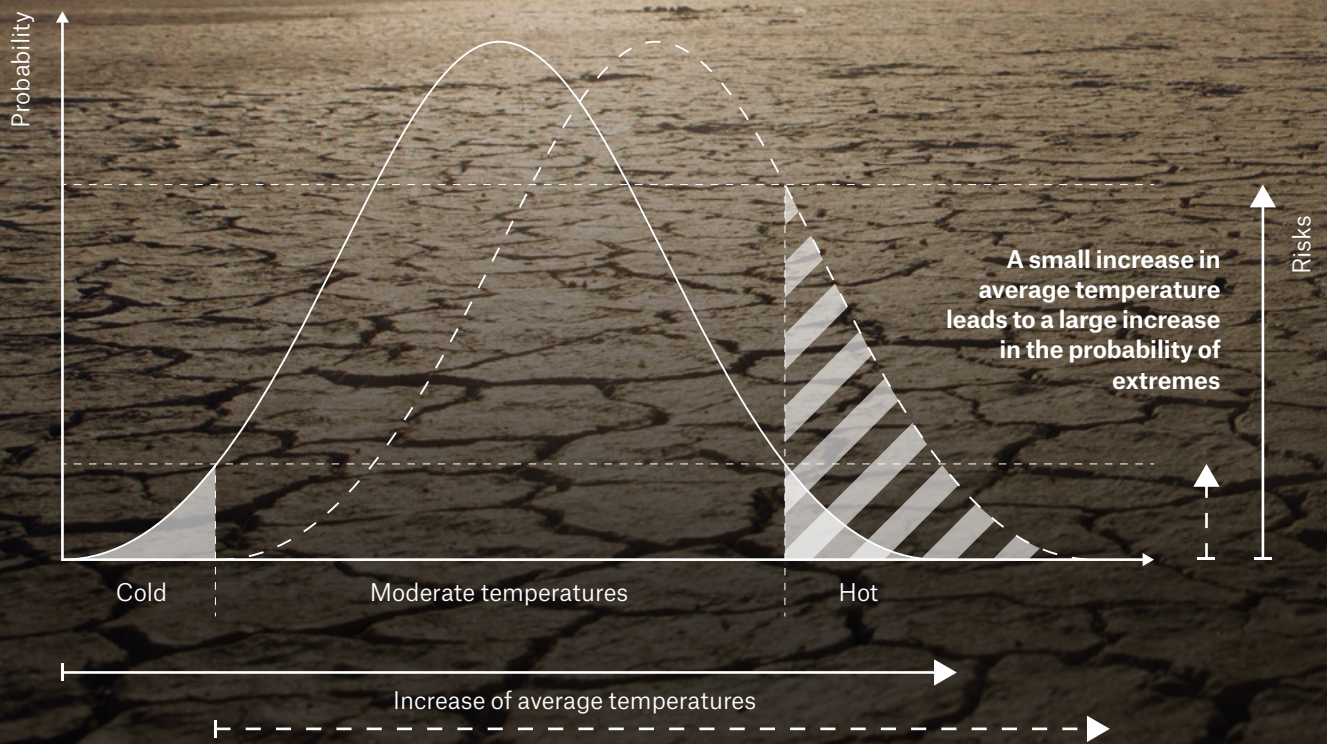


Location Risk Intelligence On-Demand

Climate Change Edition.

Don't be surprised by the impacts of climate change, but clearly understand the related risks



Source: Munich Re, based on IPCC

Extreme weather events are becoming more likely due to climate change

How will your business and assets be affected?

Be prepared for the effects of climate change.

Make sure you can assess and understand natural disaster risks such as hurricanes, floods, droughts, etc. up to the year 2100 by using different climate change scenarios representing the impacts of global warming.

Climate change impacts losses from natural disasters. **That's a fact**

In 2023 natural hazards caused a total global loss of around US\$ 250 billion. What is striking is that, rising temperatures can result in more frequent and intense weather events, leading to higher losses. 45 such events worldwide each caused damage of at least one billion US dollars or significantly more.

The question of how likely your company could also be affected by a similar natural disaster and how climate change will impact your exposure to such physical climate events in the future can hardly be answered responsibly without reliable expert insights. Especially in view of the dramatically increasing numbers, it is essential that climate risks data are included as an integral part of your business decisions to protect your company from their increasingly frequent consequences. You'd better take climate change into account.

Source: Munich Re, NatCatSERVICE, January 2024

Your biggest risk is not knowing the risks of climate change because ...



