Climate Physical Risks and Adaptation

Risk and Credit Portfolio Management Workshop

Recent climate events

• WEATHER UPDATES

Weather updates: Delhi on flood alert again River Yamuna crosses danger mark

India Today News Desk
New Delhi, UPDATED: Jul 23, 2023 23:09 IST

Delhi is once again on flood alert as River Yamuna's water level crossed the danger ma
pm, the water level was recorded at 206.26 meters. Meanwhile, the India Meteorologic
Department has issued an 'orange' alert for heavy to very heavy rainfall at isolated pla
Maharashtra's Palghar, Raigad, Ratnagiri, and Sindhudurg districts on Monday. The so
and Saurashtra regions of Gujarat have been witnessing incessant rainfall, which trigg
flood-like situation in several areas. Stay with IndiaToday.in for the latest weather upd

The Washington Post
Democracy Dies in Darkness

Climate Environment Weather Climate Solutions Climate Lab Green Living Business of Climate

Heat waves in U.S., Europe 'virtually impossible' without climate change, study finds

Such events will become only more intense and more frequent unless humans halt the burning of fossil fuels that warm the planet, scientists say

The Washington Post
Democracy Dies in Darkness

Southern Europe soars to record temperatures as heat wave peaks

Rome reached an all-time high Tuesday. Sicily made it to at least 115, a few degrees shy of the European record.

By Ian Livingston

Updated July 18, 2023 at 1:57 p.m. EDT | Published July 17, 2023 at 5:16 p.m. EDT

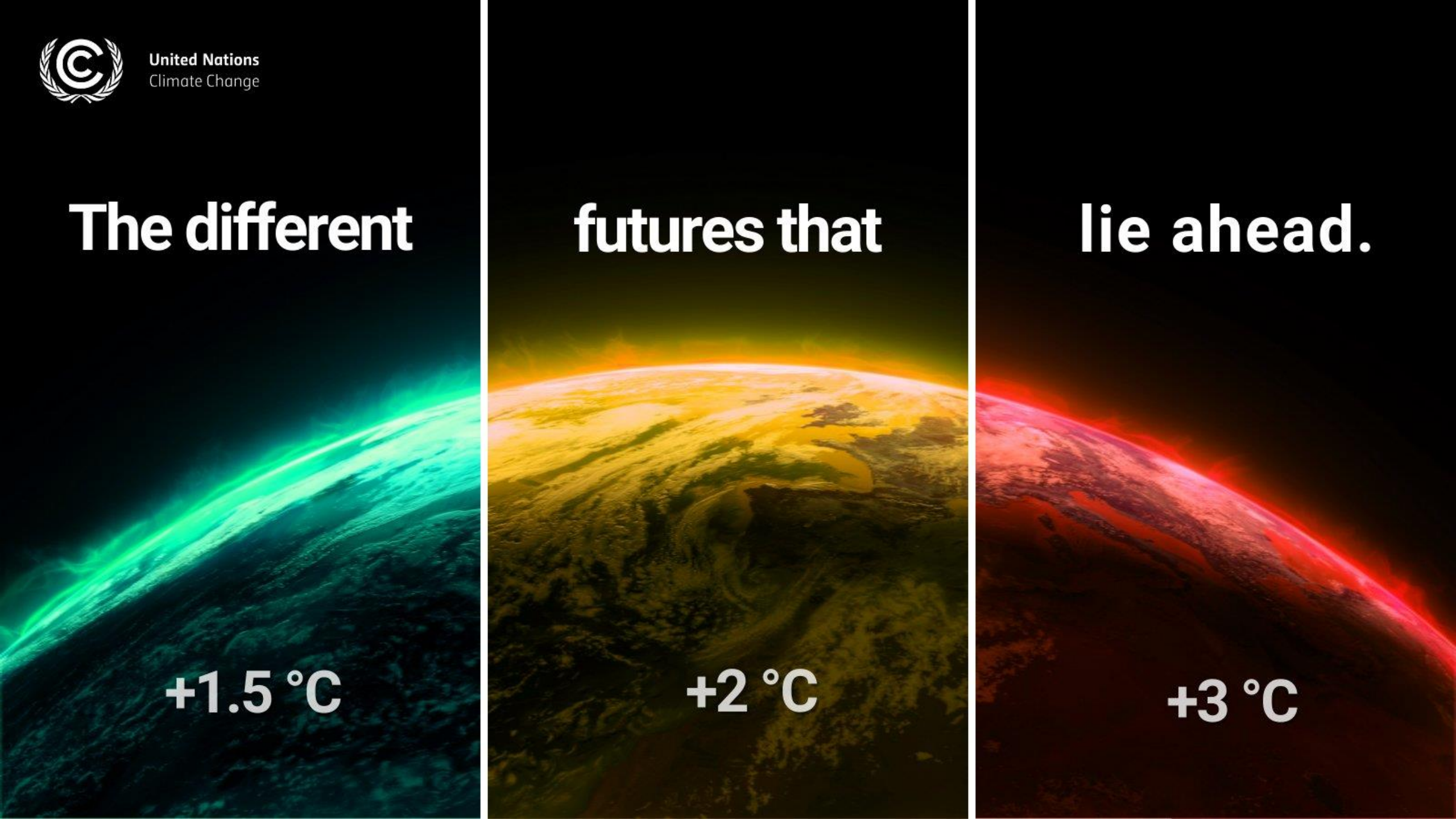
CNN US World Politics Business Opinion Health Entertainment Style Travel Sports Video

