

NGFS Scenarios In Action: A Guide To Climate Scenario Analysis

GCD Climate Risk Focus Group Webinar
Tuesday, February 17th, 2026

Speaker: Tina Emambakhsh
European Central Bank (ECB)

Host: Hale Tatar, Global Credit Data

Before we start



Anti-Trust Warning:
participants are warned not to provide sensitive information about their bank or to engage in discussions which might encourage or lead to collusive behaviour. If in doubt, then please seek guidance from your own bank's policies or legal counsel.

Participate in the polls during the session
(login to MS teams required to participate)

Slides will be available after the session

During the session:
Ask questions in the chat

After Presentation:
Interactive Q&A

About Global Credit Data

Member banks



send data
receive data

GCD



- Collects data
- Provides standards
- Control Data Quality
- Anonymizes
- Analyses



LGD/EAD

Data pooling of historical defaults and realised LGD and CCFs



PD/Rating

Data pooling of ratings, PDs and defaults and migration matrices



Named Peer Ratings

Data pooling of predicted PD/Rating, LGD and CCF for named counterparties and specific banking book clusters



ICC Trade Register

Data pooling of trade finance products

GCD Climate Initiatives...get involved!

Climate And Credit Risk Come Together

March 5&6
GCD Zurich
Conference!

Regional Activities

Banks collaborate through webinars, surveys and regional initiatives. Collaboration projects with regulators

Climate Focus Group

Establish Workstreams. Meet with banks on integration of climate into credit risk

Standard Methods

Identify and publish standard quantification methods

Data & Metrics

Collection of key climate drivers in the PD & LGD platforms

UNEP FI Collaboration ESG Scorecard

ESG & Sustainability Risk Scorecard metrics pooling project

European Banking Authority (EBA) Collaboration

Joint analysis on correlation between ESG risk drivers and defaults/PDs

Active
Focus
Group

Results
soon

Credit & Climate → GCD Climate Focus Group

✓ Leveraging years of expertise in successful data pooling for banks



Creating Standards and Best Practices



Data Pooling



Knowledge Sharing



Analytics & Reports



Industry Collaborations

Industry Standard

Standard Template

Webinars

Dashboards

Climate Experts

Comparability

Borrower Level

Surveys

Segment based

Regulators

Consistency

Regional/
Global

Working Group

Benchmarking

Academia

Data quality

Sector based

1-1

Tailored analytics

Partners

Get Involved!

Climate Survey



**Best Practices &
Industry Standards**

Presentations



**Knowledge sharing &
practical insights**

Climate Data Collection



**Integration to
Credit Risk**

Join the
GCD Climate Risk
Focus Group

[https://globalcreditdata.org/
esg-climaterisk/](https://globalcreditdata.org/esg-climaterisk/)



Today's Speaker



Tina Emambakhsh
Financial Stability Expert,
European Central Bank (ECB)



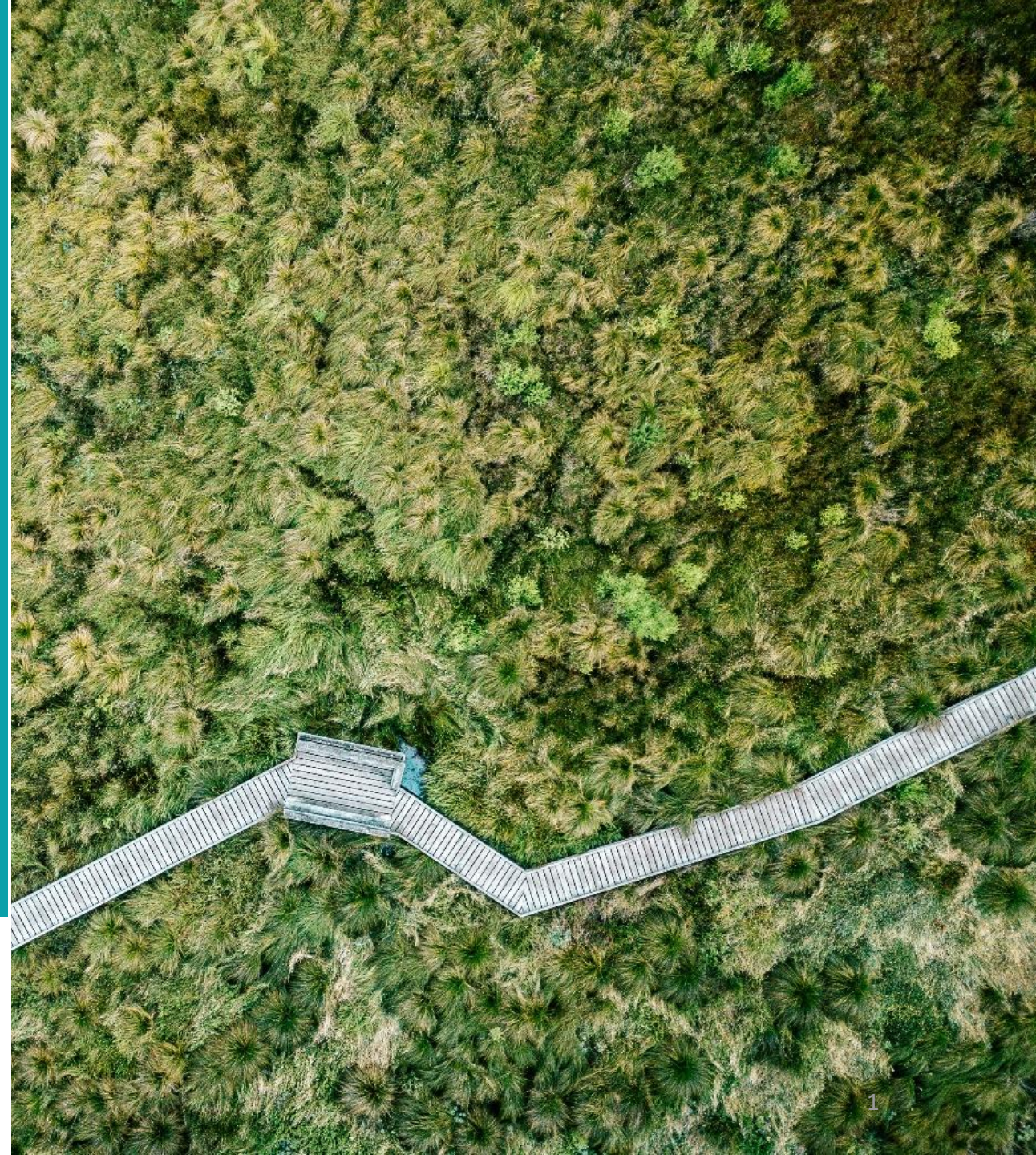
EUROPEAN CENTRAL BANK

NGFS scenarios in action: a guide to climate scenario analysis

GCD seminar
17 February 2026

Tina Emambakhsh*

** Disclaimer: This presentation should not be reported as representing the views of the European Central Bank (ECB) and/or the Network for Greening the Financial System (NGFS). The views expressed are those of the authors and do not necessarily reflect those of the ECB or NGFS.*



NGFS User Survey

Your feedback on your experience with NGFS scenarios is greatly appreciated!



Link: <https://forms.office.com/e/8Xr8LkayQq?origin=lprLink>

NGFS scenarios support climate analysis and stress testing

The NGFS scenarios provide a harmonized set of climate and macroeconomic variables, based on an internally consistent modelling framework.

The NGFS **climate scenarios** help answering the questions:

What can happen? E.g., if policy ambition diverges and climate change is not mitigated.

What should happen? E.g. to shed light on the benefits of a timely green transition from a macro-financial perspective.

Climate scenario analysis enables to:

- **explore a range of plausible outcomes** associated with climate change and **provide forward-looking information** about the potential economic and financial consequences of climate risks
- **compare costs** associated with **transitioning towards a net-zero economy versus** those associated with **extreme weather events** in case of a 'Hot House World'
- identify of **potential pockets of vulnerability** and **prepare the financial system** against climate risks by **anticipating potential losses and vulnerabilities**



Climate scenarios **are not forecasts** as they are intended to explore the bookends of plausible futures (neither the most probable nor the most desirable).