... **due to their geographical location, your assets and portfolios such as buildings, facilities and infrastructure may be in danger.** You can only take action to mitigate an increase in your risk exposure if you are aware of the threat. This is all the more true if you are aiming for optimal risk diversification and risk-balanced portfolio management.



... **your shareholders and stakeholders are increasingly demanding reliable answers on this topic.** If you are unable to meet the growing call for more transparency and accurate reporting, you will lose investor confidence in your company's future viability and your corporate image will suffer.



... if your strategic business decisions do not include such risk assessments, **not only your top and bottom line results may be at risk but the future viability of the entire company** could also be at stake.

How you can turn climate risks into business opportunities with Climate Change Edition

Benefit from the integration of climate risk data into your business processes and decisions to stay ahead of the game.

- ✔ **Invest safely:** Check the risk of individual assets or entire portfolios using Climate Change Edition's set of global warming scenarios, looking up to 80 years into the future.
- ✔ **Avoid revenue losses and reputational damage:** Identify potential risks from climate change before they materialise in your assets and portfolios to proactively steer your investments towards profitable and secure returns now and in the future.
- ✔ **Maintain your business continuity and resilience:** With the globalisation of almost all business sectors, it is vital that your supply chains remain future-proof and exposed to as little climate risk as possible. With Climate Change Edition you can stay on top of things - worldwide.
- ✔ **Keep an eye on the future of your business:** With Climate Change Edition you can not only protect your business by anticipating the threat of natural disasters, but also assess how markets are changing and where new opportunities are emerging for your company.
- ✔ **Identify risks quickly and reliably:** Thanks to Climate Change Edition, you can easily identify areas of high risk concentration and assess them with an overall risk score or a detailed risk evaluation consisting of over 20 individual risk scores.
- ✔ **Meet your increasing disclosure obligations:** Climate Change Edition provides you with sound answers to the increasingly extensive regulatory and voluntary requirements relating to the disclosure of your climate change risk exposure, creating the transparency you need.



// Thanks to the detailed and meaningful assessment of physical risks from natural disasters and climate change using Climate Change Edition, **we can make an informed credit decision in our risk analysis.** //



Patrick Th. Gruninger
Chief Specialist in Credit Management
Bayerische Landesbank

Scores that score points when it comes to climate change

Climate Change Edition supports you not only with information regarding the exposure of your assets to current physical risks, but above all in analysing and assessing the physical risks associated with climate change in various future scenarios.

In terms of both acute and chronic climate risks, this edition includes not only 12 NATHAN Hazard Scores and four NATHAN Risk Scores, but also eight additional Climate Hazard Scores which consider the effects of climate change. And unlike the Natural Hazards Edition, the risk scores are not only calculated on the basis of past events, but also include projected changes in the intensity and frequency of future events under different climate scenarios and projection years right up to 2100.

Climate Hazard Scores

The Climate Hazard Scores cover either RCP scenarios² (RCP4.5 and 8.5) or SSP scenarios³ (SSP1-2.6, SSP2-4.5, SSP3-7.0 and SSP5-8.5) as well as the current, 2030, 2040, 2050 and 2100 projection years.¹

¹For some Climate Hazard Scores only a part of the scenarios or projection years is available.

²Representative Concentration Pathway

³Shared Socioeconomic Pathway



River Flood¹

Munich Re models the future River Flood Hazard Score using the River Flood model for current atmospheric conditions as a basis and estimating changes in flood risk using an aggregate of climate and hydrological models.



Storm Surge

Munich Re models the future Storm Surge Hazard Score using the global storm surge model for current atmospheric conditions as a basis and includes the latest sea level rise projections and projected changes in tropical cyclone risk.



Tropical Cyclone¹

Munich Re creates its future Hazard Scores by combining its proprietary tropical cyclone model with a high-atmospheric-resolution climate model to incorporate projected changes in the intensity and frequency of tropical cyclones.



Sea Level Rise¹

The Sea Level Rise Score shows the areas with elevated risk of flooding due to rising sea levels in 2100. The model is based on storm surge hazard zones, IPCC data on sea-level rise and elevation information.



Fire Weather Stress

The Fire Weather Stress Index describes meteorological fire conditions based on the Fire Weather Index (FWI), combining the probability of ignition, the speed and likelihood of fire spread and the availability of fuel.



Drought Stress¹

This Index is based on the Standardised Precipitation Evapotranspiration Index (SPEI) and dry-spell conditions. SPEI is a multi-scalar drought index that is used to determine the onset, duration and magnitude of drought conditions.