Smoke from hundreds of Canadian wildfires blankets northern US cities with air pollution

By Elizabeth Wolfe and Joe Sutton, CNN
Updated 5:09 AM EDT, Tue July 25, 2023

United Nations
Climate Change

The different futures that lie ahead.

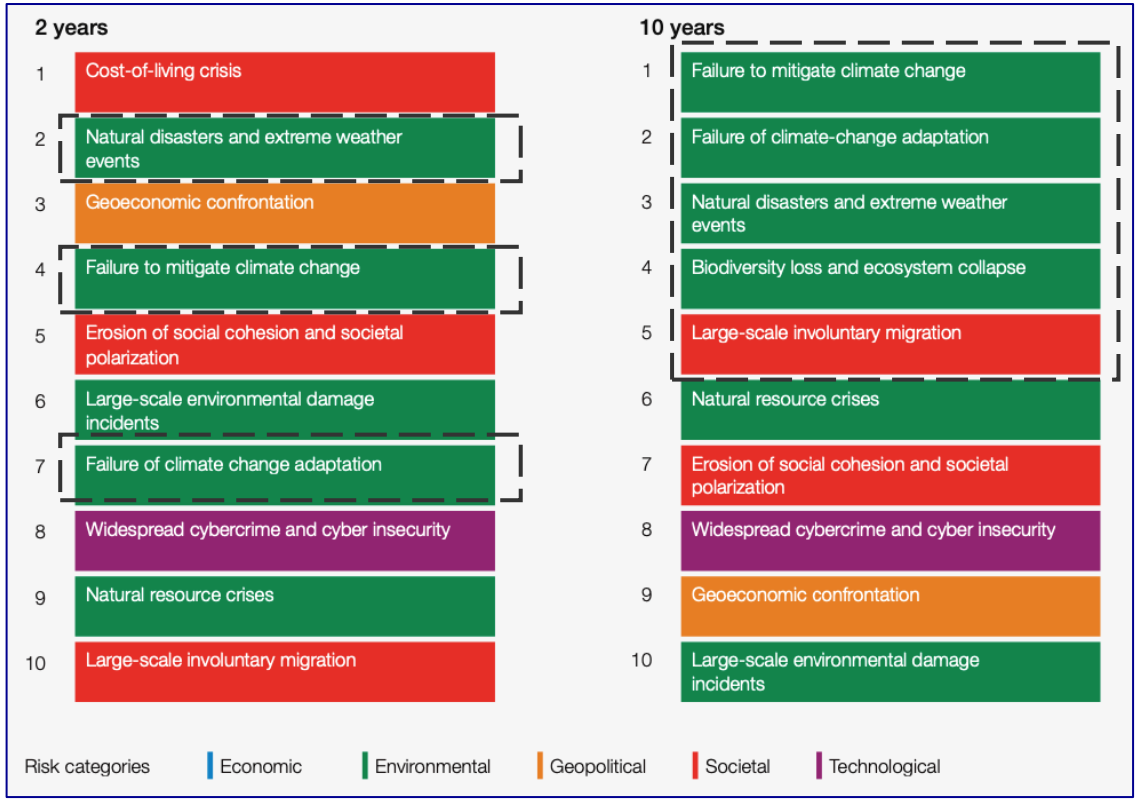


“A 4-degree warmer world is not insurable.”

