

Climate Change -Risks and Opportunities

EY Climate Change and Sustainability Services



What are Climate-related Risks and Opportunities?

Climate Change

Long-term changes in the Earth's climate that are warming the atmosphere, ocean and land. Climate change is affecting the balance of ecosystems that support life and biodiversity, and impacting health. It also causes more extreme weather events, such as more intense and/or frequent hurricanes, floods, heat waves, and droughts, and leads to sea level rise and coastal erosion as a result of ocean warming, melting of glaciers, and loss of ice sheets.

Source: United Nations Development Project - The Climate Dictionary, 2023

Climate Risks

There are two categories of climate risks:

- **Transition Risks:** Risks related to the transition to a lower-carbon economy.
- **Physical Risks:** Risks related to the physical impacts of climate change.

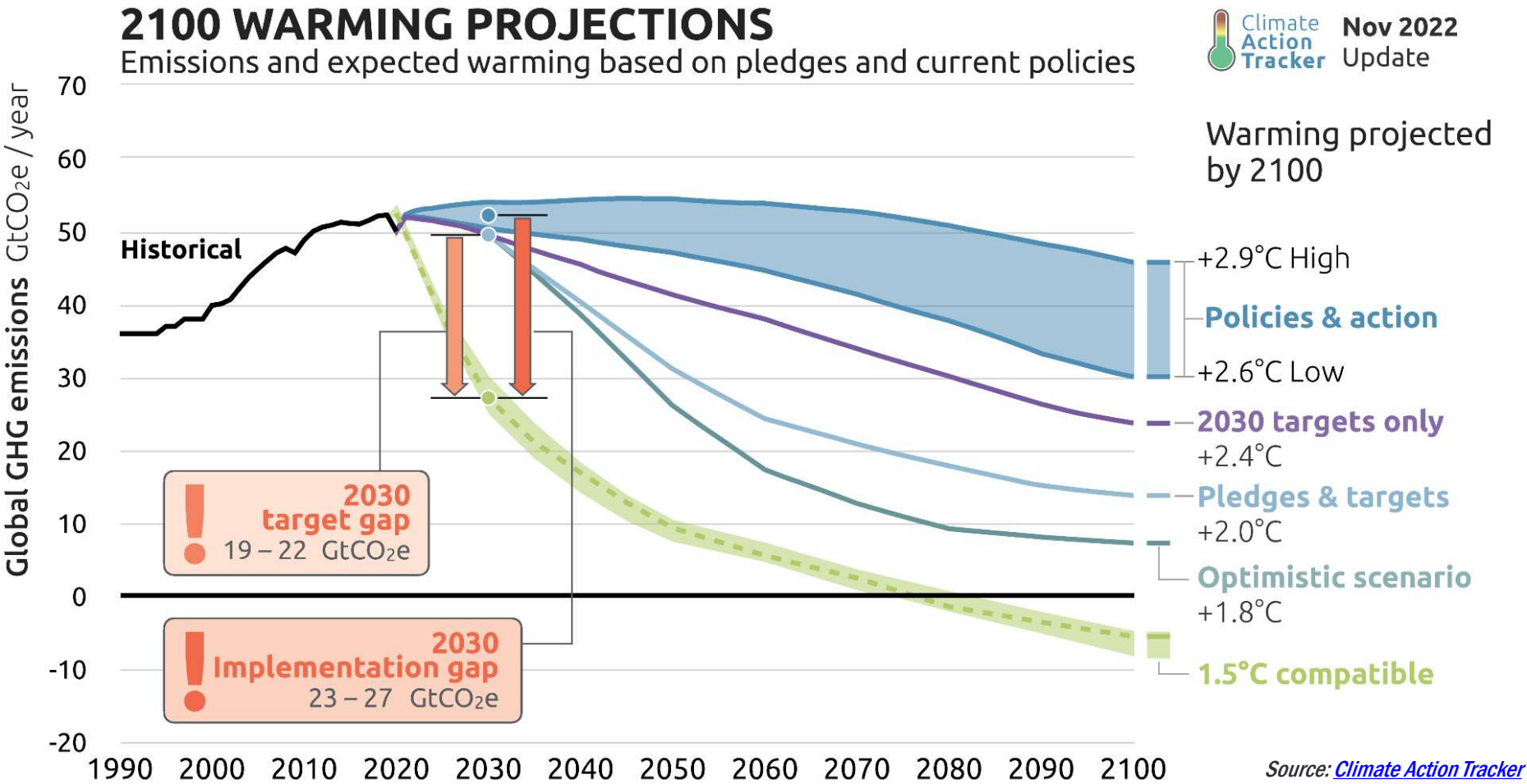
Source: [Recommendations of the Task Force on Climate-related Financial Disclosures](#)

