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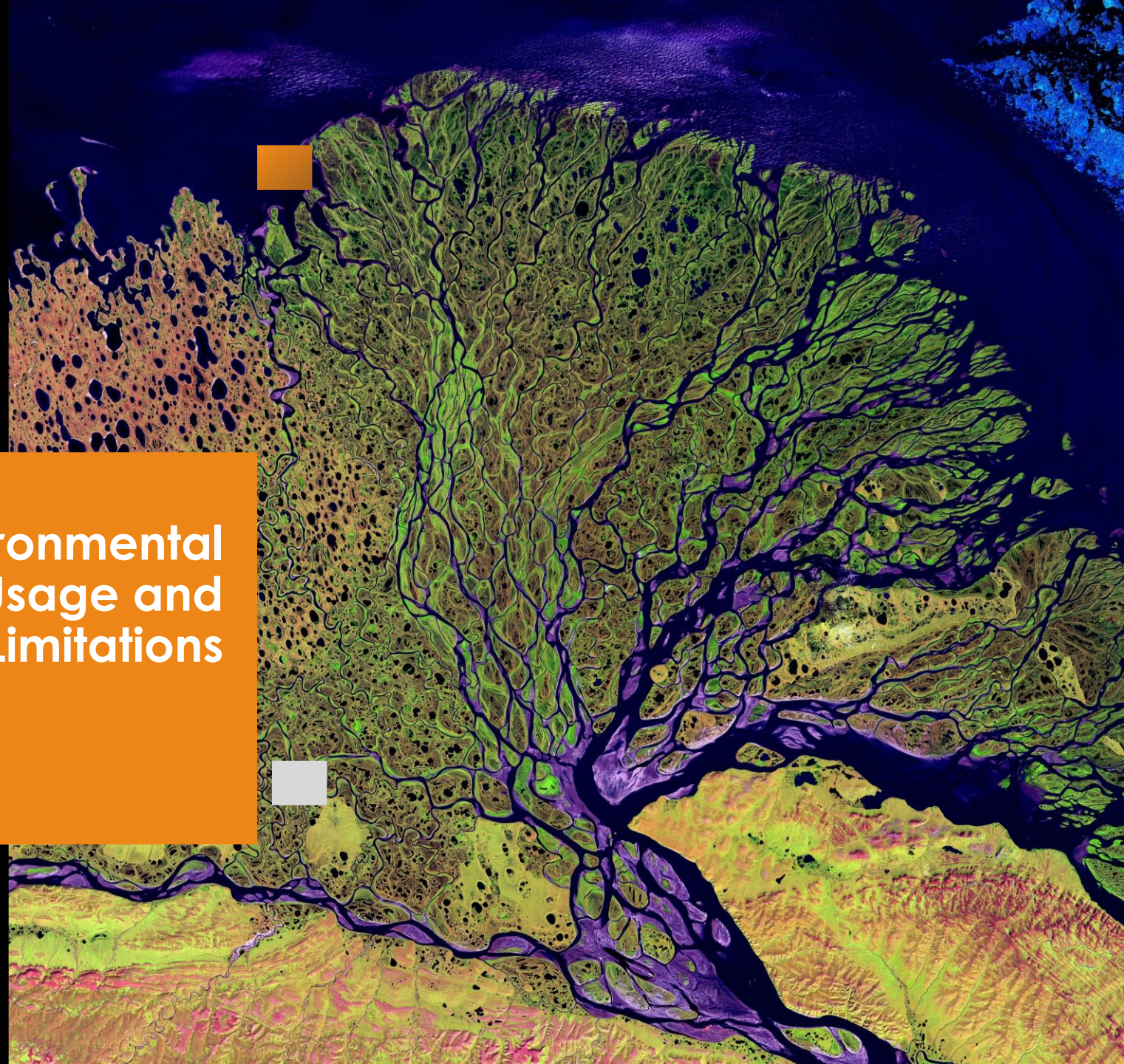
EBA Guidelines on Environmental Scenario Analysis: Usage and Limitations