Updated User Guide published in November 2025

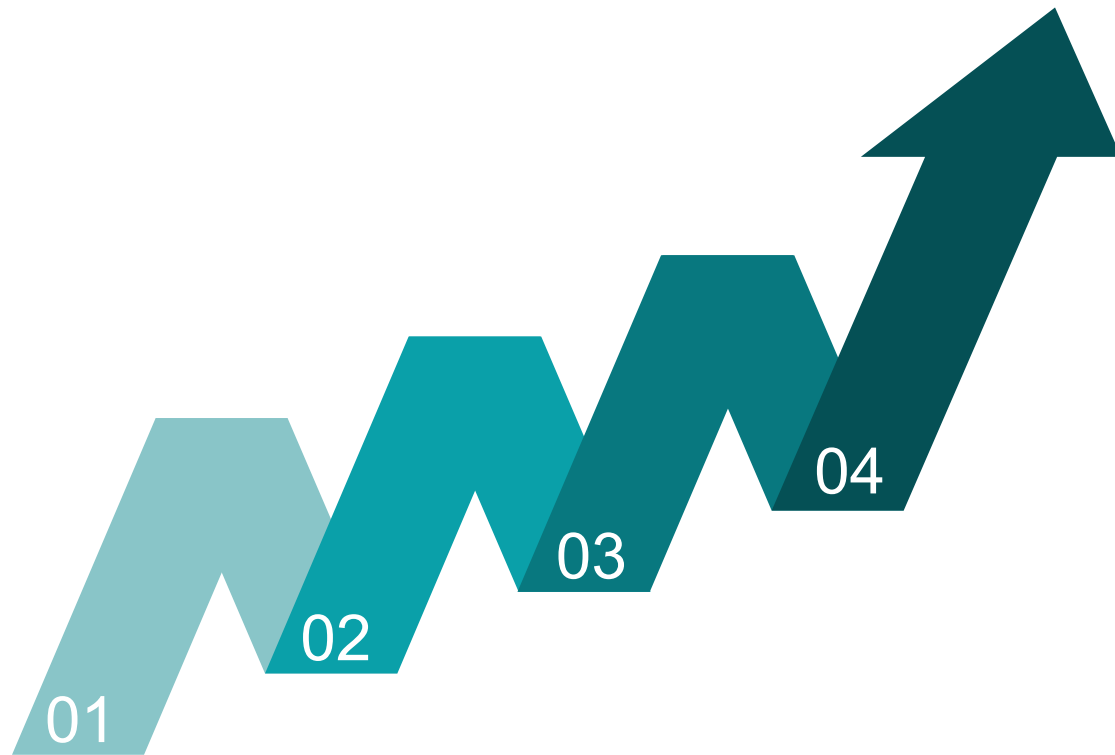
Updates include:

- Description and overview of **NGFS short-term scenarios**
- **New use cases** presenting the latest application of NGFS scenarios by users from **public and private institutions**
 - New use cases include applications from: *Banque de France/ACPR, Bank of England, Bank of Mexico, Bank of Japan, Bank of Slovenia, ECB, IMF, SBS Peru, McKinsey, Bloomberg*
- **Practical guidance** for the application of NGFS scenarios:
 - Choice of time horizon, including aspects of static versus dynamic balance sheet assumption
 - Changing NGFS narratives in the design of the exercise, including aspects of non-linear dynamics
 - Further clarifying assumptions underlying NGFS scenarios

Can be downloaded from the NGFS website ([link here](#)).



The application of NGFS scenarios is a multi-step approach



01 Identify objectives & scope

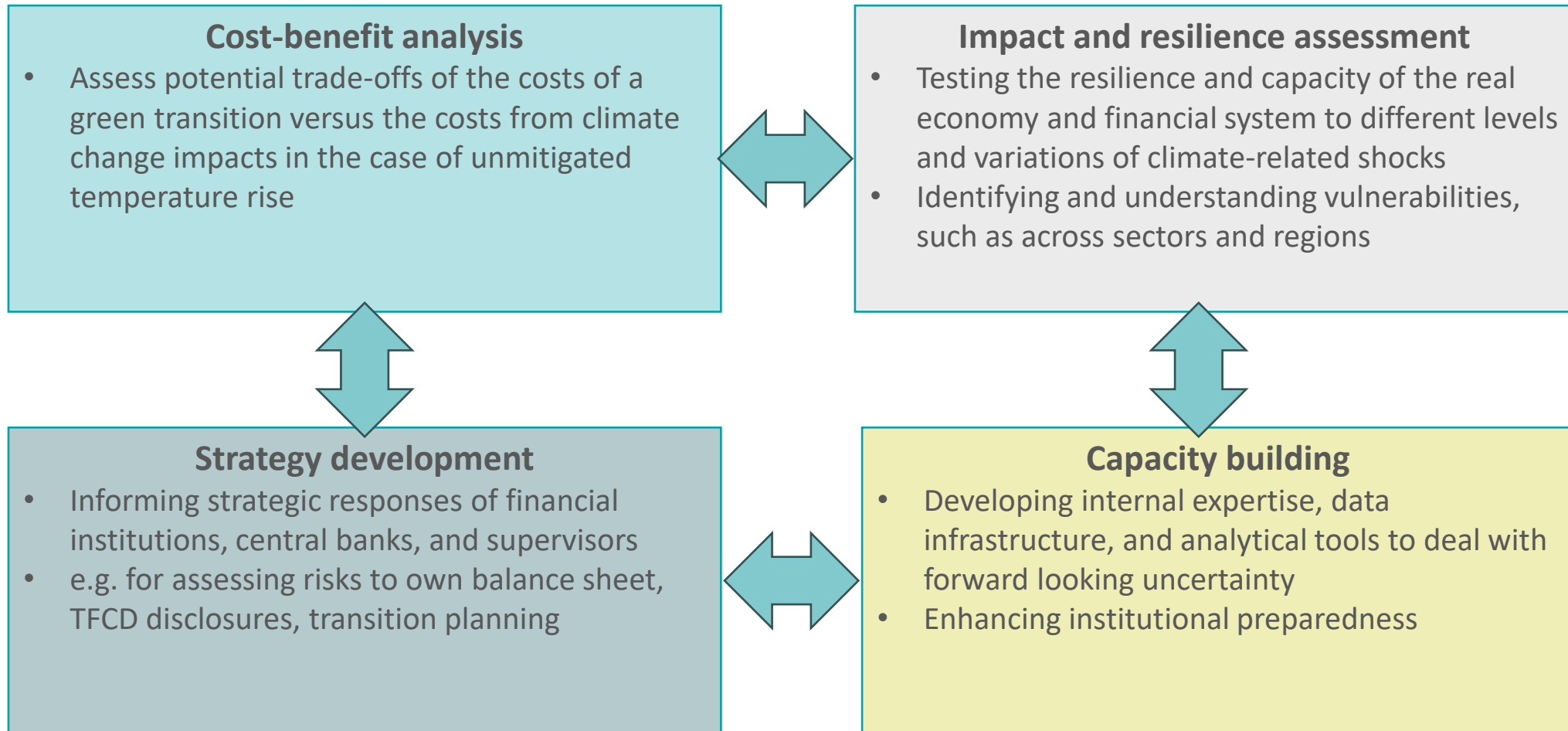
02 Selection and design relevant scenarios

03 Assessing economic and financial impacts

04 Communication & use of results

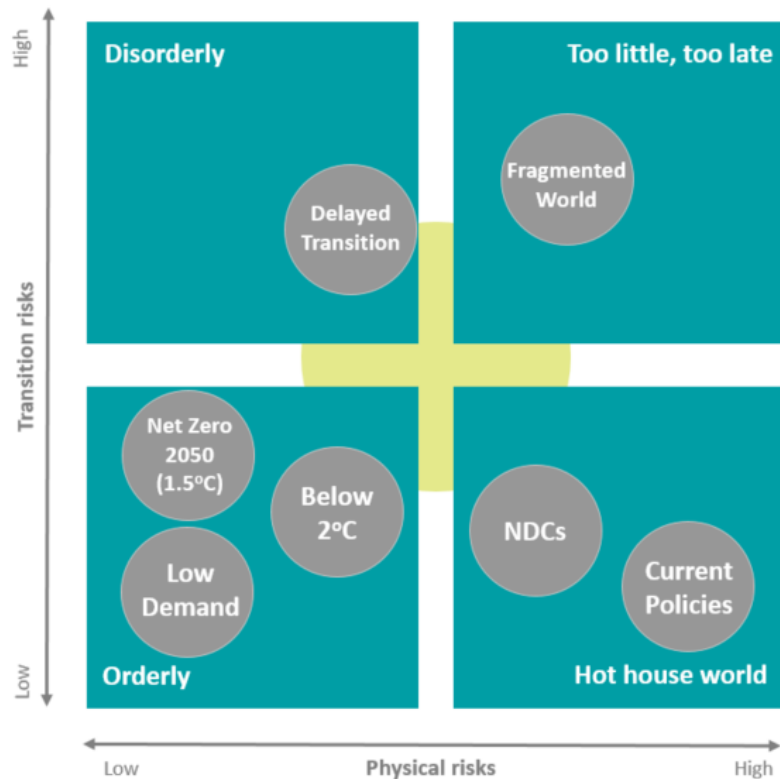
Climate scenario analysis can have several, overlapping purposes

Key objectives:

