



From signal to strategy

A practical approach to physical climate risks

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Executive summary

- Physical climate hazards, such as heatwaves, flooding, and hurricanes, disrupt operations and supply chains and are intensifying and becoming more frequent because of climate change.
- Because physical risks affect businesses in numerous different ways, companies need a clear method to identify which hazards are most relevant to them.
- We have developed a simple, three-step approach for companies to pinpoint the climate hazards to which they are most exposed and identify how these hazards affect their operations, supply chains, and customers.

The need for physical climate risk assessments

Billion-dollar physical climate events in the U.S. have tripled over the past four decades¹, while communities and companies in Switzerland and across Europe are already feeling the effects of recent flooding and heatwaves^{2,3}. An increasing number of insurers are reaching the maximum limits of coverage they are willing to provide in the most high-risk areas⁴. This isn't a future projection, it's today's reality.

Companies are increasingly driven to protect assets and maintain business continuity, respond to investor demands for resilience, and meet growing regulatory expectations around climate risk disclosure. Regulatory bodies worldwide are requiring businesses to evaluate both the risks and opportunities linked to climate change, yet many still lack the data and resources needed to assess physical risks with confidence.

In this article we focus specifically on physical climate risks and offer a simple, data-driven method with which companies can evaluate the impact of these risks on their business.

Physical climate risks are the potential negative impacts of climate-related hazards. They can be grouped into two main categories:

- **Acute events** such as hurricanes, wildfires, and floods.
- **Chronic trends** like rising sea levels and long-term temperature increases.

These hazards can threaten infrastructure, disrupt ecosystems, harm public health, and undermine economic stability. To help businesses address them the EU's Corporate Sustainability Reporting Directive

¹ 2024: An active year of U.S. billion-dollar weather and climate disasters. U.S. National Oceanic and Atmospheric Administration. January 10, 2025. ([link](#))

² Italy limits outdoor work as heatwave breaks records across Europe. June 1, 2025. ([link](#))

³ Train-maker Stadler seeks to reassure investors after flood disruption. November 14, 2025. ([link](#))

⁴ Insurers pitch 'fairer' model for victims of climate catastrophe. May 22, 2025. ([link](#))

(CSRD) and EU Taxonomy have defined a framework that includes 28 distinct climate-related hazards. This aligns with the Taskforce on Climate-related Financial Disclosures' (TCFD) categorisation of climate-related physical risks, encouraging organisations to assess both acute and chronic hazards. The classification helps companies identify which risks are most relevant to their operations and also provides a useful framework for reporting requirements in Switzerland and other jurisdictions.

Understanding which hazards your business is most exposed to is the first step in effectively managing climate risk. Conversely, hazards that won't significantly affect your business, even in their most extreme form, can be reasonably excluded from further analysis.

But this raises a key question: **How can companies accurately identify the threats that are relevant to them and prioritise their responses to them?**

	Temperature-related	Wind-related	Water-related	Solid mass-related
Chronic	Changing temperature (air, freshwater, marine water)	Changing wind patterns	Changing precipitation patterns and types (rain, hail, snow/ice)	Coastal erosion
	Heat stress		Precipitation or hydrological variability	Soil degradation
	Temperature variability		Ocean acidification	Soil erosion
	Permafrost thawing		Saline intrusion	Solifluction
			Sea level rise	
			Water stress	
Acute	Heatwave	Cyclone, hurricane, typhoon	Drought	Avalanche
	Cold wave/frost	Storm (incl. blizzards, dust, and sandstorms)	Heavy precipitation (rain, hail, snow/ice)	Landslide
	Wildfire	Tornado	Flood (coastal, fluvial, pluvial, groundwater)	Subsidence
			Glacial lake outburst	

Figure 1. The 28 climate hazards defined by EU CSRD and EU Taxonomy

Vulnerability assessment

Companies need a structured approach to assessing which of the 28 distinct physical climate hazards outlined in the CSRD and EU Taxonomy are relevant to their business.

The following three-step process helps determine which climate hazards pose the greatest risk to your company—so that you can prioritise the actions you take in response, reduce uncertainty, and report with confidence.