January 2026



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Executive Summary

- The EBA Guidelines on environmental scenario analysis (EBA/GL/2025/04) set out **supervisory expectations for financial institutions to systematically conduct environmental scenario analysis**, strengthening forward-looking risk assessment and management of environmental, especially climate-related, risks. They require institutions to integrate such scenario analyses into existing stress-testing frameworks to assess short-term impacts on capital and liquidity and to evaluate medium- and long-term business model resilience under plausible future conditions.
- The guidelines emphasize identifying relevant **transmission channels**, selecting **appropriate scenarios** (e.g., NGFS/IPCC), and embedding results into strategic planning, governance and risk processes. They apply a proportionality principle based on size, complexity and materiality of risks and aim to harmonize practices across the EU banking sector.
- Implementation is required from **January** 1st, **2027**, giving institutions time to build capabilities in data, modelling and governance.

At a Glance

Keywords: Climate & Environmental risk, Transition risk, Physical risk, Scenario Analysis, EBA

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Introduction

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Climate change and **environmental risks** are driving **significant changes** and **challenges** within the economy, which, in turn, have a profound impact on the financial sector.

Challenges for the economy

Impact on the financial sector

The **financial sector** plays a **crucial role** in both **supporting the transition to a sustainable economy** and in **monitoring and managing the financial risks associated with this transition**, as well as those arising from other environmental factors.

Objectives of Institutions

Institutions must **improve environmental risk forecasting**, **manage risks proactively**, and be prepared to address environmental changes.
In this context, **scenario analysis** is one of the **fundamental tools** for supporting this transition and facilitating more effective risk management.

EBA Mandate

EBA is mandated to provide the guidelines containing: the **criteria for defining scenarios** (defined in paragraph 3 of the arr. 87a of the CRD[1]), the **parameters** and **assumptions** to be considered in each scenario, the **specific risks**, and the **time horizons**.
This document constitutes a reference and support for institutions in the creation and use of scenarios, primarily measuring the ability to adapt to shocks in capital and liquidity reserves and the resilience of their business model over the medium to long-term.

1. Directive (EU) 2024/1619 of the European Parliament and of the Council of 31 May 2024 amending Directive 2013/36/EU as regards supervisory powers, sanctions, third-country branches, and environmental, social and governance risks.

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Environment

Focus of EBA Guidelines for scenario analysis: **environmental risks**, in particular **climate-related risk**.

Social and Governance

Social and **governance** factors has been excluded from the scope of the Guidelines for the following reasons:

- Limited availability of structured data;
- Methodologies for identifying and analyzing these risks are still underdeveloped.

Objectives of Institutions

- Develop tools, systems, and approaches **to estimate and mitigate the impact of a variety of environmental risks**, outside of climate-related risks but often related to them, such as epidemics, ecosystem collapse, and species extinction;
- **Continue research** to increase the influence of ESG factors in their scenario analyses.

Environmental risks are related to all traditional risk but are not currently fully included in the institution's management framework due to certain specific characteristics that are not yet adequately manageable.

Key Areas of Focus

Environmental risks, though already evident, **are expected to increase over time**, requiring institutions to adapt their management.

Environmental risks are new, complex, and rapidly evolving, making them **difficult to predict** using only past data. Institutions must adopt a **forward-looking approach, identifying and modeling the channels** through which these risks could impact their financial exposures.

Uncertainty regarding the **timing** and **nature** of **environmental risks** is significant. Scenario analysis is a valuable tool for managing this uncertainty by exploring potential future economic scenarios that institutions may encounter.

The aim of institutions is to **try to make scenario analysis an effective decision-making tool** that is integrated into their risk management processes. Furthermore, **large institutions** or those that are already advanced in climate and environmental scenario analysis should **ensure the full implementation of these Guidelines over time**, allowing the application of scenarios to be expanded across the sector.