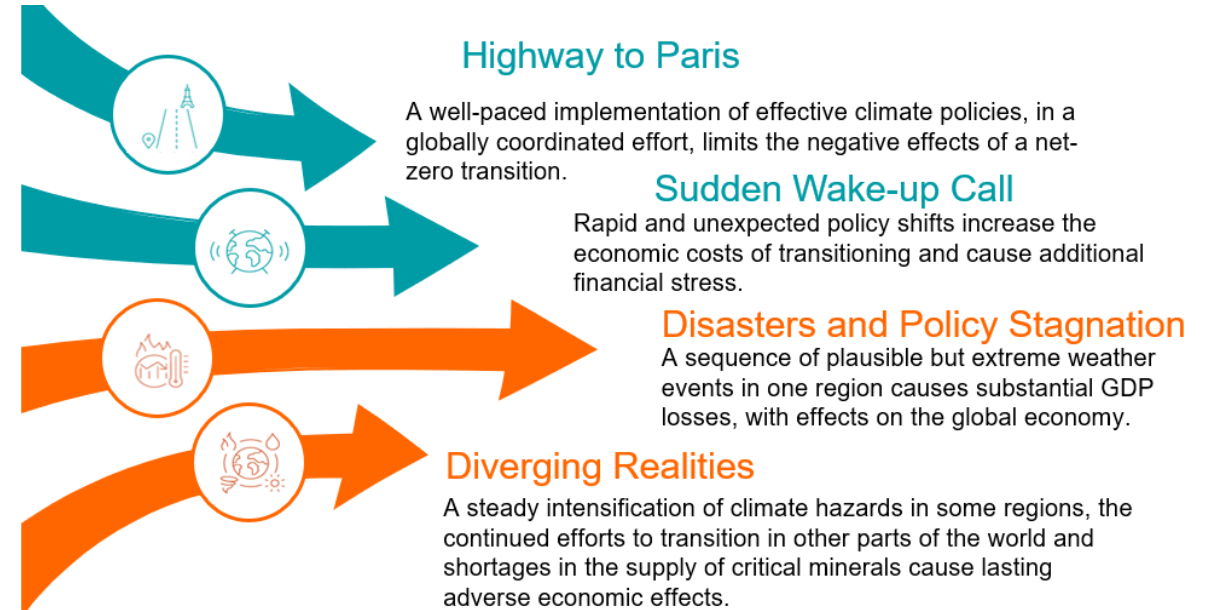


NGFS climate scenarios span multiple horizons and have evolved over time

NGFS long-term scenarios (Phase V)



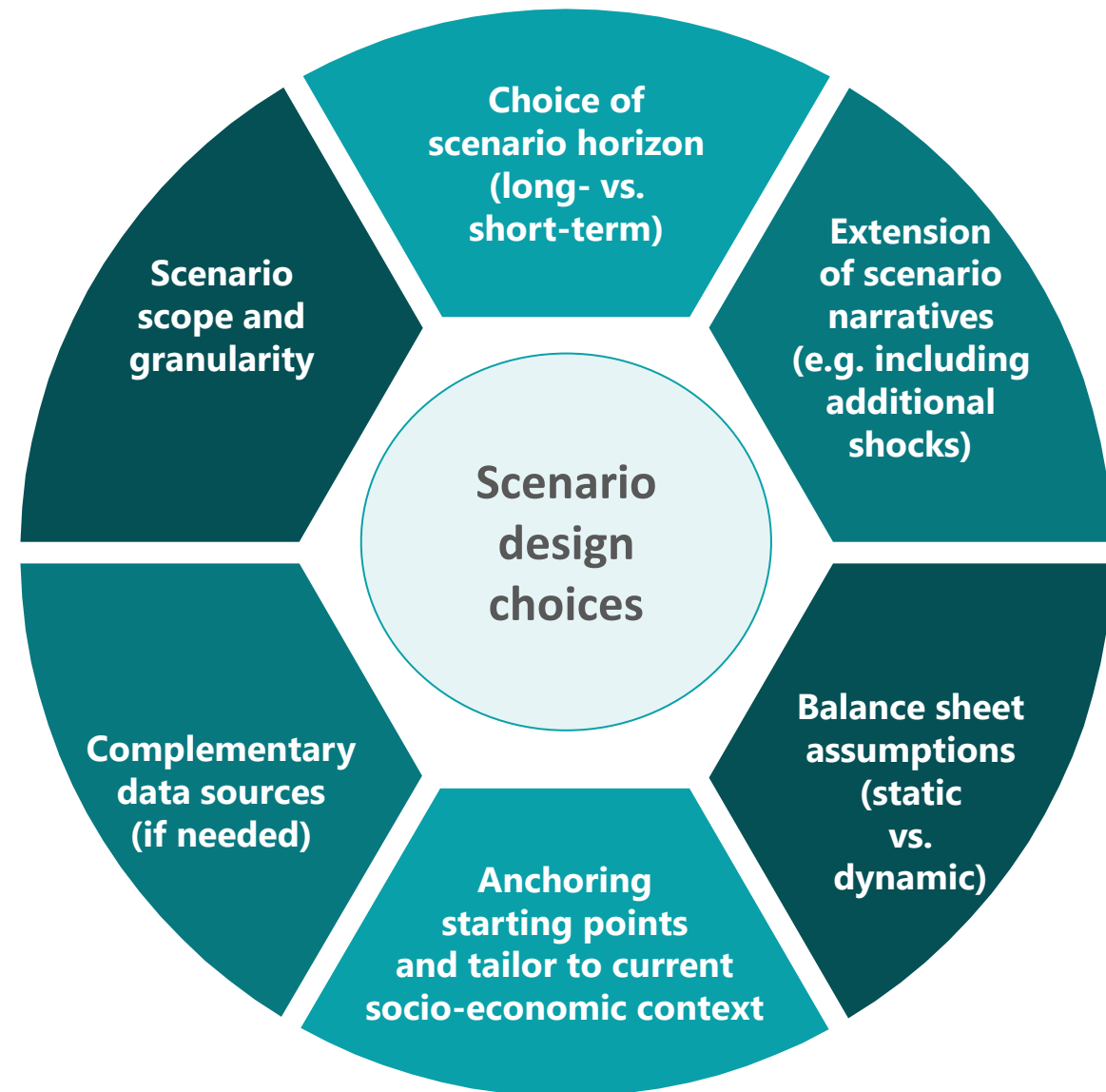
NGFS short-term scenarios (Phase I)



The NGFS short- and long-term scenarios should be **compared with caution**. They differ in several aspects, such as in the **modelling framework, transmission channels, narratives, baseline scenarios, type and modelling of physical risks**.

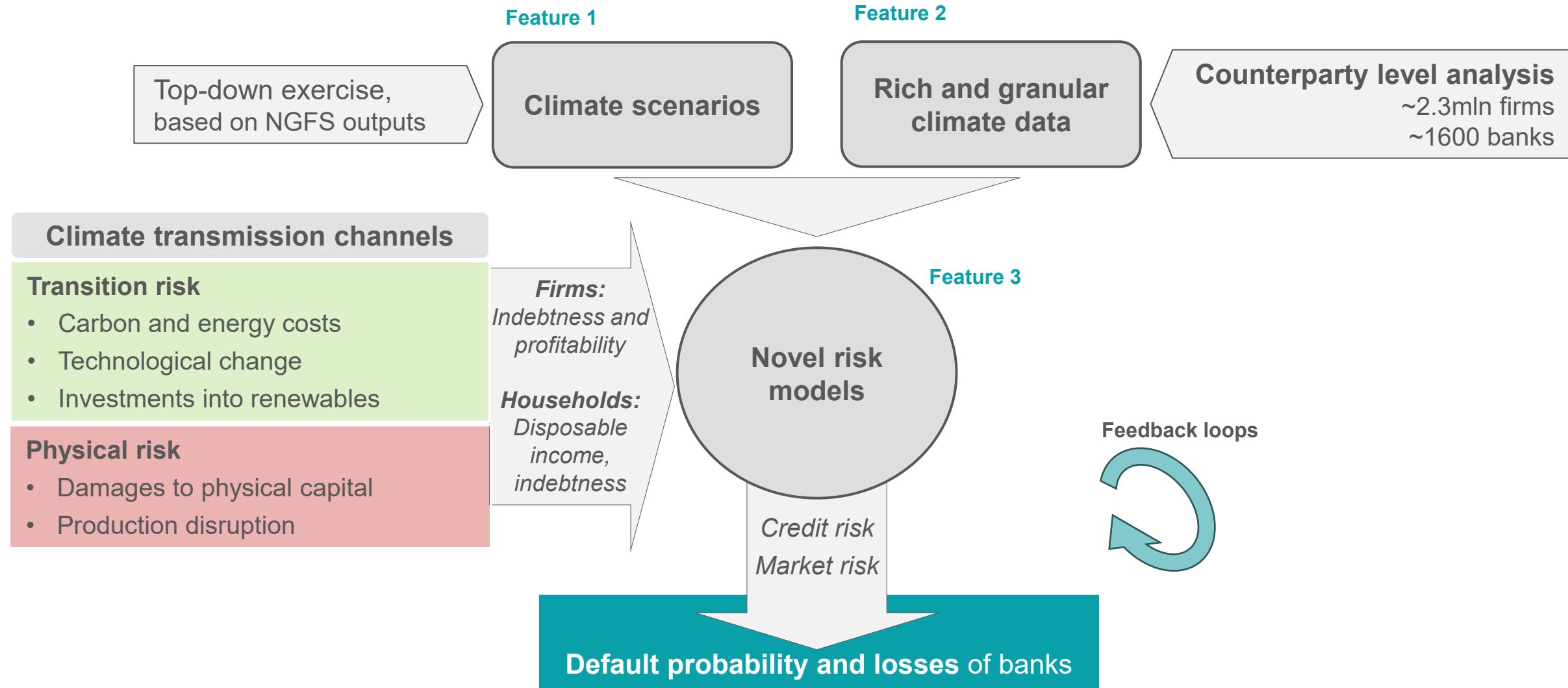
Climate scenarios need to be tailored to user needs

- Scenario design **depends on the objective**: time horizon, risk types and severity must be aligned with the question at hand.
- **Short-term scenarios** focus on tail risks and business cycle dynamics, while **long-term scenarios** assess structural trends and transformations.
- Users are expected to **extend and tailor scenario narratives and assumptions** to local contexts, while preserving consistency and international comparability.