Climate-related Opportunities

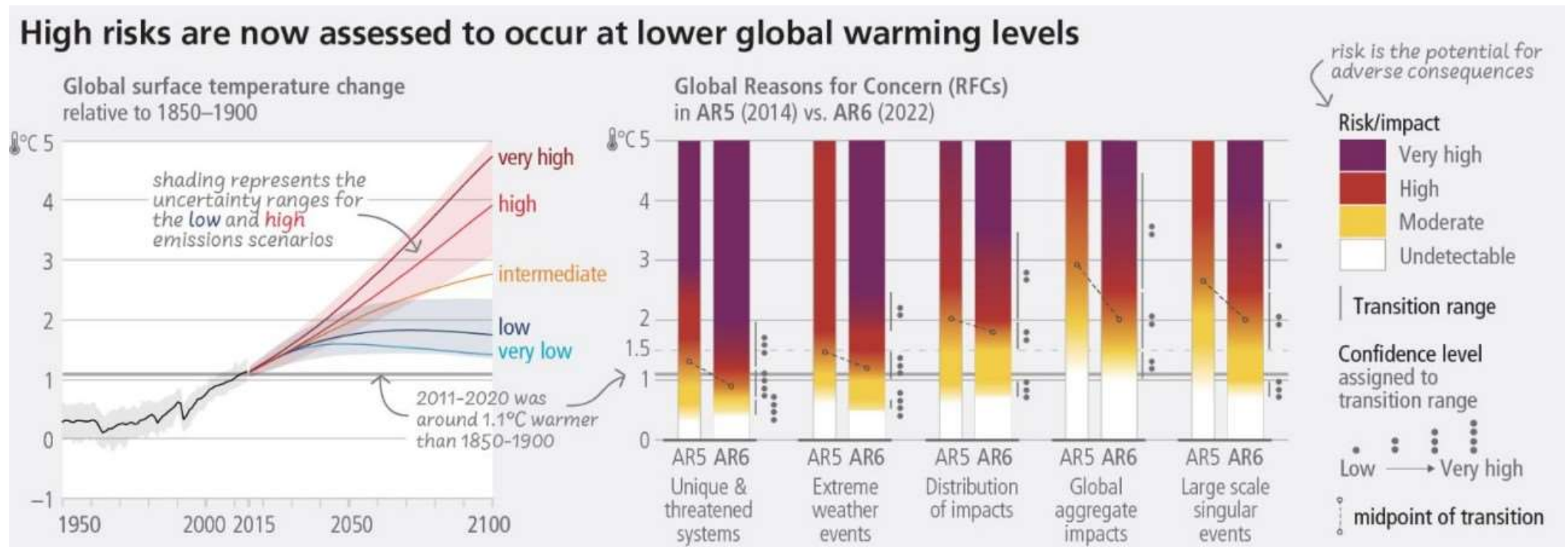
Opportunities in relation to efforts in mitigating and adapting to climate change.

Source: [Recommendations of the Task Force on Climate-related Financial Disclosures](#)

What is the Latest Projection on Global Greenhouse Gases Emissions and the Global Temperature Rise?



How Climate Risk is affected by Global Surface Temperature Change?