Henri de Castres, Former CEO of the AXA Group (2015)

The fight against climate change forms part of our overall strategy – both our corporate strategy and our investment strategy. Our goal is to bring our business into line with the Paris Agreement. Strategic measures we plan to take in order to reduce long-term CO_2 emissions include a net-zero target for our investments and insurance products, green investments (e.g. green bonds and impact funds), support for the transition to low-carbon business models, and a complete exit from the coal industry.

Why are Climate Risks Material – Global Risk Overview

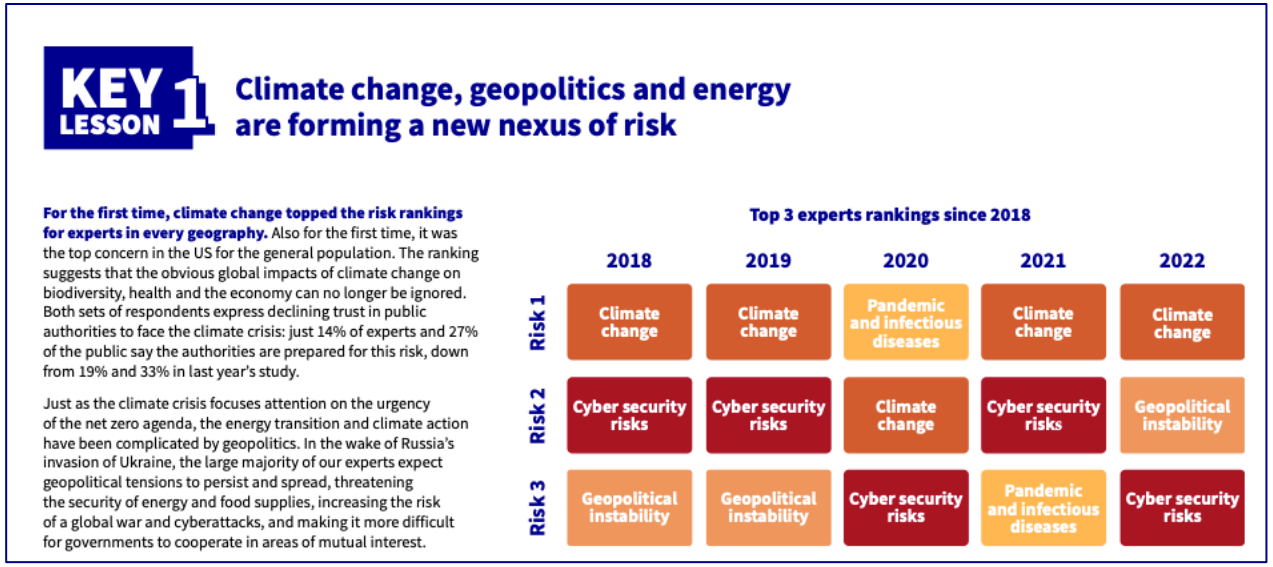


WEF Global Risks Report 2023, 11 Jan 2023

Insured Losses Hit $120 Billion as Extreme Weather Spreads

- Hurricane Ian was costliest event of 2022: Munich Re study
- Before 2005, industry losses never topped $50 billion a year

Bloomberg, 10 Jan 2023



AXA Future Risks Report, 2022

Climate / Weather is bringing huge volatility to business results both through damages and business interruption

Physical climate risk can have significant implications for credit portfolios

Creditworthiness of Borrowers

- Increased financial strain due to damage to physical assets
- Higher likelihood of defaults and credit rating downgrades

Industry-Specific Risks

- Certain industries more vulnerable such as agriculture, real estate and tourism
- Higher default risks and potential declines in asset values