Climate scenarios are a key input into models that assess the economic and financial impact of climate risks

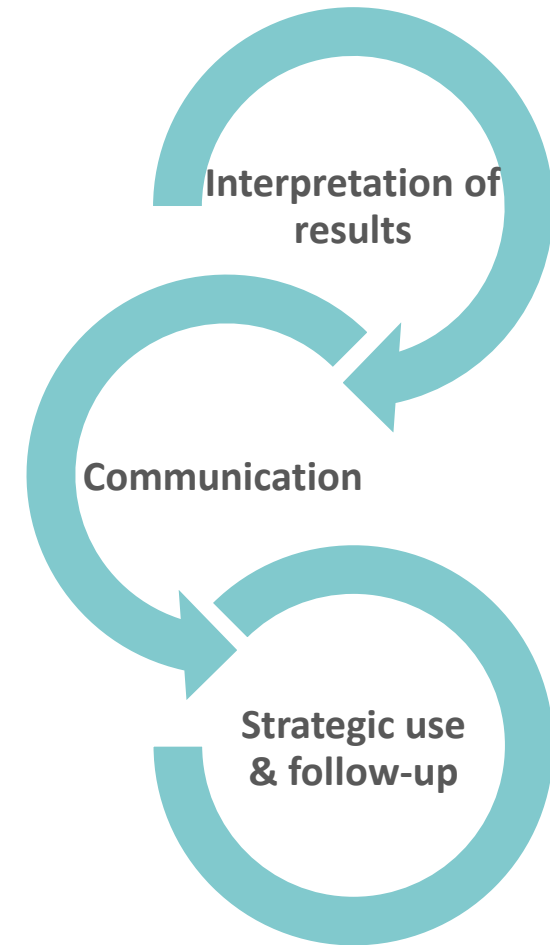
Step 3
- ECB use
case



Climate scenario analysis does not end with numbers

Good practices

- Clearly distinguish **transition vs. physical risks**
 - Focus on **relative impacts and risk drivers**, not point forecasts
 - Identify **vulnerabilities and risk concentrations**
-
- **Transparency** about assumptions, limitations and uncertainties
 - Explain key transmission channels and sensitivities
-
- Prioritise **areas for deeper analysis or monitoring**
 - Inform **policy, supervisory and risk-management dialogue**
 - **Integrate** insights into risk monitoring



There are still gaps to fill in the development of climate scenarios

Granularity and coverage of assessment

- Sector- and subnational-level information required
- EMDE countries less represented due to limited (economic) data availability



Risk amplifications

- Inclusion of tipping points and compounding effects
- Interactions with nature and macroeconomic risks

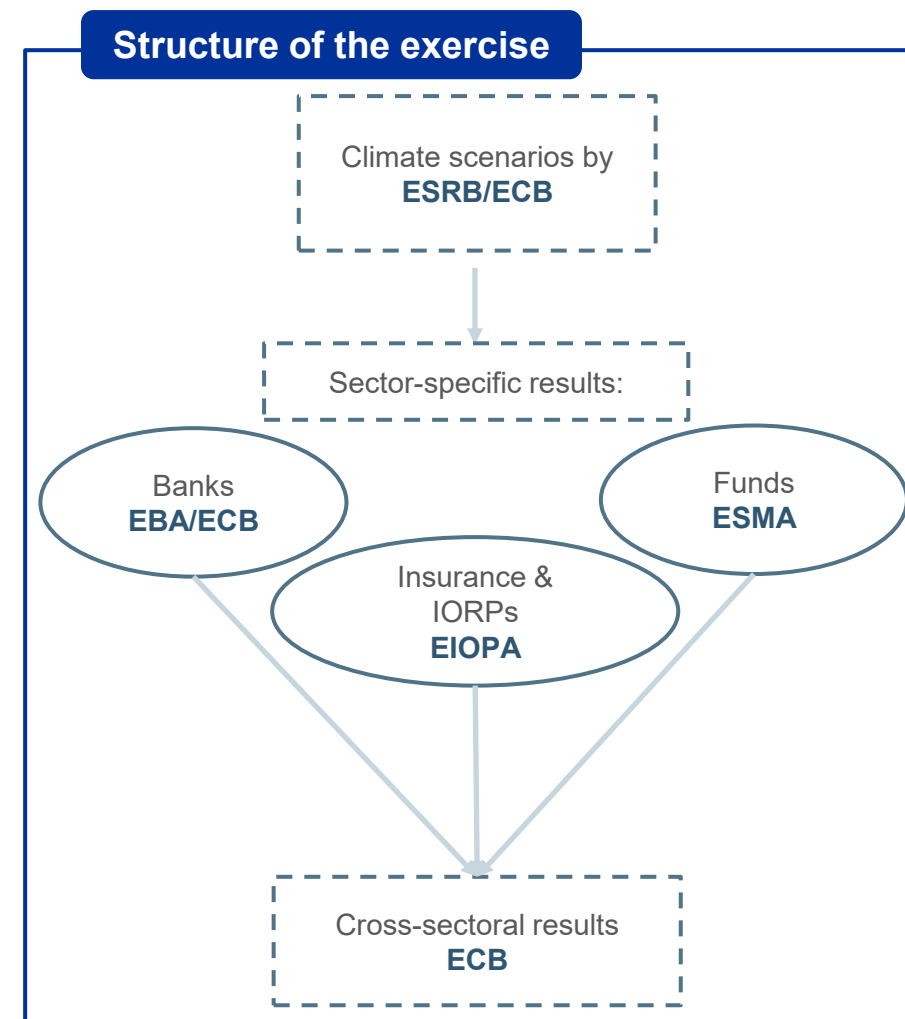
Modelling gaps

- Some modules (e.g. households, real estate, food prices) less represented due to data and modelling gaps

Climate scenario application in the ECB:
One-off “Fit-for-55” climate scenario analysis

What is the FF55 exercise?

- In 2023, the EU Commission invited the ESAs and the ECB to conduct a one-off “Fit-for-55” climate scenario analysis for banks, investment funds, occupational pension funds (IORPs) and insurers.
 - The **“Fit-for-55” package** is a set of legislative proposals aimed at **reducing net GHG emissions by at least 55% by 2030**, compared to the 1990 levels.
- **The exercise aimed at assessing the resilience of the financial sector** to climate and macro financial shocks during the implementation of the “Fit-for-55” package.
 - **Both direct losses** (“first round losses”) **and amplification effects** (“second round losses”) **were estimated** using top-down models over an 8-year horizon. The exercises also assessed the **capacity of the financial system to support the green transition**.
 - **Three scenarios** were considered focusing on **transition risk**. All scenarios assume that the “Fit-for-55” objectives will be achieved by 2030. The scenarios were developed internally, leveraging on NGFS scenarios and regulatory scenarios of the 2023 EU-wide stress test.