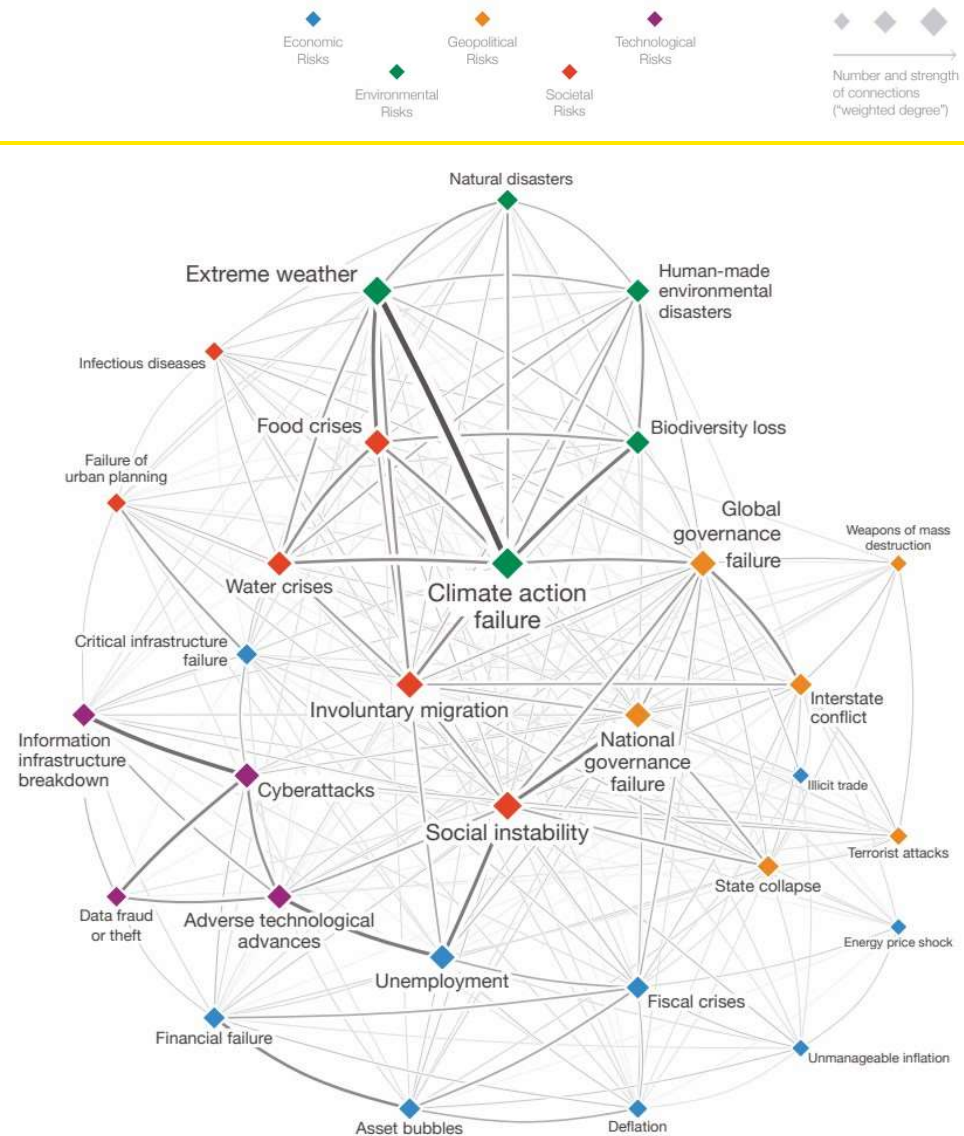


Source: [IPCC AR6 Synthesis Report](#)

Relationship between Climate Risks and other risks

Climate risks are interconnected with dozens of risks we encounter.

- In addition to the human health impacts, involuntary migration, and biodiversity loss, climate change also threatens the stability of financial markets and the broader economy.
- The physical impacts and transition risks are likely to manifest in a way that is cumulative and unexpected.
- Left unmitigated, climate change risks can impact supply chains, asset valuations, access to capital, insurability, etc