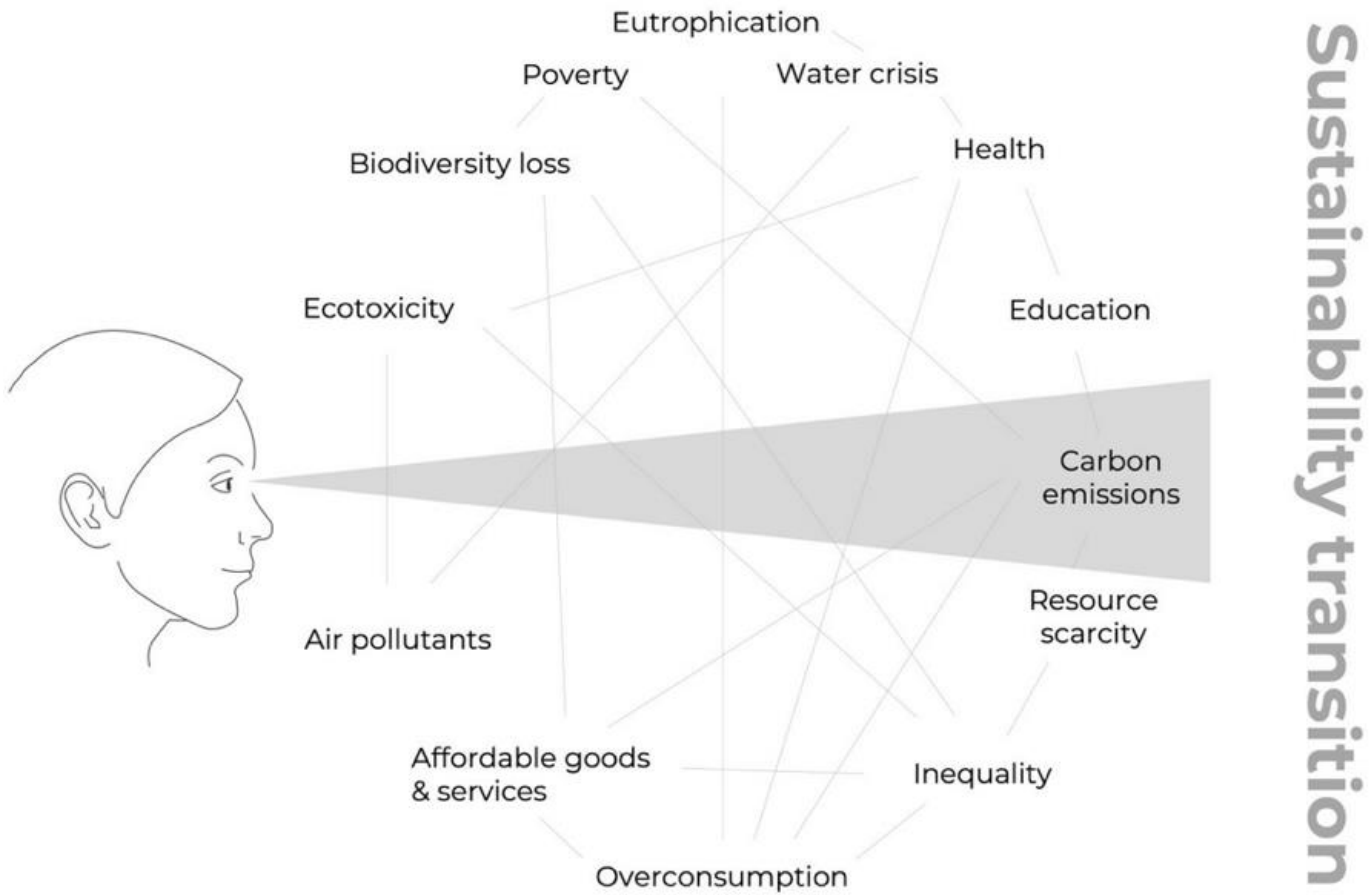
Regional Vulnerability

- Different regions exposed to varying levels of physical climate risk
- Understanding the regional vulnerability of portfolio holdings is crucial

Physical Asset Valuation

- Companies with significant real estate exposure may experience declines in the value of those assets
- Can impact the collateral value of loans and other debt instruments

Carbon Tunnel Vision



Graphic by Jan Konietzko

Mitigation - Adaptation Conundrum

- Glamorous to communicate
- Inwards versus outwards
- Investor blindfold
- Complex science and application
- Policy support and incentive
- Only incentive is protection of your assets and Business Continuity

Climate Adaptation Advisory

Climate Risk Assessment and Adaptation

Climate Risk Screening

Understand exposition & vulnerability to climate risks on portfolio and assets

Climate Impact Assessment and Quantification

Detailed analysis at site level and quantify climate risks

Climate Adaptation Strategy & Plan

Identify and conceptualize climate adaptation measures and insurability strategy

What risks do I look for?

Climate hazards

Acute climate hazard

refer to hazards that are event-driven, including extreme weather events, such as cyclones, droughts, earthquakes or floods.

and

Chronic climate hazards

refer to long-term shifts in climate patterns that may cause the continuous evolution in climate variable like sea level rise, water stress etc...

Scenarios

Base case : SSP2-4.5 – Middle of the Road Scenario

This scenario is projected to lead to a mid-century warming of 1.6 to 2.5°C and end of the century warming of 2.1 to 3.5°C.

Pessimistic case : SSP5-8.5 – High-reference Scenario (Fossil-fueled Development)

This scenario, which is the most pessimistic one, is projected to lead to a mid-century warming of 1.9 to 3°C and end of the century warming of 3.3 to 5.7°C.