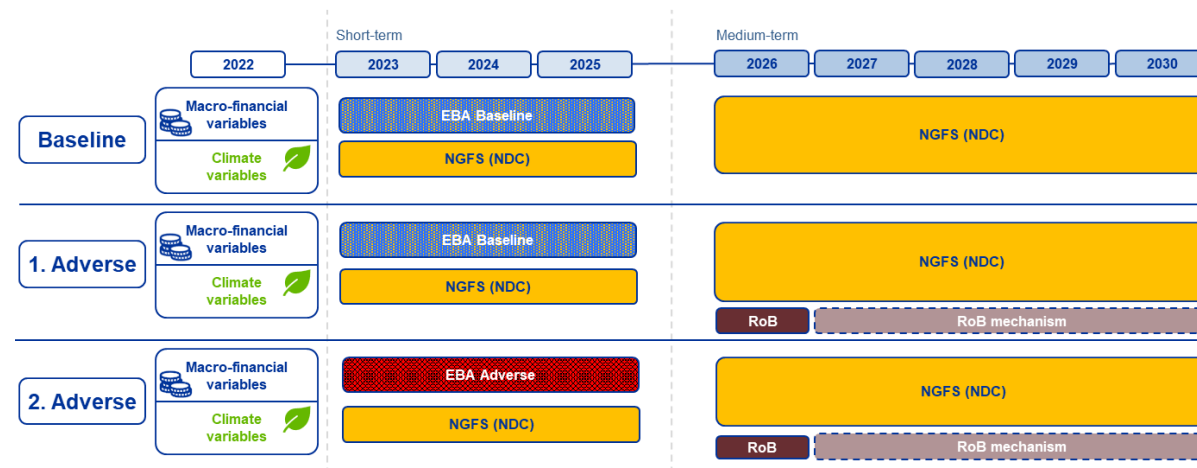


What were the scenarios of the Fit-for-55 exercise?

Scenarios

The scenarios were **developed internally**, leveraging on **NGFS scenarios** and **regulatory scenarios** of the 2023 EU-wide stress test.

- The **baseline scenario (B)** reflects an orderly transition in which the “Fit-for-55” package is implemented within a baseline economic environment.
- A **first adverse scenario (A1)** focuses on climate-change related risks that materialize in the near term, in the form of asset price corrections triggered by a sudden reassessment of transition risks in 2026 - “run-on-brown”(RoB).
- A **second adverse scenario (A2)** combines climate-change related risks with other macroeconomic stress factors included in the EBA’s EU-wide stress test 2023.



Note. More details are available in ESRB, “[Climate-related scenarios for the one-off Fit-for-55 scenario analysis exercise](#)”, November 2024.

Lessons learned from ECB climate stress tests

Challenges



Scenario alignment with **current macroeconomic & geopolitical context**



NGFS projections only **at aggregate level** (mostly region-, sometimes country- or sector-level)



Lack of **disclosure of firm-level emissions**, especially for private firms and SMEs



Identifying firm-level **exposure to** (different types and degrees of) **natural hazards**

Solutions



Combining NGFS scenarios with **regulatory scenarios** from EU-wide stress test



Translate NGFS scenarios to **firm-level** developments via **internal data and models**



Use **statistical estimation models** to infer firm-level emissions



Geolocating firms and assigning **physical risk scores** on address-level

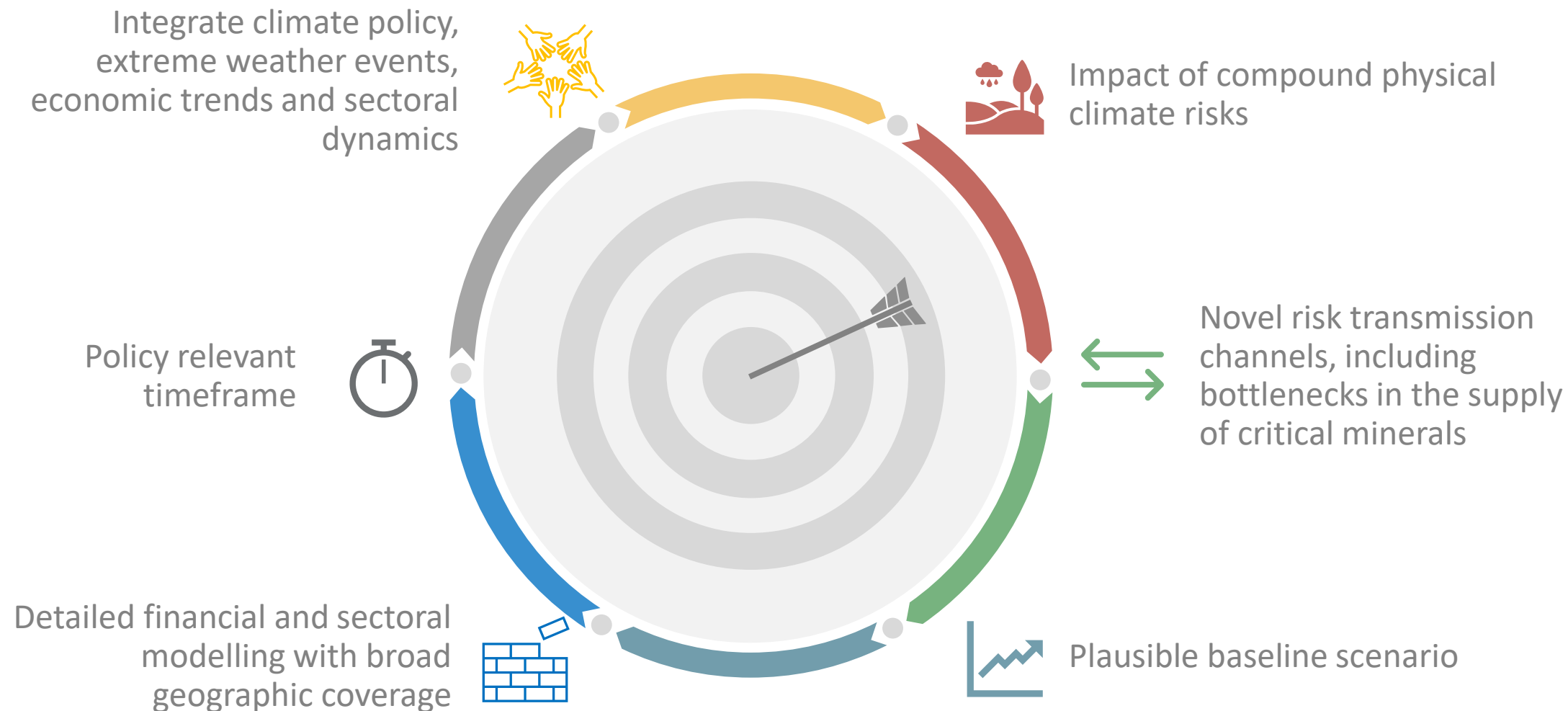


Discussion and Q&A

Appendix

NGFS short-term scenarios show immediate impacts of climate risk

The short-term scenarios are a first tool which addresses the question of how climate may matter already in the next five years across the world.



Short-term scenarios: Key messages



Highway to Paris

Early implementation of ambitious climate policies pays off in a globally coordinated transition to low-carbon economy. A gradual increase in carbon prices, coupled with effective recycling of carbon tax revenues into green investments, limit global output losses.



Sudden Wake-up Call

Rapid unexpected policy shifts increase the economic costs of transition and can cause severe financial stress due to knock-on effects of financial risks concentrated in high-emission sectors.



Disasters and Policy Stagnation

A sequence of extreme weather events would significantly increase the chance that borrowers fail to repay their debts. Capital-intensive sectors are particularly vulnerable.



Diverging Realities

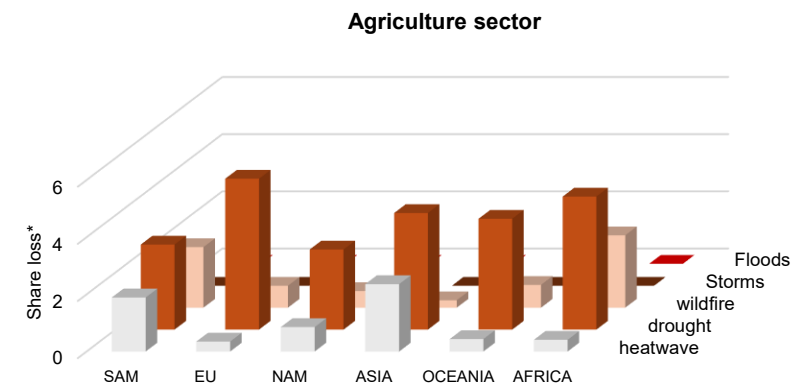
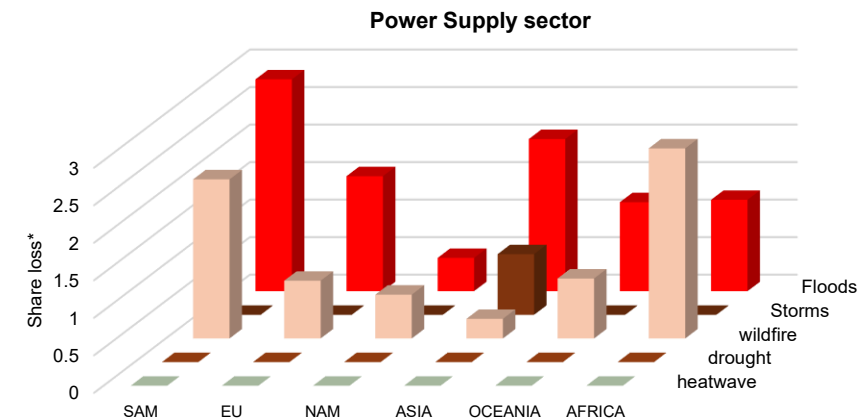
Intensifying climate hazards in some regions lead to shortages in the supply of critical minerals needed for the successful green transition and macroeconomic risks spilling over to advanced economies.