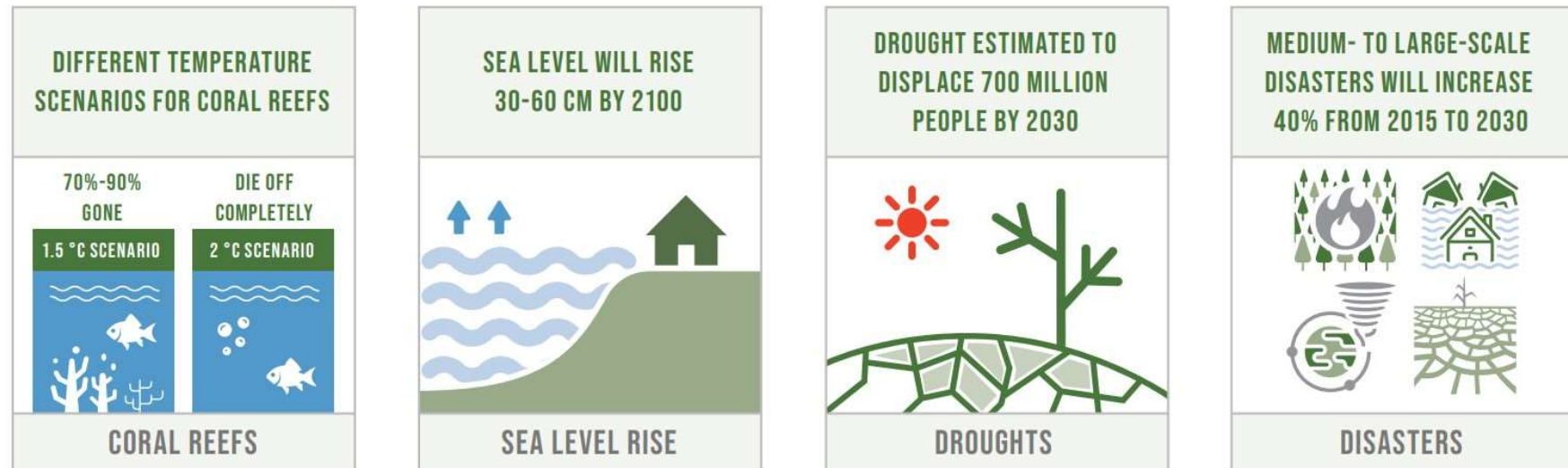


Source: World Economic Forum Global Risks Perception Survey 2019- 2020

What are the consequences if Climate Risks are neglected

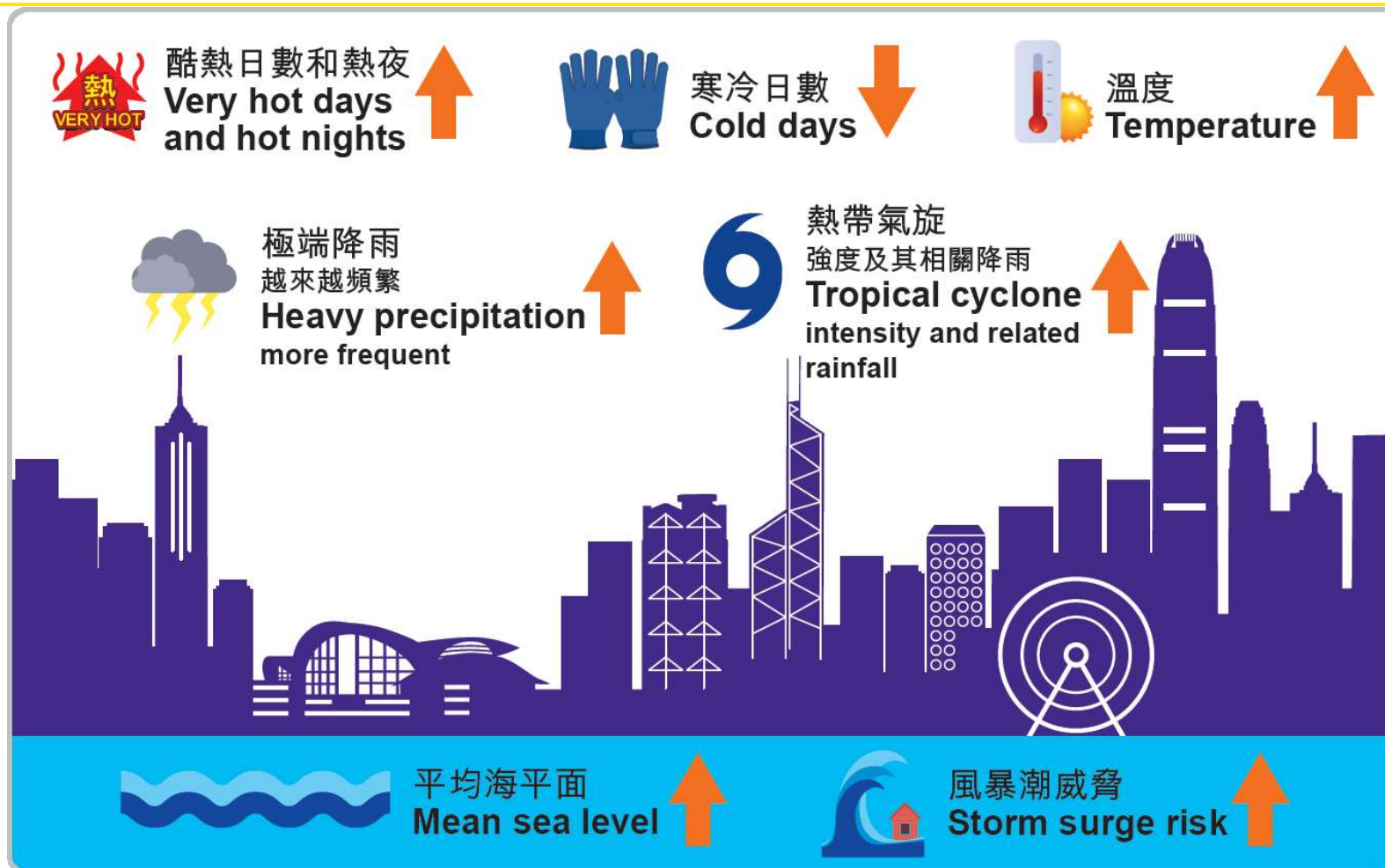


OUR WINDOW TO AVOID CLIMATE CATASTROPHE IS CLOSING RAPIDLY



Source: [THE SUSTAINABLE DEVELOPMENT GOALS REPORT 2022](#)

What are our observations in Hong Kong?



Source: [Hong Kong Observatory - Climate Change](#)

How Climate-related Risks and Opportunities affect Financials?



Source: [Recommendations of the Task Force on Climate-related Financial Disclosures](#)

What is EXAMPLEs of Climate-related Risks?

Transition Risks	Potential Financial Impacts
Policy and Legal	
<ul style="list-style-type: none"> • Increased pricing of GHG emissions • Enhanced emissions reporting obligations • Mandates on and regulation of existing products and services • Exposure to litigation 	<ul style="list-style-type: none"> • Increased operating costs (e.g., higher compliance costs, increased insurance premiums) • Write-offs, asset impairment, and early retirement of existing assets due to policy changes • Increased costs and/or reduced demand for products and services resulting from fines or judgements
Technology	
<ul style="list-style-type: none"> • Substitution of existing products and services with lower emission options • Unsuccessful investment in new technologies • Costs to transition to lower emissions technology 	<ul style="list-style-type: none"> • Write-offs and early