Timeframes

Three timeframes are considered, consistently with the indicative expected lifetime of the assets and the indications of the EU Taxonomy:

- **Baseline:** average 1981 and 2010;
- **2030:** average between 2015 and 2044 values (Be operational ready)
- **2050:** average between 2035 and 2064 values (Drive investment strategies)

Physical Climate Risks

Climate risk is a function of hazard, vulnerability and exposure

PHYSICAL CLIMATE RISK

Hazard

A climate-related event

E.g. water stress

Exposure

Location, physical attributes, and value of assets (buildings, factories, farmland, etc.) **or people** that could be affected by a hazard;

E.g. asset located in a water stressed area and representing 25% of the portfolio value

Vulnerability

Propensity or predisposition to be adversely affected by a certain hazard and encompasses a variety of concepts and elements, including sensitivity or susceptibility to harm.

E.g. asset requiring large quantities of water to operate

Risk Categorisation, Calculation & Financial 'Value at Risk'

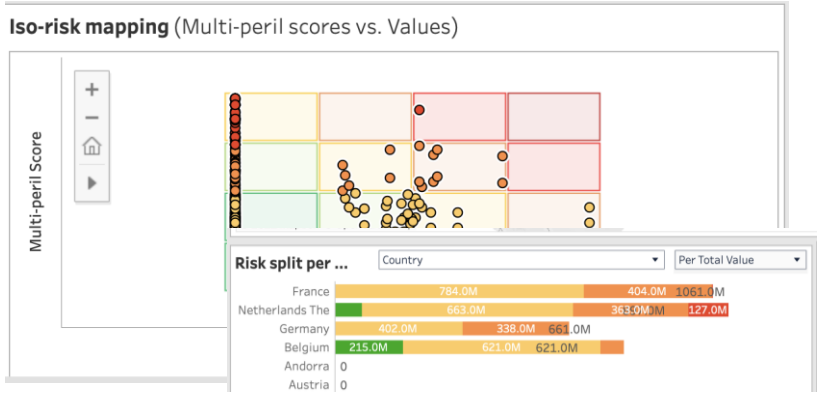
Multi-peril risk score calculation

Score calculated based only on an asset **exposition** to perils (relatively to the portfolio studied) and on the vulnerability depending on the type of building and industry.

Hazard **X** Exposure **X** Vulnerability **=** Normalisation Risk Score **=** Multi-peril Score

The multi-peril risk score calculated for each site has different categories

1
Extreme — Risk with potential medium to long-term damages. Requires further investigations to determine business impacts and adaptation strategy
0.75
High — Risk with potential medium-term damages. Requires further investigations to determine business impacts and adaptation strategy.
0.5
Moderate — Risk with potential impact on business continuity or short-term damages.
0.25
Low — Limited risk that does not require further analysis
.
0