Novel approach for modelling short-term physical risk

The NGFS short-term scenarios are produced by a suite of integrated models.

- Modelled via a **story-line approach** to explore a series of severe and compound, region-specific extreme weather events, while also capturing risk propagation via global supply chains
- Two types of compound events are modelled:
 - (1) **dry events:** combination of droughts, heatwaves, and wildfires
 - (2) **wet events:** combination of floods and storms
- Impact on the economy via several channels: **capital destruction, productivity and production loss**, and **labour productivity loss**

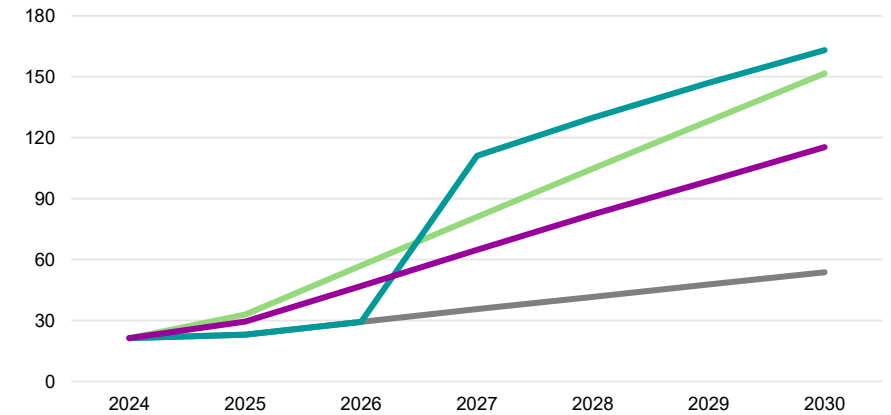
Weather impacts, simple averages, Disasters and Policy Stagnation
(% share of productive factor lost)



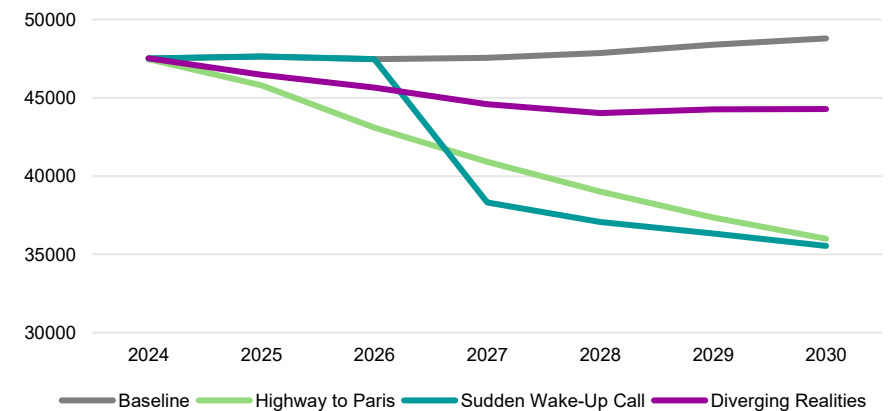
Key assumptions: Transition risk

- **Transition risk** is mostly driven by the timing of the policies, level of carbon prices, and the extent to which carbon tax revenues are reinvested into green technologies.
 - In **Highway to Paris**, carbon prices increase gradually, leading to steady emission reductions in line with net-zero. The revenue from carbon taxes is reinvested in green technologies, facilitating a more cost-effective green transition.
 - **Sudden Wake-Up Call** depicts an abrupt transition delayed to 2027. Carbon prices rise steeply without reinvesting revenues in green technologies*. While emissions reductions by 2030 are net-zero aligned, the transition comes at a higher economic cost.
 - In **Diverging Realities**, only advanced economies** follow net-zero transition pathways, leading to a global reduction in emissions that falls short of net-zero targets.

Carbon Price* - World
Weighted Average (US\$2017/t CO2)



Gross Emissions – World
(billion US\$2017)



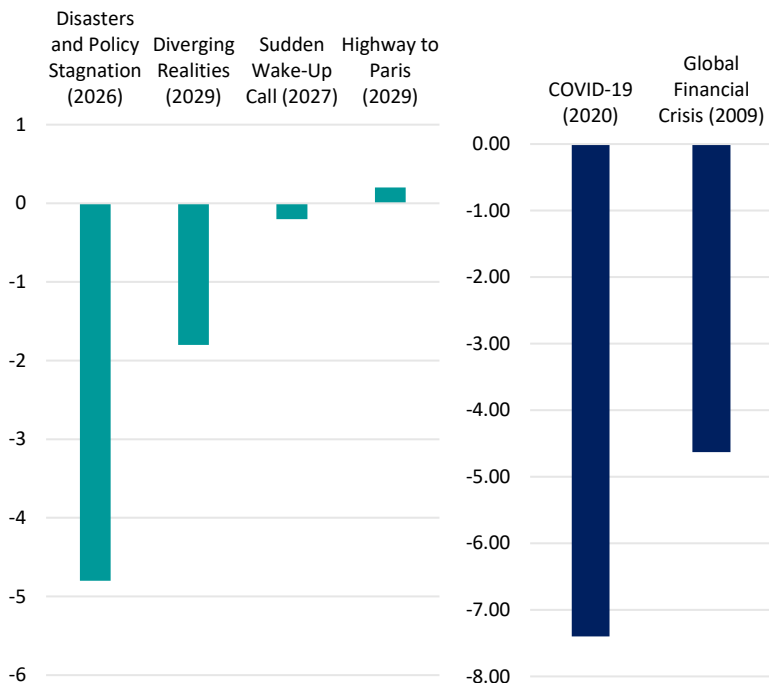
* In the Sudden Wake-up Call scenarios, tax revenues are assumed to be redistributed to support households' consumption.

** Some countries follow a Highway to Paris transition but are geographically located in disaster regions and thus are subject to both transition and physical risk. This mainly impacts Asia, where Japan, South Korea and Turkey all experience both physical and transition risks.

Key results

Climate Disasters Could Rival Economic Impact of Global Financial Crisis

(left chart: EU GDP, difference to baseline, %)
(right chart: EU GDP, difference to IMF WEO forecast, %)

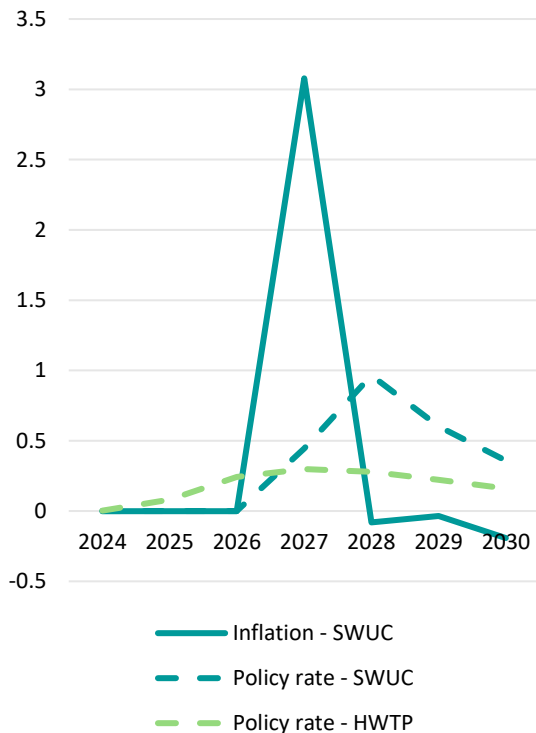


Notes: IMF WEO Forecast October 2019 was used for 2020 and IMF WEO Forecast October 2008 for 2009. Historical GDP values are sourced from IMF WEO database.

*A sequence of extreme climate events in Europe could reduce its **GDP** by almost 5%.*

Delayed Climate Policies Could Force Interest Rate Hikes

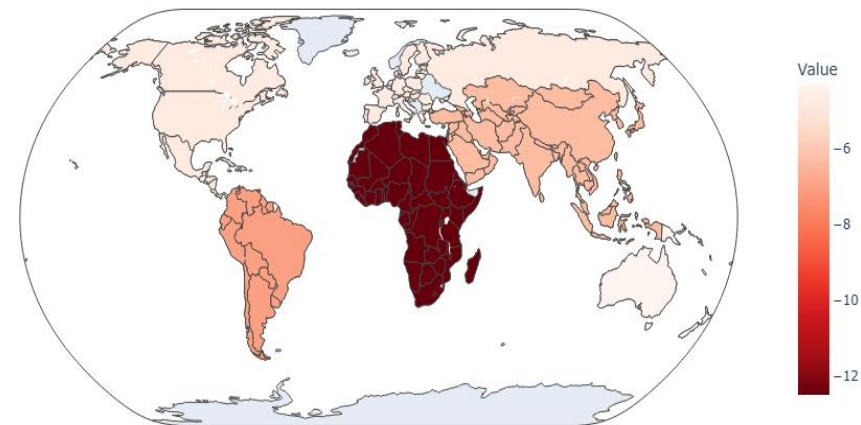
(EU Inflation and policy rates, difference to baseline, pps)



An abrupt global transition could result in inflation raising by 3 percentage points.