retirement of existing assets • Reduced demand for products and services • Research and development expenditures in new and alternative technologies • Capital investments in technology development • Costs to adopt/deploy new practices and processes

What is EXAMPLEs of Climate-related Risks?

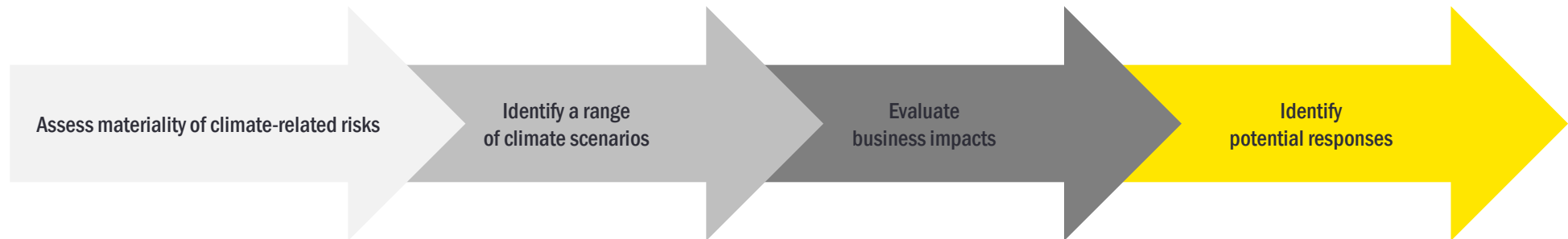
Transition Risks	Potential Financial Impacts
Market	
<ul style="list-style-type: none"> • Changing customer behavior • Uncertainty in market signals • Increased cost of raw materials 	<ul style="list-style-type: none"> • Reduced demand for goods and services due to shift in consumer preferences • Increased production costs due to changing input prices (e.g., energy, water) and output requirements (e.g., waste treatment) • Abrupt and unexpected shifts in energy costs • Change in revenue mix and sources, resulting in decreased revenues • Re-pricing of assets (e.g., fossil fuel reserves, land valuations, securities valuations)
Reputation	
<ul style="list-style-type: none"> • Shifts in consumer preferences • Stigmatization of sector • Increased stakeholder concern or negative stakeholder feedback 	<ul style="list-style-type: none"> • Reduced revenue from decreased demand for goods/services • Reduced revenue from decreased production capacity (e.g., delayed planning approvals, supply chain interruptions) • Reduced revenue from negative impacts on workforce management and planning (e.g., employee attraction and retention) • Reduction in capital availability

