

Helping your
business guard
against the risks
of a changing
climate





A suite of services to manage and mitigate climate risk

Zurich's Climate Change Resilience Service is designed to help businesses manage natural hazards and other climate-related risks. We offer you:

- **Risk assessments** at group- or location-level, for natural hazards and their future evolution under climate change
- **Support in identifying and deploying** sustainable resilience solutions to adapt to future conditions successfully.

Everything we do is informed by our expertise in risk assessment. By bringing various data sources together for analysis, we demonstrate impacts through possible scenarios and then can work with you to develop tailored solutions. This scenario-based approach allows for the uncertainty that is inherent in climate risk assessments, while taking into account every aspect of risk, including exposures, hazards, and quality of controls.



The process in detail

To begin, we combine climate change data with your global exposure and location data to identify the regions and sites where you may be most exposed to climate hazards.

Once we have identified these critical sites, we analyze the hazards in depth and assess the impact they may have. We can then map the value chain to see the protection measures that you'll need, and to identify any vulnerabilities, either remotely or with an on-site visit.

Once we have identified the vulnerable points, we help you plan and put in place resilience measures which include physical and organizational measures, as well as risk transfer solutions.

The data we use covers a range of perils, three IPCC climate scenarios and time horizons from today to 2100 in five-year increments. We can augment the perils highlighted on the next page with open-source data on other perils if the information is available and of suitable quality.

Our step-by-step climate risk assessment process



1 Data quality review



2 Definition of scope



3 Global exposure analysis



4 Account loss modeling



5 Desktop study of key sites



6 On-site visit for key sites



7 Resilience solutions



Additional related services



Off the shelf perils

Current risks
(hazard data)

Flood and precipitation
Wind
Earthquake
Storm surge
Tornado
Lightning
Wildfire

Future risks
(climate projection)

Flood
Precipitation
Wind
Heat
Drought
Hail and thunderstorm
Wildfire

Call on extra services
whenever you need them

We are committed to helping your business be successful and sustainable. Working together, we can create and deliver sustainable risk reduction solutions.

How you benefit from an expert climate risk assessment

Data quality review

- To ensure the analysis makes the most of the available data, and that the data most accurately reflects the risk

Global exposure analysis

- Giving greater insight on global exposures per peril and accumulations
- We identify the climate change impacts that will affect your business assets up to the year 2100
- Strategic planning will improve business resilience
- We prioritize the regions, sites and perils that may need further review

Account loss modeling

- Informed insurance and captive coverage with probabilistic loss estimates
- Access to cat modeling expertise underpinning the 'Zurich View'
- Customized scenario-based loss estimates by Zurich experts for non-modeled regions
- Support to address regulatory requirements
- Identifying key loss drivers

Desktop study of key sites

- Deeper understanding of local climate hazards and vulnerabilities
- Preliminary loss scenarios
- Preliminary assessment of quality of controls

