



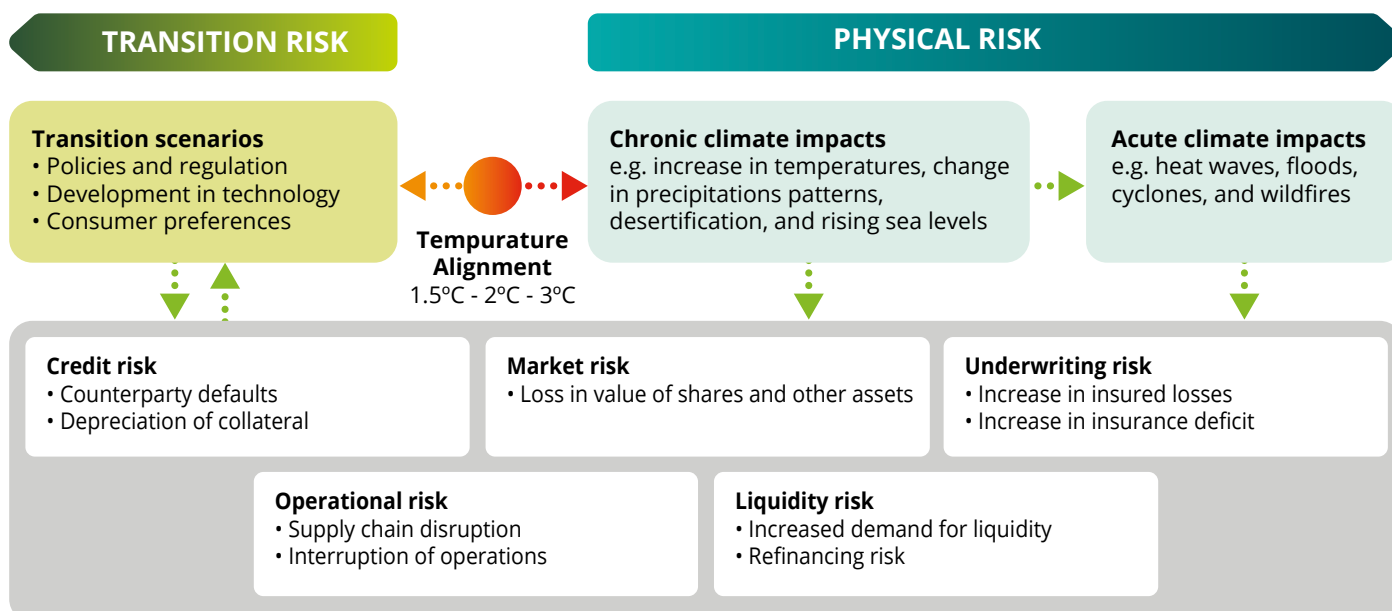
Nature-related financial risks

A framework for risk identification, materiality assessment and scenario analysis

In this first article in our three-part series on nature-related financial risks we focus on one of the central pillars of the FINMA circular: how banks and insurers should approach the identification of nature-related financial risks and perform a robust analysis of their materiality.

The circular requires financial institutions to periodically identify potential exposures to nature-related financial risks – such as climate change, biodiversity loss, deforestation, water scarcity, and pollution – and assess their materiality across different risk types (in particular, credit, market, liquidity, and operational risk). It is important to get this right as all material risks need to be integrated into the business-as-usual risk management processes of the bank and insurance company.

The risk identification and materiality assessment exercise must account for both direct and indirect dependencies on ecosystem services – including upstream and downstream value chain impacts – consider multiple time horizons (short, medium and long-term) and incorporate scenario-based assumptions to ensure a forward-looking view. When incorporating scenarios, it is crucial that these scenarios not only model potential losses but also examine the transmission channels and how physical or transition risks could affect counterparties, portfolios, or operational resilience.



By performing this assessment financial institutions can better understand the potential financial implications and impacts of nature-related risks on their existing financial risks. This enables them to better reflect the risks and rewards associated with their business models in their existing risk strategy and internal capital adequacy assessment (e.g. ICAAP) process.

The first step should be a systematic mapping of exposures across the institution's key sectors, geographical areas and counterparties. This includes creating a longlist of potential risks and/or exposures and assessing the dependencies on climate and natural capital – such as water, biodiversity and ecosystem services and nature – within e.g. a bank's lending and investment portfolios or an insurance company underwriting exposure to identify which factors are the main drivers of the higher exposures.