What is EXAMPLEs of Climate-related Risks?

Climate-related Physical Risks	Potential Financial Impacts
<p>Acute</p> <ul style="list-style-type: none"> Increased severity of extreme weather events such as cyclones and floods <p>Chronic</p> <ul style="list-style-type: none"> Changes in precipitation patterns and extreme variability in weather patterns Rising mean temperatures Rising sea levels 	<ul style="list-style-type: none"> Reduced revenue from decreased production capacity (e.g., transport difficulties, supply chain interruptions) Reduced revenue and higher costs from negative impacts on workforce (e.g., health, safety, absenteeism) Write-offs and early retirement of existing assets (e.g., damage to property and assets in "high-risk" locations) Increased operating costs (e.g., inadequate water supply for hydroelectric plants or to cool nuclear and fossil fuel plants) Increased capital costs (e.g., damage to facilities) Reduced revenues from lower sales/output Increased insurance premiums and potential for reduced availability of insurance on assets in "high-risk" locations

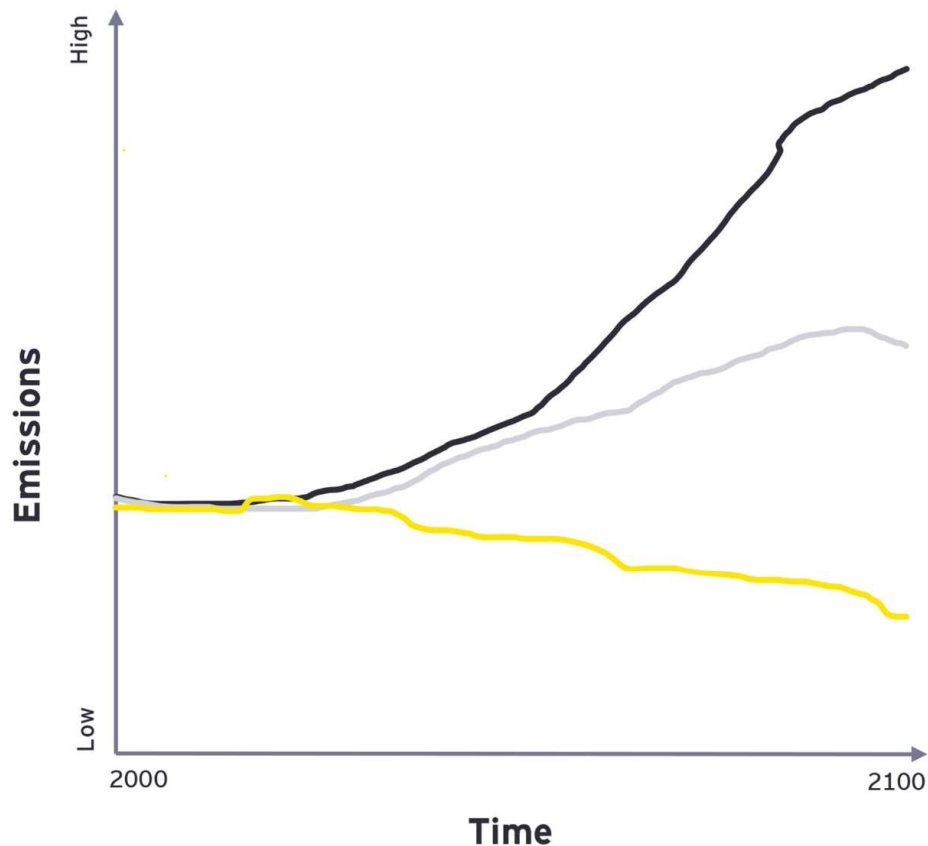
What is The Typical Way of Assessing Climate Risks on an organization?