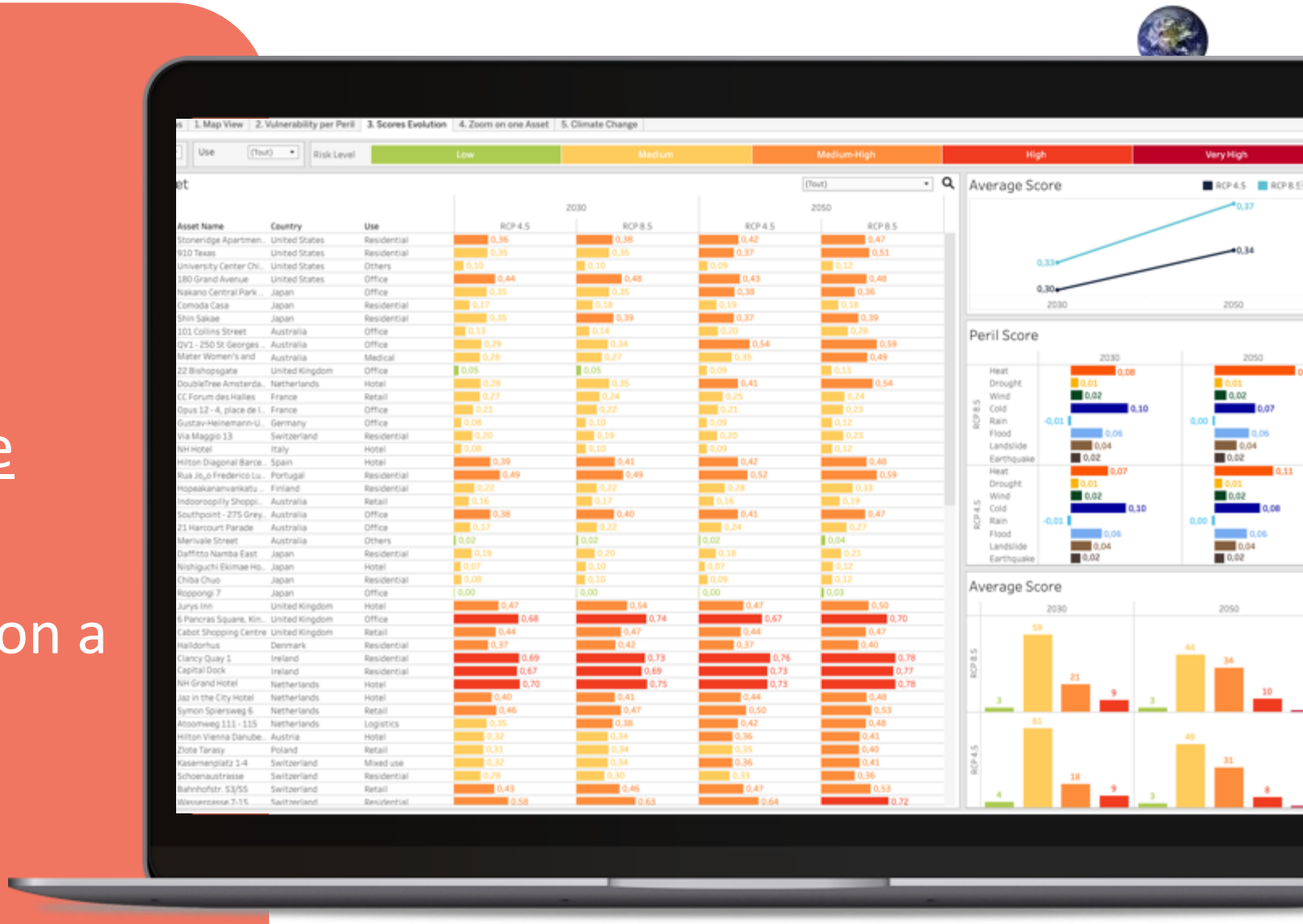
Iso-risk score calculation

Iso Risk is absolute risk scoring of an asset multiplied by its financial exposure. This indicator allows to include the financial value of to their level of risk. The number obtained is then normalized between 0 and 1.

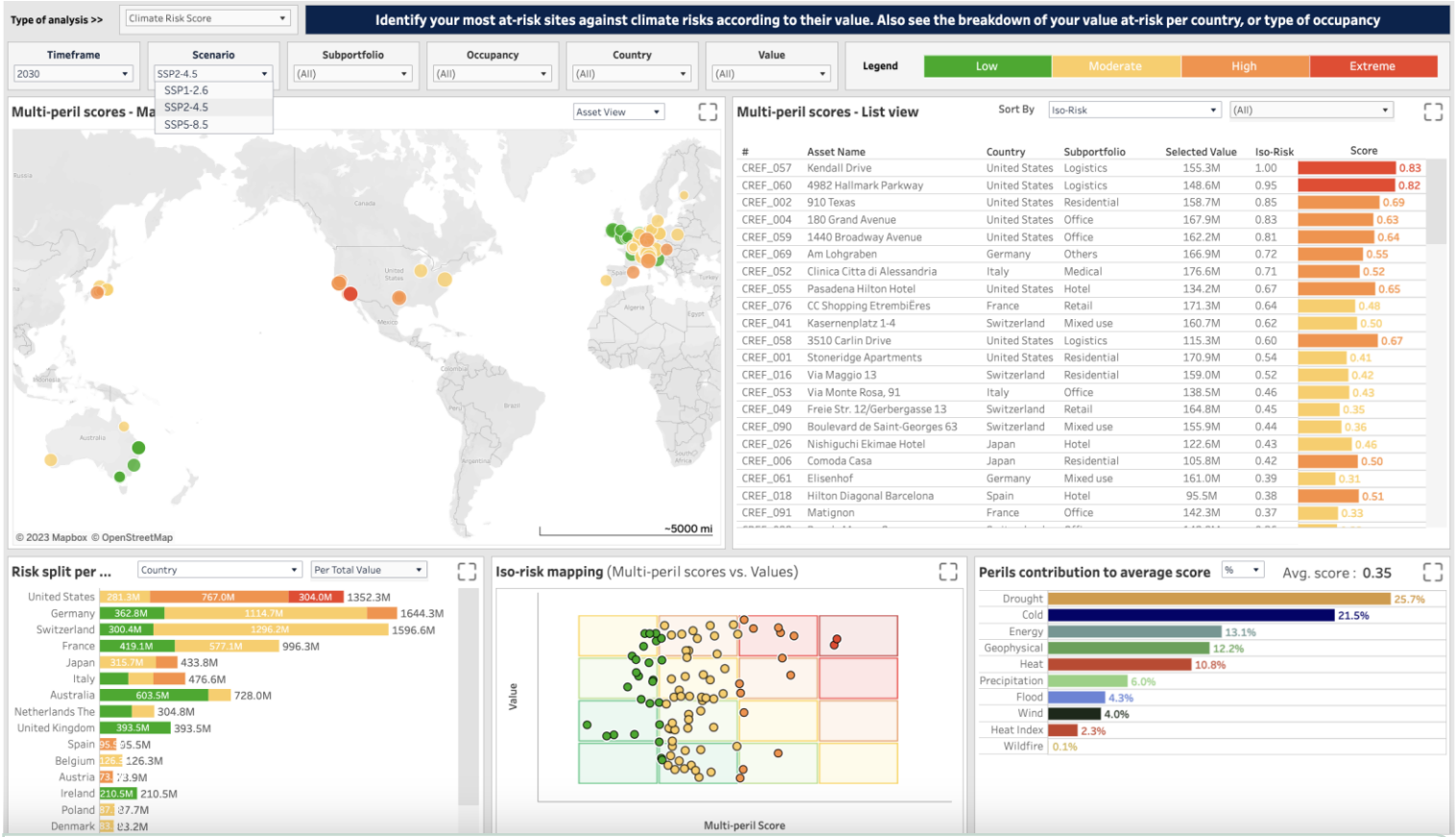
Multi-peril Score **X** Financial Value **=** Iso-Risk