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Scenario Analysis

Background and Rationale

Framework

Tools of Scenario Analysis: Stress Test & Resilience Exercise

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Background and Rationale

The EBA Guidelines take into account the principle of **proportionality**, which requires institutions to calibrate scenario analysis based on:

- The **materiality of the environmental risks** associated with their business model;
- The **level of maturity of their approaches** in terms of data availability, identification of transmission channels, and modeling capacity for climate and other environmental risks.

Institutions must **progressively improve** their approaches, monitoring scientific and operational developments of stakeholders.

Scenario Analysis

Greater complexity or granularity does not automatically guarantee better analysis: it is necessary to maintain a balance between **credibility**, **completeness** and **comprehensibility** of scenarios in a world of sophisticated models, allowing for expert judgment.
Scenario analysis must be **adaptable** and **modular**, in response to evolving contexts and knowledge, involving various internal functions.

Resilience Test

An **institution's resilience test** can be performed proportionately to **size**, **nature** and **complexity** of its activities adjusting its level of sophistication and frequency.
However, even smaller institutions must conduct proportionate but adequately thorough analyses when risks are material.

Supervisory authorities are encouraged to adopt a **pragmatic approach**, allowing for a gradual improvement in institutions' practices.

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The **scenario analysis** is broken down into a series of **sequential phases**, both qualitative and quantitative, closely interconnected, which institutions must follow with the aim of performing an assessment that takes into account all the specific features of environmental risks within the operational context of the institutions themselves.

1 Goal Definition

Institutions should define the goal of the exercise in a **clear, structured, and decision-oriented way**. The goal definition should ensure that the exercise is **relevant, proportionate, and aligned with the institution's risk profile and strategic needs**. In particular, the objective-setting phase should:

- Conduct **in-depth assessment of business environment** in which they operate, focusing on environmental risks, and
- Consider **multiple time horizons**, both short/medium term and long term pathways.

2 Scope Definition

When defining the scope of environmental scenario analysis, **institutions should set an appropriate time horizon and perform a materiality assessment** aligned with Article 87a(2) of the CRD, which key elements include:

- **Time Horizons**: short, medium, and long-term horizons, with the long-term horizon being at least 10 years.
- **Proportionality:** monitoring of ESG risk remain proportionate to the scale and nature of an institution's business model.
- **Complexity:** smaller and less complex institutions have fewer resources and capacities to manage such complex risks. Hence, it allows for a more tailored approach compared to larger, more complex institutions.

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3 Transmission Channels Identification

Institutions should **systematically identify the most relevant transmission channels** through which environmental risks may affect their exposures. This **process should be structured**, **well-documented, and subject to regular review** to capture evolving risks.

The main aspects to take into consideration can be broken down as follows:

- **Data and assumption**
  - Identify and use **reliable, high-quality data sources**.
  - Apply **transparent methodologies** and **clearly articulate assumptions**.
  - Ensure that **data collection aligns with the materiality assessment**.
- **Risk drivers and exposure**
  - Consider **both transition risks** (e.g., policy, technology, market changes) **and physical risks** (e.g., extreme weather, long-term environmental changes).
  - **Assess how counterparties may be indirectly exposed** to environmental risks through supply chains or economic spillovers in their local regions and prioritizing the largest or most concentrated counterparties.
- **Risk mitigation and amplification factors**
  - Consider private and public insurance coverage, while accounting for current and potential future protection gaps.
  - Evaluate **counterparties' climate mitigation** or adaptation **strategies**.
  - Factor in relevant local or governmental adaptation measures.
- **Propagation to financial and operational risk categories**, such as credit or market risk.

The EBA acknowledges the complexity of this step and allows, initially, for the assessment to be based on a qualitative approach supported by expert judgement.

