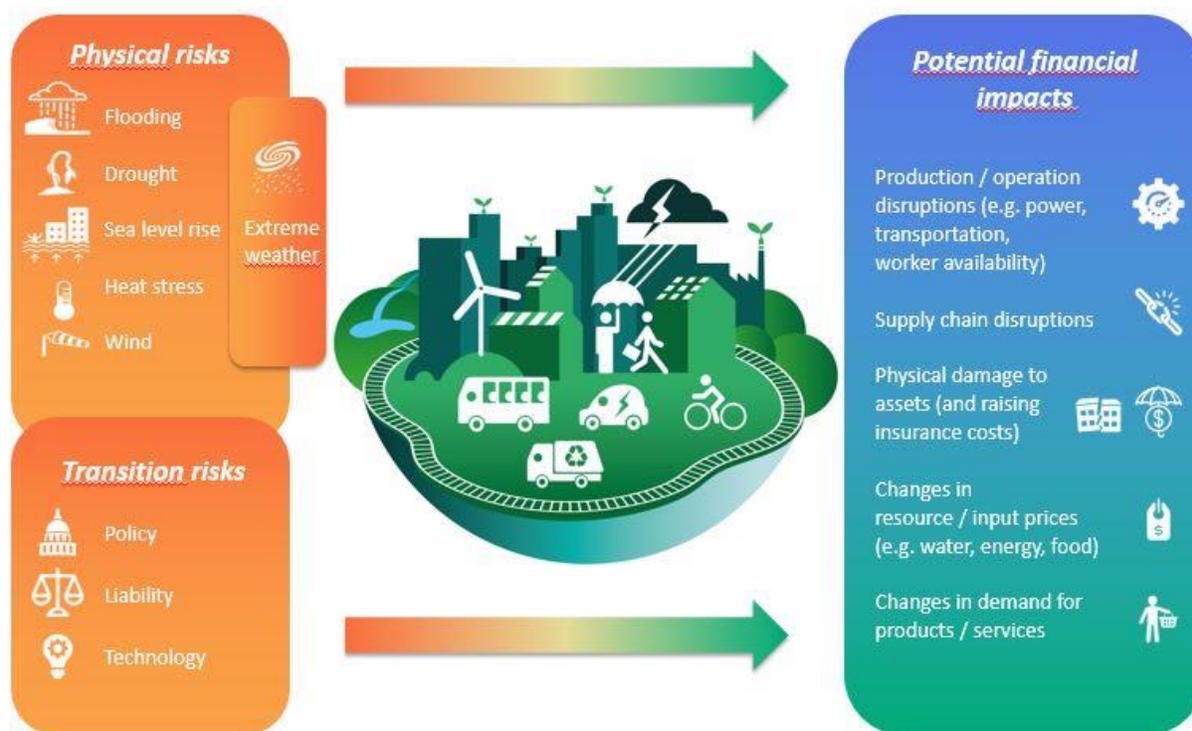


Figure 1: Climate Risk and Potential Financial Impacts

Climate-related risks and opportunities are categorized in this report in a manner largely consistent with the Task Force on Climate-Related Financial Disclosure. However, acute and chronic physical risks can apply to each of the categories of physical risk (e.g. sea-level rise is primarily chronic but can result in breached levees).