Output:

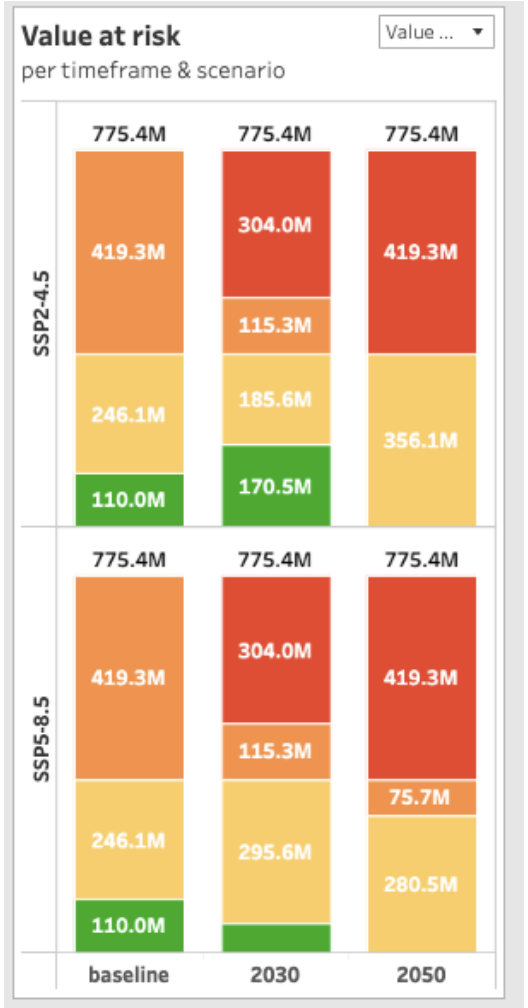
Global view of your future risk exposure, and prioritization of assets to on a dashboard