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4 Data Collection

In preparing for the implementation of scenario analysis, institutions should ensure that their **data collection and processing systems** **are robust**, **flexible**, and fully **aligned with the purpose of the analysis**. It is important to **address any existing skills or capabilities gaps** in handling environmental data and to **explore technological solutions** that can enhance data quality and efficiency.

Key considerations include:

- **Data systems readiness:** Ensure systems are efficient, adaptable, and fit for purpose; address skills gaps; explore technological solutions.
- **Database enhancement:** Continuously improve and expand databases, maintaining a clear focus on analytical objectives.
- **Collaboration and resources:** Foster cooperation internally and with other institutions, leveraging guidance and resources from governmental, intergovernmental organizations, NGOs, and academia.

⚠ *The entire data collection process should be guided and evaluated based on the outcomes of the materiality assessment.*

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5 Set Narratives / Scenarios

Institution should define the narratives and scenarios that are relevant to the risks they want to explore. Scenarios should be aligned with identified transmission channels, consider multiple intertwined factors to ensure relevance and realism and eventually cover both physical and transition risks, with consistency across risks. Moreover, scenarios should include the following factors:

- **Socioeconomic and behavioral factors**, such as:
  - **socioeconomic context**: global/regional population, economic development, social inequalities, inflation, etc.,
  - **technological evolution**: pace of innovation, tech adoption, infrastructure availability, and
  - **consumer preferences**: shifts toward sustainable, locally produced, or healthy goods/services.
- **Climate-specific factors**, such as:
  - **climate policies**: ambition and coverage of mitigation/adaptation policies,
  - **energy systems**: energy production, consumption, reliance on fossil fuels vs. renewables,
  - **sectoral pathways to net-zero**: sectoral decarbonization trajectories, EU Green Deal, Fit-for-55, IEA, SBTi, NZBA, and
  - **Emissions and climate impacts**: GHG concentrations, temperature, and biophysical changes.
- **Other environmental risk** such as:
  - **environmental policy & regulation**: ecosystem condition: biodiversity trends, soil fertility, freshwater availability, pollution,
  - **land and resource use**: intensity of urban, agricultural, or industrial land use, resource extraction, and
  - **supply chain dependencies**: reliance on ecosystem services (pollination, water filtration, raw materials).

Moreover, **institutions should use credible, science-based scenarios** leveraging on international/regional organizations (such as Intergovernmental Panel on Climate Change - IPCC or Network for Greening the Financial System - NGFS), **albeit providing for customizations** based on objective, scope, and granularity of the analysis in scope as well as their portfolios and business model.

⚠ *Institutions may consider using sensitivity analyses as a simpler and more practical tool, as a starting point for impact assessment.*

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6 Impacts Assessment

The impact assessments must be carried out with a structured, transparent and proportionate approach that should take into account the following elements:

- **Effects on capital and liquidity**: impacts on exposures, collateral values, market valuations, or credit risk should be translated into potential losses, capital reclassifications, and/or liquidity needs.
- **Implications for the medium- to long-term business model and strategy**: evaluation of the sustainability and adaptability of the business model under future environmental and transition scenarios.
- **Opportunities and risks arising from the transition**: not only negative risk factors but also potential opportunities, such as new markets, green financing solutions, and clients that are more resilient or aligned with climate-transition pathways.

7 Results Usage

Results should be systematically **integrated into banks' risk management**, **capital and liquidity planning, and strategic decision-making processes**. They are not standalone analytical exercises but **key inputs for strengthening resilience and steering long-term business decisions**. In particular, institutions should:

- **Incorporate results into risk management frameworks**, in order to obtain a more holistic perspective
- **Reflect results in capital and liquidity planning**, contributing to internal review process (e.g., ICAAP/ILAAP) or other internal prudential processes.
- **Use insights for medium- and long-term strategic planning**, to evaluate the sustainability of the business model under different pathways.
- **Inform governance and risk appetite**, ensuring senior management engagement and clear responsibilities.
- **Support concrete strategic and operational decisions**, such as portfolio reallocation, product development, and transition planning.
- **Ensure auditability and transparent documentation**, including scenarios, assumptions, methodologies, data sources, and transmission channels.