- As discussed previously, no one is certain about the trajectory of global temperature rise.
- Given the uncertainty, the TCFD recommends the use of scenario analysis to test the resiliency of an organization under different future states. Scenarios aren't predictions or forecasts but possible future states.
- By selecting a range of future scenarios, organizations can identify different risks and opportunities and use that to inform the business strategy.



Relationship between Scenarios and Impact of Climate-related Risks

An example in the context of a clothing business



3- 5 degrees: Uncontrolled climate change

- ▶ Scarcity of raw materials e.g. cotton
- ▶ Distortion of seasonal clothing market
- ▶ Extensive weather disruptions to production and supply chain
- ▶ Extensive social disruptions to production and supply chain

2-3 degrees: Slow transition

- ▶ Increased price of cotton
- ▶ Unpredictability of seasonal clothing market
- ▶ Social and weather disruptions to production and supply chain
- ▶ Change in consumer preferences and competition
- ▶ Requirements related to metals, and materials

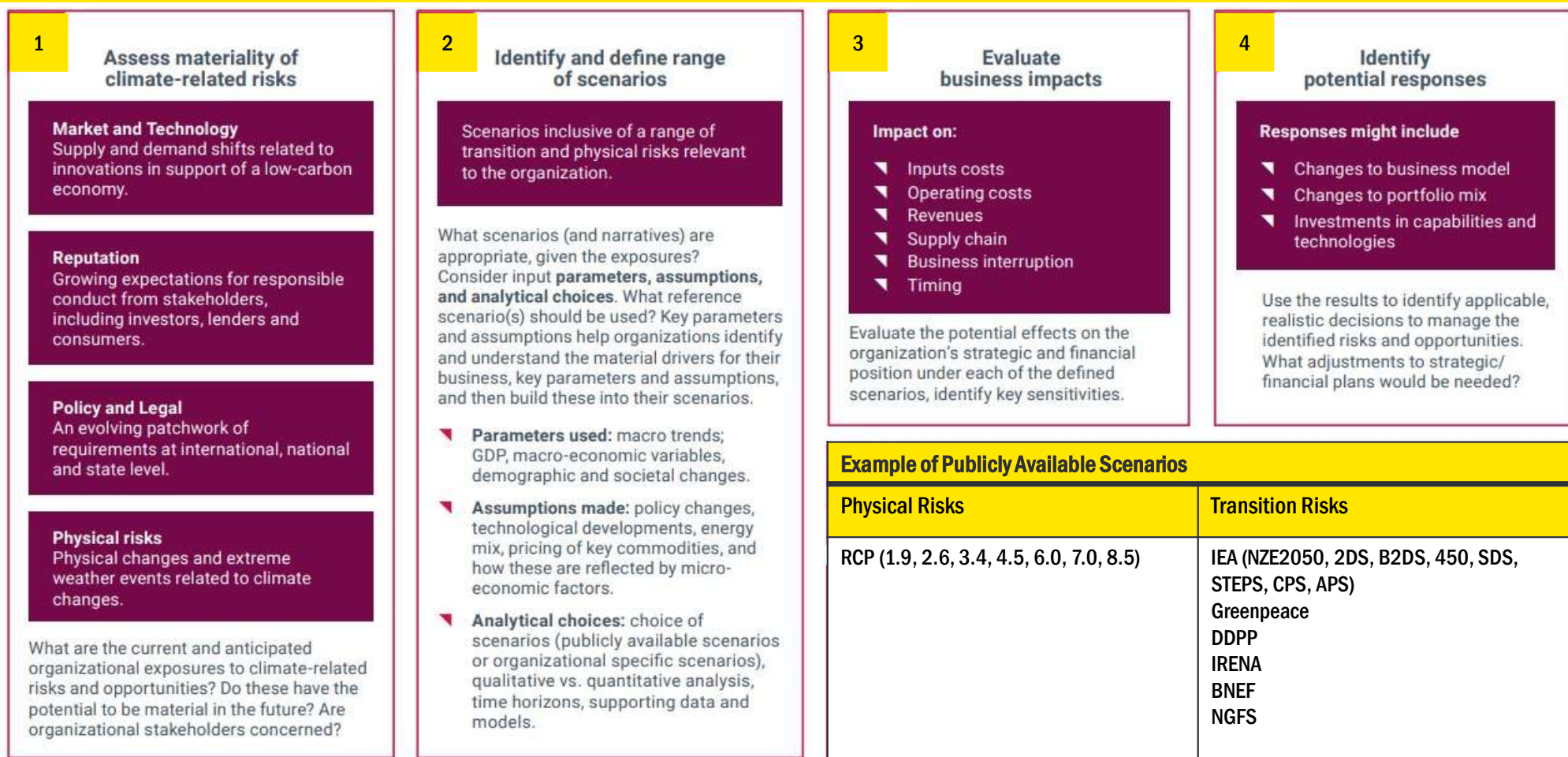
Below 2 degrees: Sustainable disruption

- ▶ Increased cost of transportation
- ▶ Changing consumer preferences and competition from low-carbon alternatives e.g. circular solutions, new materials (hemp, bamboo), durability
- ▶ Regulation of "fast fashion"
- ▶ Limitation on animal based materials e.g. wool, leather, and limits of mining of metals

Physical impacts

Transitional impacts

A Typical Climate Scenario Analysis



Source: [CDP](#)

What is EXAMPLES of Climate-related Opportunities?

Type	Climate-Related Opportunities	Potential Financial Impacts
Resource Efficiency	<ul style="list-style-type: none"> • Use of more efficient modes of transport • Use of more efficient production and distribution processes • Use of recycling • Move to more efficient buildings • Reduced water usage and consumption 	<ul style="list-style-type: none"> • Reduced operating costs (e.g., through efficiency gains and cost reductions) • Increased production capacity, resulting in increased revenues • Increased value of fixed assets (e.g., highly rated energy efficient buildings) • Benefits to workforce management and planning (e.g., improved health and safety, employee satisfaction) resulting in lower costs