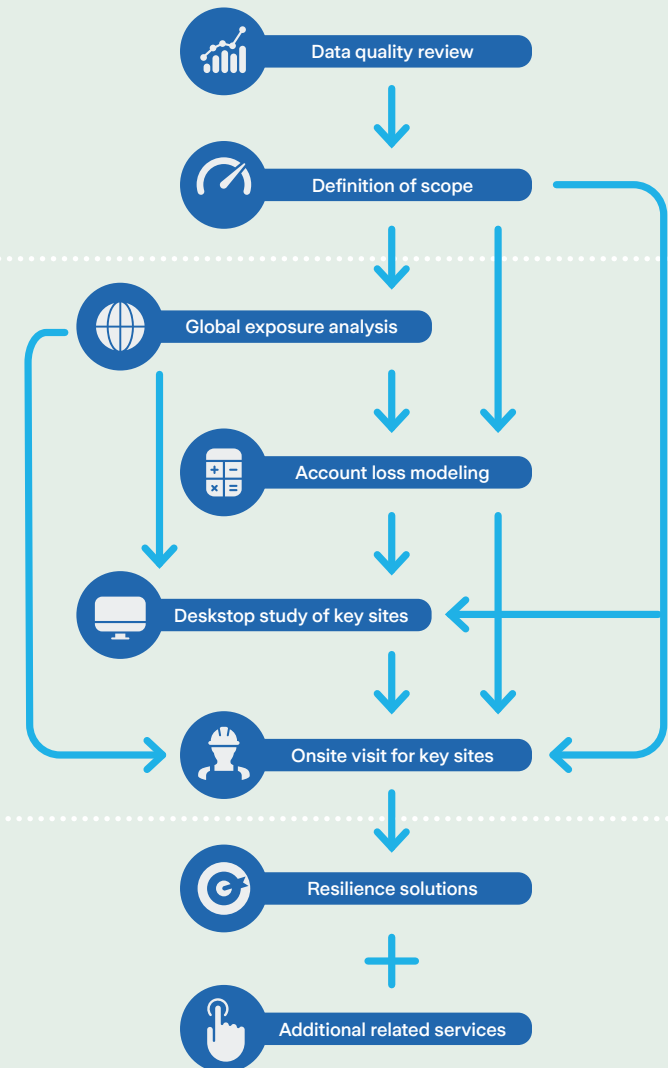
On-site visit for key sites

- Scenario-based financial loss estimate
- On-site evaluation of controls (which can be benchmarked among different sites)
- Support in implementation of sustainability measures on-site

Resilience solutions

- Natural hazard and climate change risk management strategy development
- Improve site resilience with support in design and implementation of tailored solutions
- Effective allocation of resources for site maintenance, retrofit, etc

Our step-by-step modular approach ensures a thorough risk assessment



The four pillars of our climate change risk assessments

Our Risk Engineers follow a rigorous methodology to assess the natural hazards and climate risks your business faces. We apply a comprehensive approach that covers all dimensions of risk; the hazards, controls, and exposures.



1. Exposures

We identify the values or processes that are at risk of disruptions, or the people who could be injured by hazards.

For example, insured values, critical site processes, infrastructure, suppliers or employees.

3. Controls

We assess the quality of the controls and identify any weaknesses, whether in terms of physical protection, organizational measures, or related to the coverage.

2. Hazards

The potential sources of damage are identified, based on the available information. For example, for flood we'll consider:

All potential flood sources, topography, possible contamination sources released by a flood event.

4. Event

The events that trigger a potential disruption are defined and, considering the other three dimensions of risk, a scenario is developed and quantified in terms of potential financial losses.



1. Reviewing the quality of the data

- Reviewing data quality is the fundamental first step to all analyses, whether for single or multiple location assessments.
- We assess location data for accuracy and make adjustments if needed. We'll also identify clusters of sites that could be impacted by a same event.
- We benchmark global hazard data against alternative local sources if they're available.
- We can also analyze your claims data, if available, to understand site performance in historical events.

We rigorously test all available data including our own underwriting data and relevant third-party or open-source data, to ensure high quality insights on climate risks.



2. Defining the scope

Based on your analysis goals, our first step is to select and agree the criticality metrics most relevant to the business for measuring exposure.

We will also define hazard parameters in time horizons stretching to 2100, as well as climate change scenarios and any specific perils that are of interest.

We consider a number of scenarios to deliver a range of possible outcomes. We can use up to three IPCC scenarios that define different narratives of global development and greenhouse gas emissions.

Illustrative: Climate scenarios (called SSPs) and their associated increase in global mean surface temperature (°C) relative to 1850-1900 baseline.

After Tebaldi et al. 2021

Group level analysis gives us an overview of climate risks



3. Analysis of your global exposure

Our Global Exposure Analysis will give you an **overview of exposure to hazards** at both global and regional levels, as well as an insight into how climate risks will evolve across your sites. You can use the insight to set strategy, plan resources and the supply chain, or manage risks at the regional or group level. Understanding the relative exposure of sites and infrastructure also naturally leads to a **prioritization for undertaking detailed resilience assessments** across locations.

We assess the hazards across the network of sites, which can include suppliers and critical utilities.

We combine the hazard data with information on the exposures, and we have the flexibility to include additional risk factors such as site vulnerability, existing protection measures, or local infrastructure quality.

This allows us to assess the evolving risks across your portfolio and identify any locations that should be assessed in more detail, either remotely or as part of an on-site climate resilience assessment.

We will prioritize **regions, sites, and perils** for further assessments, such as account loss modeling, or location-level analyses.