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Tools of Scenario Analysis: Stress Test & Resilience Exercise

Within the scenario analysis previously described, the EBA provides **two main tools** that institutions must **integrate into** their **risk assessments** relating to the **integration of the environmental component**: **stress testing** and **resilience exercises**. Although these concepts are already extensively addressed in existing regulatory frameworks, in the context of environmental risks they take on some crucial aspects, which are summarized below.

	Stress Test Analysis	Resilience Analysis
Purpose	Assess **short-term financial resilience** to environmental/climate shocks	Assess **long-term strategic** and **business-model resilience** under multiple climate pathways
Time Horizon	Short to medium term (≈ **1–5 years**)	Long term (≈ **10+ years**)
Scenario Type	Usually **adverse scenarios** (physical & transition risks)	**Multiple plausible future scenarios** (not only adverse)
Primary Focus	Capital impacts, liquidity buffer, losses and risk parameters	Strategy, business model viability, opportunities & vulnerabilities
Nature of Analysis	Mostly **quantitative**	Often **mixed qualitative/quantitative**
Outputs	CET1 impact, loss projections, liquidity needs, RWA effects	Strategic insights, required adaptations, transition pathways, long-term positioning
Key Strengths	**High comparability**; strong risk-management alignment; **clear metrics**	**Long-term insight**; supports strategy; captures opportunities; **forward-looking**
Key Limitations	**Short-term focus**; assumes high modelling precision; balance sheet assumption	**High uncertainty**; less standardised; more qualitative; harder to measure quantitatively

The **combined use of stress testing and resilience analysis** enables banks to **gain a comprehensive, multi-layered view of environmental and climate risks**, integrating **short-term assessments of financial robustness with long-term insights** that guide strategic positioning and the evolution of a resilient, sustainable business model.

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Next Steps

Scenario analysis is still in its early stages within institutions, and EBA Guidelines are intended as a first step toward its integration into risk management systems. As this is a complex and constantly evolving topic, the **EBA Guidelines will be updated over time**.

Future developments by the **Basel Committee** on climate scenarios will be closely monitored, as will the contributions of the **NGFS** on short-term scenarios, physical risks, and nature-related risks. Similarly, the work of regulators and industry associations on scenario analysis for trading portfolios will also be evaluated. Looking ahead, any future revisions may also include **social** and **governance aspects**, provided that methodologies in these areas reach an adequate level of maturity.

In fact, the ***next steps*** that institutions must take are as follows:

STREGHTEN THE MODELS

Compare results and assumptions with **external sources**, use sensitivity analysis, and verify the reliability of **third-party models**.

INTEGRATE MISSING ELEMENTS

Apply **conservative corrections** based on expert judgment to account for factors that cannot be modeled (e.g., knock-on effects, tipping points).

CONSTANTLY MONITOR DEVELOPMENTS IN THE CONTEXT

Update scenarios and models based on external changes and counterparties' strategies, adjusting the frequency of analyses.

DESIGNING FLEXIBLE AND UP-TO-DATE SCENARIOS

Ensure the **modularity** and **adaptability** of scenarios and keep in line with the latest scientific knowledge.

03

Usage and Limitations

Use of Scenario Analysis

Limitations of Scenario Analysis

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Environmental Scenario Analysis usage
in the banking sector

Uses Developed in the EBA Guidelines

- Inform strategy & business model adaption,
- Assess risk management practices & check capital and liquidity adequacy.

Other Uses

- Increase awareness & prompt discussion within organisation,
- Support alignment strategies & transition planning,
- Identify & seize business opportunities,
- Underpin external communication with stakeholders,
- Develop engagement & advice with counterparties,
- Strengthen existing skills & build new capabilities.