Energy Source	<ul style="list-style-type: none"> • Use of lower-emission sources of energy • Use of supportive policy incentives • Use of new technologies • Participation in carbon market • Shift toward decentralized energy generation 	<ul style="list-style-type: none"> • Reduced operational costs (e.g., through use of lowest cost abatement) • Reduced exposure to future fossil fuel price increases • Reduced exposure to GHG emissions and therefore less sensitivity to changes in cost of carbon • Returns on investment in low-emission technology • Increased capital availability (e.g., as more investors favor lower-emissions producers) • Reputational benefits resulting in increased demand for goods/services

What is EXAMPLES of Climate-related Opportunities?

Type	Climate-Related Opportunities	Potential Financial Impacts
Products and Services	<ul style="list-style-type: none"> • Development and/or expansion of low emission goods and services • Development of climate adaptation and insurance risk solutions • Development of new products or services through R&D and innovation • Ability to diversify business activities • Shift in consumer preferences 	<ul style="list-style-type: none"> • Increased revenue through demand for lower emissions products and services • Increased revenue through new solutions to adaptation needs (e.g., insurance risk transfer products and services) • Better competitive position to reflect shifting consumer preferences, resulting in increased revenues
Markets	<ul style="list-style-type: none"> • Access to new markets • Use of public-sector incentives • Access to new assets and locations needing insurance coverage 	<ul style="list-style-type: none"> • Increased revenues through access to new and emerging markets (e.g., partnerships with governments, development banks) • Increased diversification of financial assets (e.g., green bonds and infrastructure)
Resilience	<ul style="list-style-type: none"> • Participation in renewable energy programs and adoption of energy efficiency measures • Resource substitutes/diversification 	<ul style="list-style-type: none"> • Increased market valuation through resilience planning (e.g., infrastructure, land, buildings) • Increased reliability of supply chain and ability to operate under various conditions • Increased revenue through new products and services related to ensuring resiliency