Climate Physical Risk Outputs

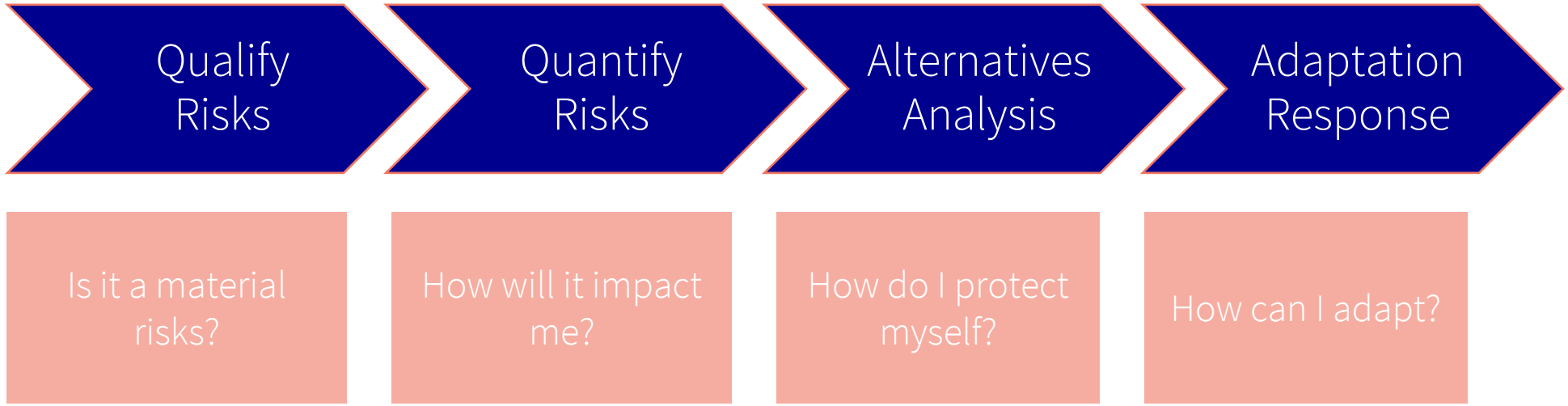


Above: Global view of all assets at risk, key perils, multi-peril score, 'value at risk' and distribution across geography/occupancy.

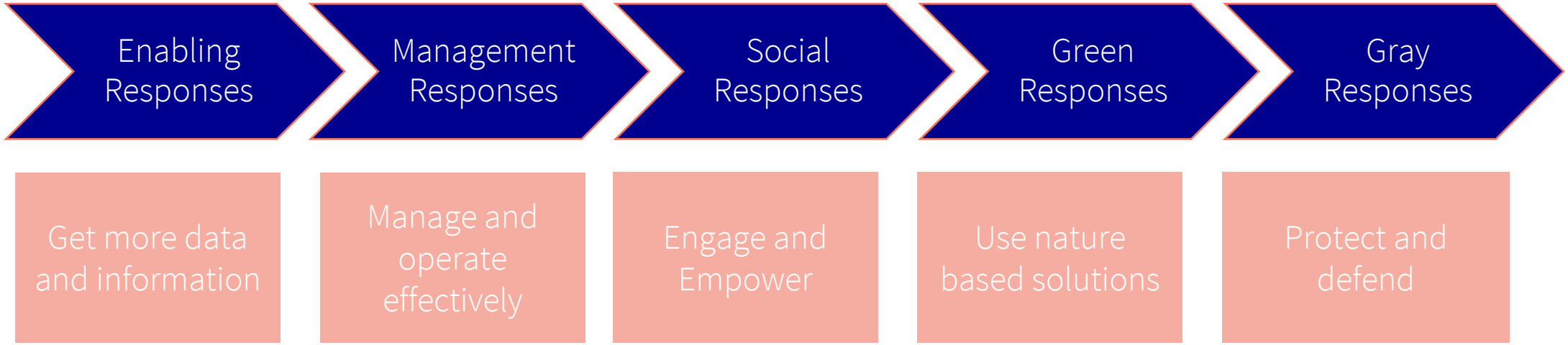


Above: 'Value at risk' evolution

How do I approach Physical Climate Adaptation



Climate Response Options



Asian Warehouse and Logistics Company
Identifying Climate Physical Risks and Response

AXA Climate

Objective: Assess the climate physical risks for over 45 warehouse assets across India based on IPCC scenarios and timeframes. Identify key perils and most at risk assets with respect to climate risk and financial value at risk.

Methodology: We screened over 45 assets for key climate physical perils and risks including floods, water stress, extreme temperatures, precipitation, heat stress etc.. The findings were presented to the ESG committee and board via an interactive dashboard to allow the users to evaluate the risks and prioritize the most-at-risk assets and perils. The company has decided to extend the study to future investments (brownfield and greenfield) as part of a due diligence program, to evaluate climate physical risks as a key decision making criterion.

Key outputs:

- Easy-to-use Tableau dashboard to assess and manage physical climate risks.
- Analysis done based on multi-peril score and financial value at risk
- Business presentation for the group sustainability cell as well as individual businesses.
- High level adaptation strategy for the businesses part of the portfolio

Let’s talk, Any Questions?

Thank you