Compounding Weather Events Threaten All Economies

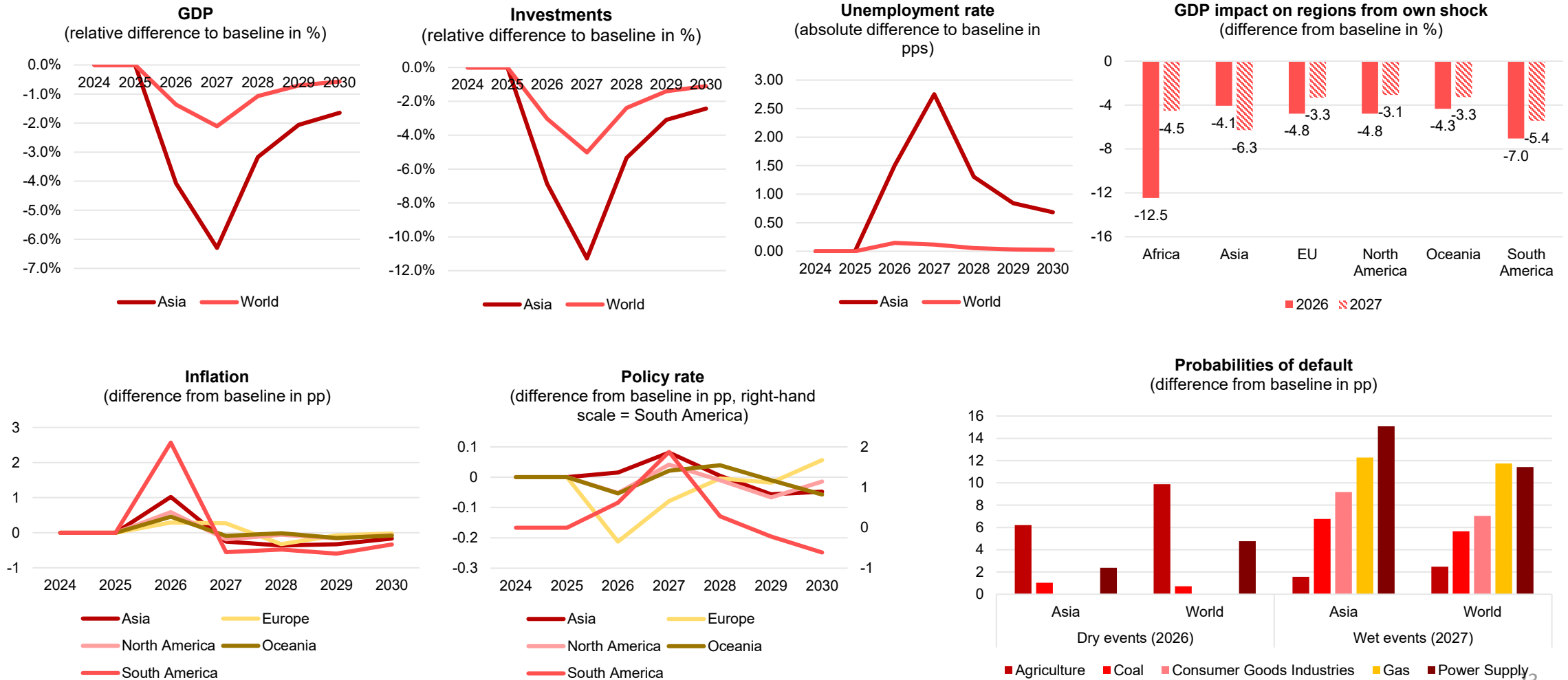
(GDP growth, Disasters and Policy Stagnation scenario, difference to baseline, %)



The impact of compounding extreme weather events ranges between 5 and 12.5% of GDP depending on the region.

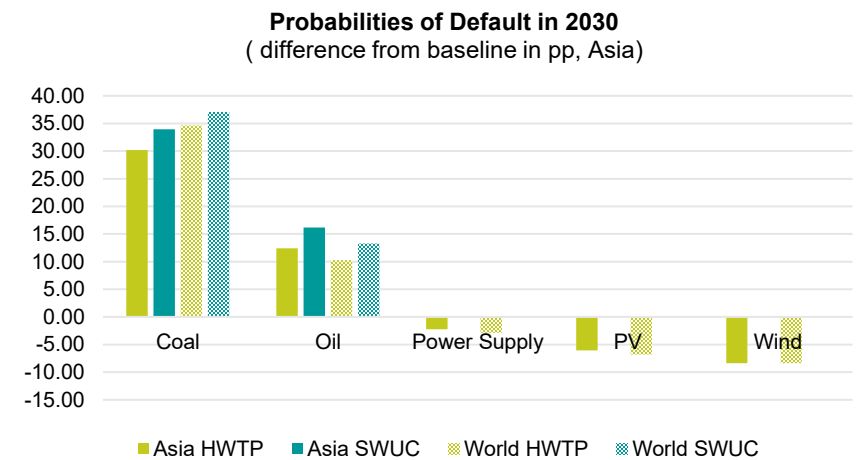
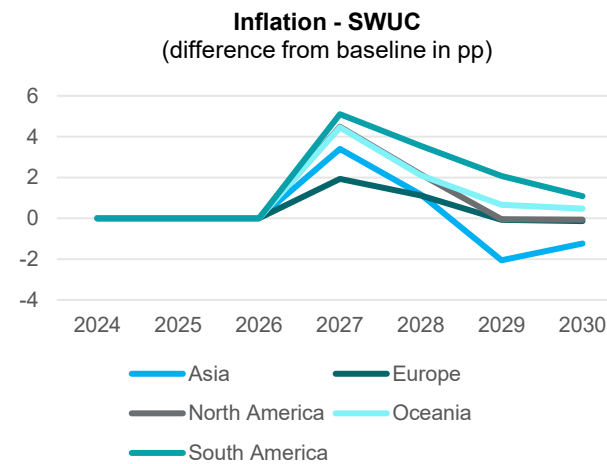
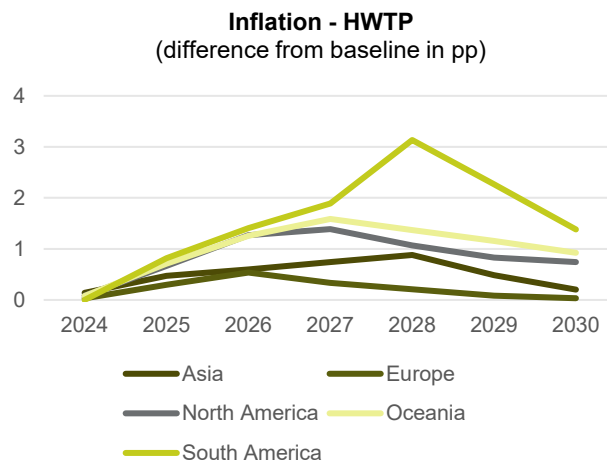
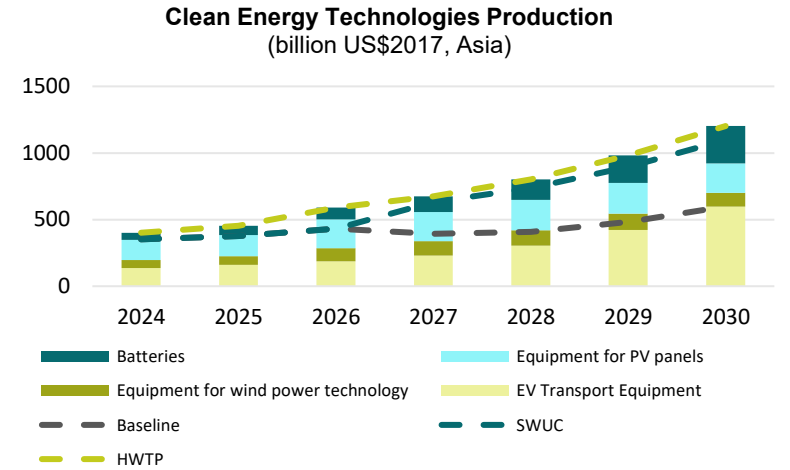
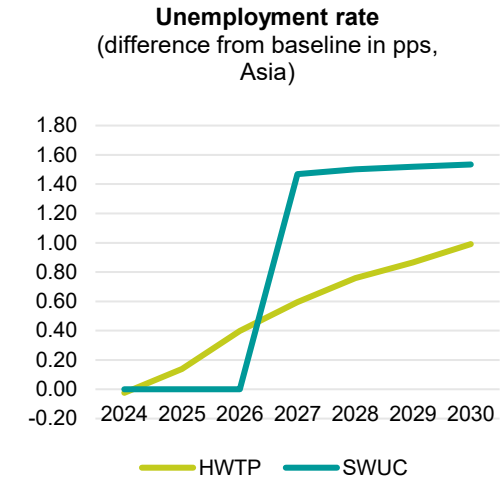
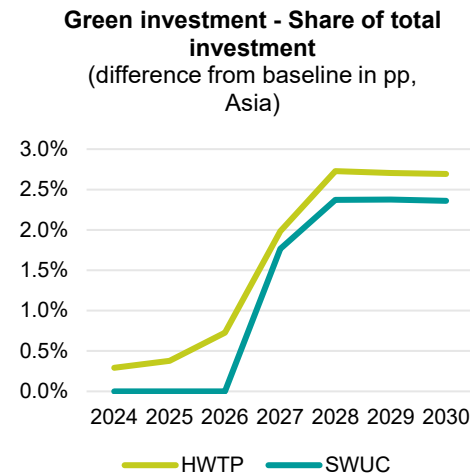
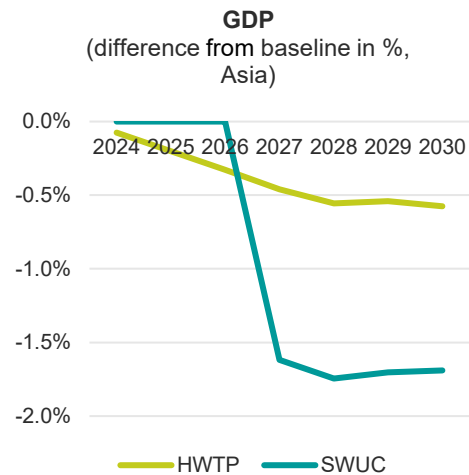
Disasters and Policy Stagnation – Key results