Heat Stress

The Heat Stress Index combines information on increasing temperatures, extreme heat and heat waves.



Precipitation Stress

The Precipitation Stress Index describes the meteorological threat from high precipitation, combining data on precipitation duration, intensity and frequency.



Cold Stress

The Cold Stress Index combines several temperature-related parameters and classifies climatological cold stress.

NATHAN Hazard Scores



River Flood

This Hazard Score is based on a global flood model from JBA, describing flood extents for return periods of 50, 100 and 500 years, and is available on both an undefended and defended basis, i.e. taking flood protection into account.



Flash Flood

The Flash Flood Hazard Score describes the hazard level, based on meteorological data, soil sealing information as well as terrain and hydrographic data (slope and flow accumulation).

NATHAN Hazard Scores describe the hazard level of a location for all hazards.

**Storm Surge**

Storm surges are coastal floods caused by storms such as tropical cyclones and extratropical storms. The Storm Surge Hazard Score reflects the inundation area for return periods of 100, 500 and 1000 years and is available in an undefended as well as defended view, i.e. taking flood protection into account.

**Tropical Cyclone**

The Tropical Cyclone Hazard Score is derived from globally consistent, basin-specific models for tropical cyclones, and is based on probable maximum wind intensities with a return period of 100 years.

**Extratropical Storm**

The Extratropical Storm Hazard Score shows the probable maximum wind intensity occurring during extratropical storms in the region (approx. 30 – 70° north and south of the equator) for a 100-year return period.

**Tornado**

The Tornado Hazard Score is based on the annual frequency of tornadoes over an area of 10,000 km², interpolated from meteorological data

**Hail**

The Hail Hazard Score describes the hail potential by combining meteorological data, elevation and the global distribution of lightning activity.

**Lightning**

This Hazard Score shows the global frequency of lightning strikes per km² and year recorded by satellites and ground-based lightning detection networks.

**Earthquake**

The Earthquake Hazard Score is graded according to the probable maximum intensity of earthquakes on the Modified Mercalli Intensity (MMI) scale for an event with a return period of 475 years.

**Volcano**

The Volcano Hazard Score is based on volcanic activities, which are classified depending on their VEI (Volcano Explosivity Index) and annual return periods.

**Tsunami**

The Tsunami Hazard Score reflects the flood inundation areas for return periods of 100, 500 and 1000 years.

**Wildfire**

The Wildfire Hazard Score describes the hazard of wildfire, based on climatological data and land cover data.

NATHAN Risk Scores**Overall**

The Overall Risk Score can be used as a primary identifier of red flags. It combines the Earthquake, Storm and Flood Risk Scores, while also taking Wildfire Risk into account.

**Earthquake**

The Earthquake Risk Score can be used to identify earthquake-related risks and includes Earthquake, Volcano and Tsunami risks.

**Storm**

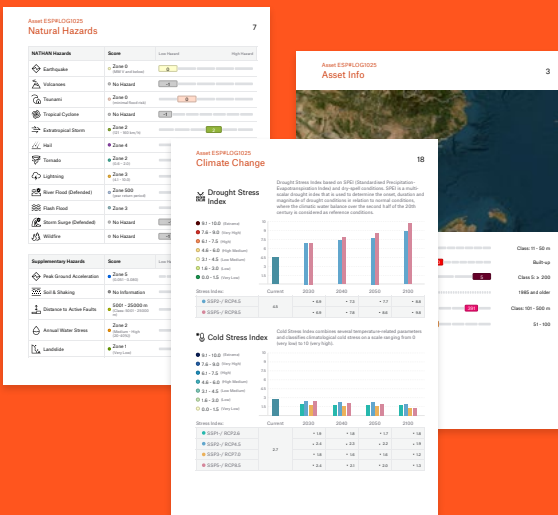
The Storm Risk Score can be used to identify storm-related risks and includes Tropical Cyclone, Extratropical Storm, Hail, Tornado and Lightning risks.

**Flood**

The Flood Risk Score can be used to identify flood-related risks and includes River Flood, Flash Flood and Storm Surge risks.

NATHAN Risk Scores provide an overview and identify high-risk assets. They aggregate the risk of each asset in the portfolio in terms of geophysical, hydrological, meteorological and climatological hazards.

3 simple steps to assess the risks for any location in the world



The fastest way to a physical climate risk assessment for any location worldwide

- 1 Create an account and buy credits
- 2 Enter any address or coordinate
- 3 Get all the risks displayed in a clear panel for downloading as a report

Start your risk assessment now!

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