A simple 3-step approach to identifying relevant climate hazards

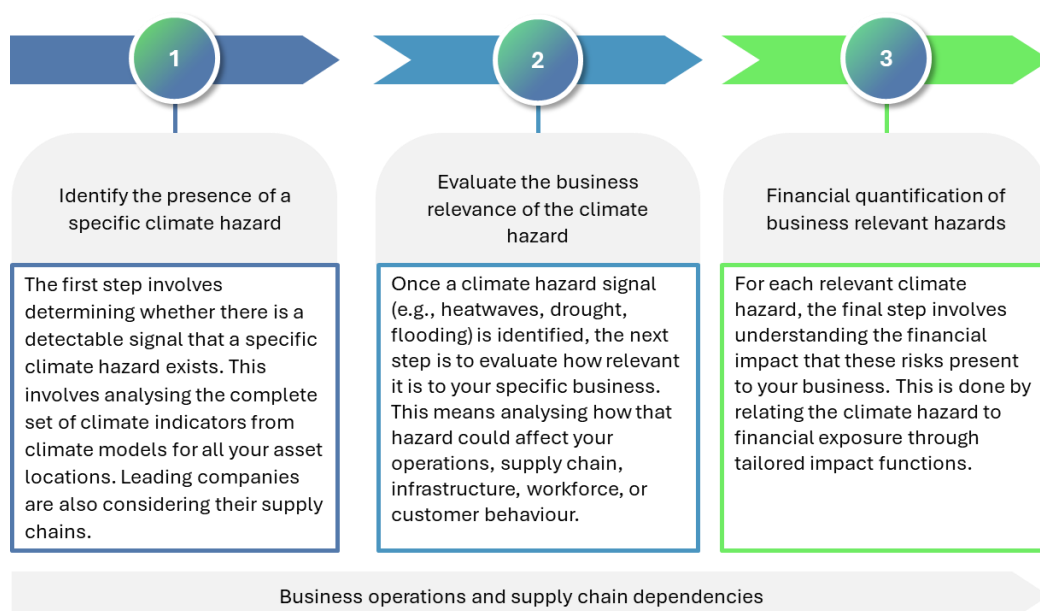


Figure 2. Three-step approach to evaluating physical climate risks

Step 1: Identify the presence of a specific climate hazard

The key question in step 1 is: "Does this climate hazard occur where your company is located and how strong is the climate signal?"

The company's sites and physical assets should be uploaded into a climate risk analytics tool to evaluate the exposure to different hazards, across different time-horizons, and for different climate scenarios.

Deloitte Switzerland collaborates with Correntics⁵, which specialises in data-driven climate risk analytics to perform the climate scenario modelling. This climate risk model allows a company to evaluate

⁵ Correntics Climate Risk Analytics ([website](#))

immediate and future climate-related risks. It can evaluate the company's own assets as well as dependencies in the supply chain.

In collaboration with Correntics we help companies visualise climate data, create user-friendly dashboards and use the modelling outputs to determine if there is a detectable signal for each climate hazard.



Figure 3. Climate risk analytics and digital tools to aid climate reporting (graphic courtesy of Correntics)

Step 2: Evaluate the business relevance of the climate hazard

The key question in step 2 is: "Is the signal relevant to your business?"

To effectively assess climate risks, it is crucial to consider both the direct and indirect impacts for the hazards that are identified in Step 1 to potentially have an impact.

Begin by evaluating how climate-related events might directly affect your assets and revenue, as well as your ability to maintain operational continuity. This step may involve climate and business experts, who examine each hazard to qualitatively describe the potential business impacts from each hazard. Additionally, examine the broader ecosystem, considering how climate hazards could impact your employees, utilities such as power and water supply, site accessibility or production processes.

While understanding the physical risks to your own operations is crucial, it is also important to recognise your supply chain dependency. Disruptions within the supply chain can have cascading impacts on your operations and financial performance. By adopting a comprehensive approach, you can better understand and mitigate potential climate risks.

For example, heatwaves affect many industries, but in different ways. In the agricultural sector heatwaves can reduce crop yields and harm livestock. In the energy sector they can lead to surges in electricity demand for cooling. Yet at the same time it may be necessary to reduce electricity production, as cooling water becomes too hot and can no longer be discharged into rivers without risking harm to local wildlife. In healthcare they increase patient loads and strain emergency services. In manufacturing they can reduce worker productivity, disrupt working conditions, and increase the risk of heat-related illnesses on the factory floor.

How the impact of any threat is evaluated will depend on your sector.

Step 3: Financial modelling of business-relevant hazards

The key question in step 3 is: "What are the impacts of the relevant climate hazard on the business?"

We have developed various damage functions for the relevant climate indicators. For example:

Asset Damage (AD) Curves illustrate the relationship between the severity of a climate event and the extent of damage to physical structures, including manufacturing sites, warehouses, inventory, offices, etc. These curves help businesses estimate asset value exposure to various hazards. This insight helps businesses assess asset exposure and supports strategic decisions around enhancing resilience to specific climate threats.

Business Interruption (BI) Curves depict the correlation between climate events and the extent of disruption of business activities, such as diminished employee productivity, increased risk of cooling costs or outages, or revenue losses. These curves are crucial to understanding how climate hazards can impact operational continuity, revenue generation, and overall business performance.

These impact functions are used to evaluate the financial risk to your business, including those related to the supply chain, associated with each of the climate hazards.

Establishing resilience against physical risks

Companies can use physical climate risk assessments to identify vulnerabilities in their operations and supply chains, enabling them to make targeted investments in resilience and adaptation. By integrating these insights into strategic planning, they can minimise disruptions, protect long-term assets, and avoid stranded investments. In this way gross risks can be reduced to net risks, enhancing insurability.

While building resilience is crucial, the ultimate goal is to reduce high-risk systems' exposure altogether by supporting the transition to a net-zero economy. This involves contributing to the broader effort to mitigate climate change at its source, thereby creating long-term value and future-proofing operations.

How can Deloitte help?

We help you understand and assess your physical climate risks by:

- Conducting comprehensive vulnerability assessments
- Identifying and analysing potential physical climate hazards relevant to your operations
- Quantifying the potential impacts of these risks (gross and net) across multiple climate scenarios
- Delivering tailored training sessions on how climate risks may be relevant to your industry.

We support you in taking action, verifying, and reporting, by:

- Guiding the disclosure of your physical climate risks in alignment with regulatory and stakeholder expectations
- Identifying practical and effective mitigation strategies
- Assisting in the implementation of these strategies to build climate resilience
- Integrating physical climate risk insights into your broader decarbonisation strategy, aligning with sustainability goals while proactively mitigating exposure to climate-related hazards.

Contacts

If you would like to discuss this topic, please reach out to our key contacts below.



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