A sequence of severe compound climate shocks can cause substantial and lasting GDP losses in the affected regions, with effects on the global economy through trade and financial linkages.



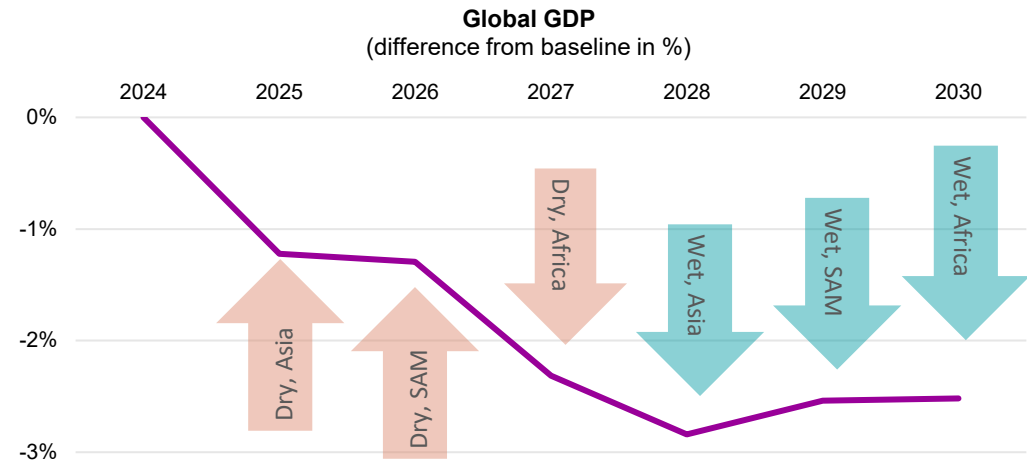
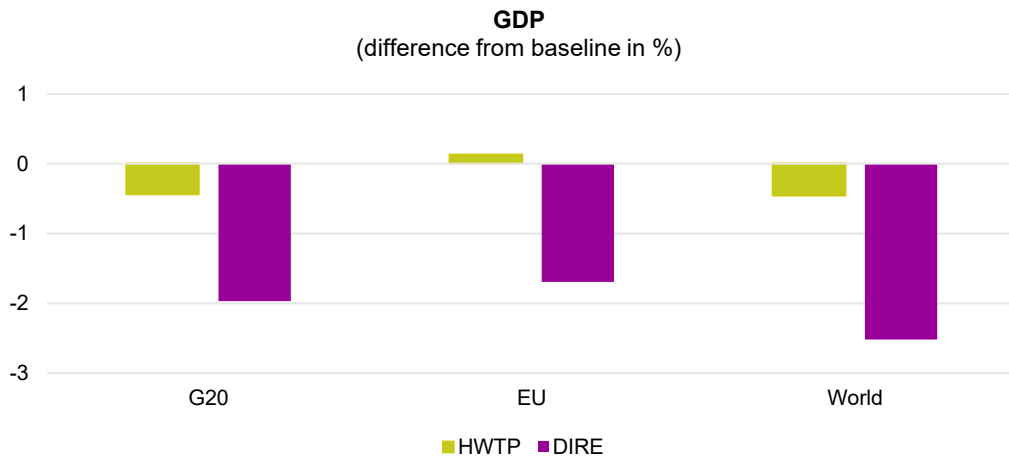
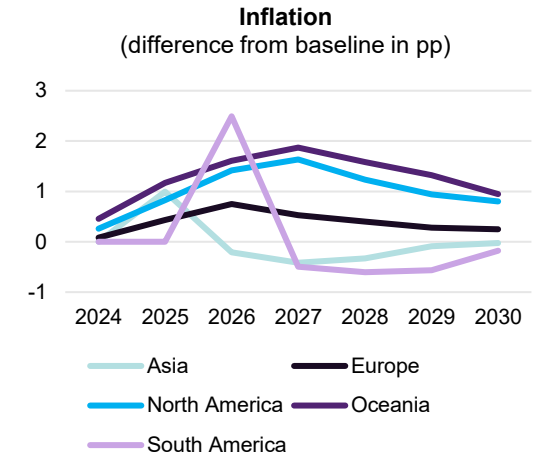
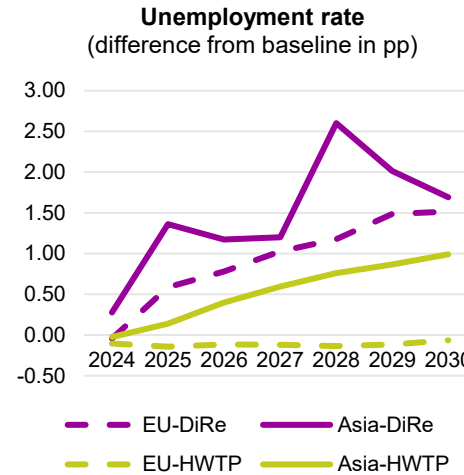
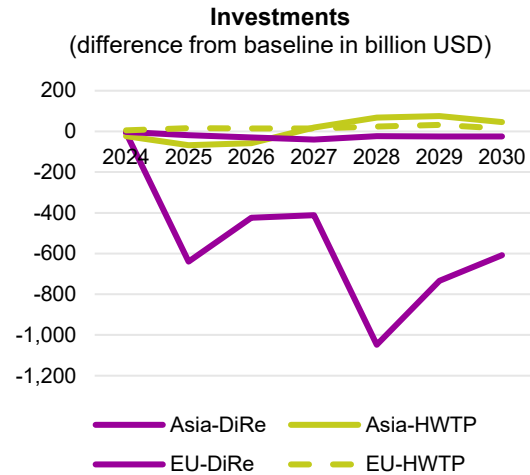
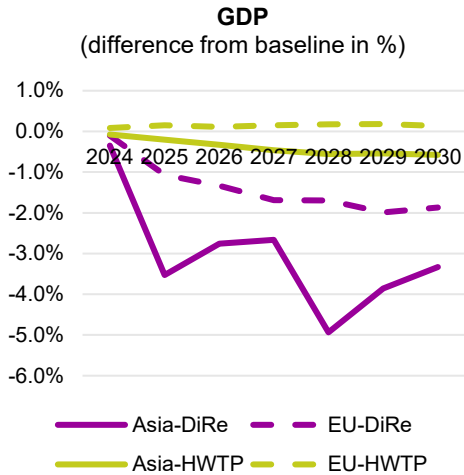
Transition risk scenarios – Key results

Gradual increases in carbon prices, coupled with effective recycling of carbon tax revenues into green investments, limit output losses. A delay of 3 years leads to more pronounced output losses and inflationary pressures.



Diverging Realities – Key results

Intensifying climate hazards in some regions lead to shortages in the supply of critical minerals needed for the successful green transition and macroeconomic risks spilling over globally.



GCD ESG and Climate Risk Solutions

where climate and credit risk measurement come together!

Contact



Hale Tatar

Global Lead, ESG and Climate Risk

hale.tatar@globalcreditdata.org

GCD Climate Risk

climaterisk@globalcreditdata.org