Institutions are required to **develop forward-looking approaches** and **conduct scenario analysis to adequately manage environmental risks and guide strategic decisions**. In particular:

Scenario analysis should be used to identify risks and opportunities, assess the vulnerability of portfolios to physical and transition risks, and verify the institution's resilience to the potential negative impacts of environmental factors, primarily climate change.

Such analysis should also support the development of corporate strategy and transition plans, in accordance with the EBA guidelines on ESG risks, and enable a critical assessment of the long-term soundness of the business model.

Scenario analysis can also be used to raise internal awareness and promote the integration of environmental risks into corporate culture.

Scenario analysis should be developed and applied gradually, with the **goal** of **fully integrating it into the organization's entire management system**.

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Use of Scenario Analysis 2/2

In delineating the uses of Environmental Scenario Analysis, the EBA guidelines articulate not only their purpose but also the associated **governance** and **proportionality**.

Governance

Banking institutions must adopt **governance practices** that, in addition to complying with the EBA Guidelines, ensure **consistency** in the narratives and scenarios employed and subject them to **regular review** to incorporate changes in their operating context

A **cross-functional approach** engaging multiple business functions is essential to ensure the **coherence** of **assumptions** and the **production of results** that effectively support internal processes

Financial institutions must **document the analysis conducted**, including the **methodological choices**, **underlying assumptions**, **proxies employed**, and the **final conclusions**

Proportionality

The **degree** of **detail**, **frequency**, and **complexity** of the analysis should be **commensurate** with the **materiality of the risks**, the maturity of the available **methodologies**, the **institution's internal capabilities**, and the **expected benefits** of the exercise

When an **advanced quantitative approach** is disproportionate to the available resources or its expected usefulness, **simplified solutions** may be used:

- ***Small and Non-Complex Institution (SNCI)*** may employ a predominantly qualitative approach for scenario analysis over both the short and longer term
- ***Institutions other than large entities*** and other than ***SNCIs*** may use sensitivity analysis to assess their short-term financial resilience to adverse environmental factors, while relying on a predominantly qualitative approach for longer-term resilience
- ***Large institutions*** may start with a simplified approach, using sensitivity analysis for medium- to long-term and non-climate risks, progressively moving to more advanced quantitative methods as capabilities develop

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Limitations of Scenario Analysis

Macroeconomic models are not designed to integrate environmental variables and are therefore ill-suited to describing structural transformations in the economy, such as those linked to climate change.

⚠ Key Limitations ⚠

- **Macroeconomic Focus**: macroeconomic models typically examine deviations from long-term economic equilibria rather than addressing more fundamental shifts in the economy caused by environmental factors.
- **Limited Representation**: these models often do not adequately represent energy and agricultural systems, which are crucial in environmental risk analysis. They also struggle to incorporate feedback loops and tipping points.
- **Uncertainty and Assumptions**: the time horizon in these models introduces considerable uncertainty, as long-term projections are based on many assumptions and simplifications.

🏛 Decision-Making Implications 🏛

- Institutions should **approach the results of scenario analyses cautiously**, as the increasing uncertainty over time and the need for simplifications can reduce the relevance of the conclusions.
- Scenario analysis is intended to **inform decision-making rather than dictate it.** The value lies in the process itself, **encouraging strategic thinking, identifying vulnerabilities, and fostering collaboration**, rather than relying solely on the quantitative results.
- **Overinterpreting results or cherry-picking scenarios can lead to misleading conclusions**. Particularly when assessing resilience, institutions should consider the full range of scenarios, not just low-impact ones, as assigning meaningful probabilities to each scenario is difficult.
- Institutions should **ensure that the scenarios used are comprehensive and represent plausible futures**, particularly when relying on external providers. They should also **understand the assumptions behind the models used**, as these assumptions critically shape the outcomes.

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