4. Modeling the loss across your business

Loss modeling at group level – called CAT modeling informs your risk transfer strategy. We apply the “Zurich View”¹ of CAT models where available, or scenario-based estimates to quantify losses in an extreme event adjusted for future climate change.

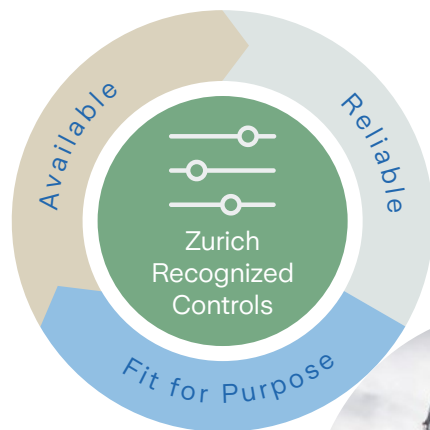
This provides a view on **insurance structure**, as well as an alternative method to identify high-risk sites, as the **potential top contributors to Nat Cat losses**.

¹The “Zurich View” incorporates modifications to the CAT model output based on the latest science, our claims experience and other adjustments

Understanding climate impacts at your individual sites

At the location-level, we combine natural hazard and any climate data with exposure data, along with details of identified vulnerabilities, protection measures on site, and the immediate surroundings. We can carry out this assessment for current or future climate risks. You'll gain **an understanding of the potential impacts of extreme events now and in the future.**

Our risk engineers will also evaluate the quality of your controls, taking into account their availability, reliability, and fitness for purpose, for the hazards and exposures that have been identified during earlier steps of the climate risk assessment.



5. Analyzing your key sites as desktop assessments

We can carry out site-specific **high-level scenario analysis of any potential loss events** considering global climate projections plus local hazard data, using

details of buildings and the value chain. The assessment will help us estimate the potential damage to property or business interruption.

Inputs

- Site location & characteristics
- Details of value chain, buildings, and (optionally) suppliers
- Climate change or natural hazard data

Activities

- In-depth hazard review
- Assess operations-relevant regional climate change effects
- High-level loss scenario including any available information on controls

Outputs

- **Impact of physical climate hazards on site**
- **Preliminary assessment of quality of controls**
- **Initial loss estimate**



6. Assessing key sites through on-site visits

Our risk engineering specialists can walk through key sites to **assess the quality of controls.** These may be physical, such as engineered measures, or organizational, such as employee safety, emergency response planning, monitoring and resource management.

This will help to develop potential **loss scenario** informed by climate data.

Onsite assessments are highly recommended for any critical locations, as they enable us to assess onsite conditions.

Additional inputs to desktop assessments

- Walk-through of site and assessment of entire value chain performed by our specialists

Additional activities

- Assess quality of controls
- Assess critical infrastructure, utilities, and suppliers

Additional outputs

- **Evaluation of quality of controls**
- **Scenario-based financial loss estimates**
- **Practical resilience recommendations**

We'll help you identify and implement climate risk mitigation measures

If we identify any vulnerabilities in steps 5 or 6 above, we can help you increase your resilience through an improved climate risk management strategy. We will suggest practical mitigation measures that may include:

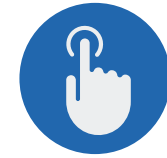
- Physical and organizational resilience measures designed to reduce vulnerabilities – like engineered protection measures or better emergency response planning
- Updated risk transfer solutions that complement the resilience measures.



7. Reporting on your resilience solutions

Finally, we will draw up a catalogue of resilience solutions along with an estimate of their potential benefits in terms of reducing losses. These controls need to be designed, planned, implemented and maintained according to the specific requirements of each site. We can help you implement these tailored engineering and organizational solutions, for example by supporting tender processes, or evaluating contractors and offered solutions. You can then apply our risk engineering methodology on an ongoing basis to ensure that the controls remain available, reliable and fit for purpose.

Once we have carried out an assessment, we will remain available to you to carry on the dialogue as climate risks, business criticalities and vulnerabilities evolve. Working together, we can build a long-term holistic view of climate risk at group- and location-level.



Call on a range of extra services



To find out more about how Zurich Climate Change Resilience Services can help you, please contact:

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