Once the list of potential risks and corresponding exposure levels have been identified, institutions should proceed with a materiality assessment. The materiality assessment of nature-related financial risks should use a risk-based approach that considers the likelihood of

occurrence and the potential magnitude of the financial effects of these risks in the short and medium term, and over a long-term horizon. To enhance resilience and ensure timely management of material risks, banks should confirm their longlist of potential risks and exposures at least annually and repeat their materiality assessment every three or four years.

Nature-related dependencies and impacts should then be integrated into counterparty due diligence processes, credit risk assessments, and sectoral risk frameworks. This means potentially enhancing client questionnaires, introducing ESG scoring models that reflect ecosystem-related factors, and developing internal classification systems to flag activities with high nature-related risk exposure.

The risks from climate and other nature-related events can be quite diverse and depend on the specific business model. To conduct an example walkthrough of some key elements we will focus on risks related to mortgages and corporate lending from the perspective of Swiss banks.

Mortgages

Mortgage portfolios are particularly exposed to climate-related risks, primarily through the physical impacts of extreme events and long-term environmental changes.

Properties securing mortgages may be located in areas that are increasingly vulnerable to flooding or landslides which can reduce property values, damage collateral, impair borrowers' ability to repay loans, and lead to other losses, particularly if insurance coverage becomes unavailable or inadequate.

To identify potential physical risks and later assess their materiality, banks should perform a location-specific risk identification that overlays climate hazard data with the geographical distribution of the mortgage

properties to identify the most relevant exposure to physical hazard of the asset's location. This mapping can be carried out by using national datasets and sources from the Federal Office for the Environment (FOEN) or the Federal Office for Topography (swisstopo) as well as cantonal hazard maps, and other sources. Asset-specific data such as location is key for the accurate identification of the related exposures, as assets located within the same city can be exposed to significantly different nature-related risks. For example, an asset located close to the Limmat river in the city of Zurich is likely to face a higher risk of flooding than one in parts of the city that are further from the river or in an elevated position.

Beyond physical risks, mortgage portfolios are also exposed to transition risks particularly in relation to energy efficiency requirements or carbon taxes on buildings. This is especially true if we consider that the building sector is currently not on track to meet the Swiss climate policy goal of net zero by 2050 and that – according to the 2024 Paris Agreement Capital Transition Assessment (PACTA) test, two thirds of the properties secured by mortgages in Switzerland are still heated by fossil fuels – 42% using oil and around 23% gas.¹

Finally, as part of the evaluation of transition risks, banks should also consider trends in the availability

Corporate lending

In corporate lending Swiss banks are exposed to climate-related risks – through both physical and transition risks – as well as to broader nature-related risks – including biodiversity loss, land degradation, and ecosystem service disruption.

These risks are particularly relevant in sectors with high dependencies or impacts on climate and natural capital – such as agriculture, forestry, mining,² construction, energy, manufacturing/production, and tourism. These sectors are prominent in both domestic portfolios and international exposures.

Physical climate risks, such as floods, droughts, and alpine hazards, can disrupt supply chains, damage fixed assets, or impair business continuity. At the same time, degradation of natural ecosystems (e.g. declining soil fertility, reduced water availability, pollinator loss, deforestation) can undermine the long-term viability of borrowers whose operations depend directly on these ecosystem services.

Transition risks are also increasingly material as Switzerland advances toward its net-zero by 2050 goal and adopts nature-related policy measures aligned with the Swiss Biodiversity Strategy. Sectors with high environmental footprints may face rising costs from carbon pricing, ecosystem restoration obligations, land use regulations, or reputational pressure.

To identify these exposures, Swiss banks should perform sectoral and geographical risk mapping that overlays climate and nature risk drivers with the location of the counterparty, the emissions intensity,

of insurance and affordability given that properties in high-risk zones may become uninsurable or face rising premiums affecting borrower affordability and collateral quality. This is particularly relevant when we consider that the average mortgage contract extends for more than 10, or even 20 years, while the typical insurance contract and related insurance coverage is reassessed and contracted annually.

As a result, properties in areas highly exposed to acute or chronic physical risks or with higher exposure to transition risks should be flagged as potentially high risk and their materiality has to be assessed.

and the degree of dependency on ecosystem services. Sectors with known high exposure to climate and nature-related risks (e.g. agriculture, construction, manufacturing/production etc.) should be prioritised while the geographic analysis should focus on exposure to climate-vulnerable regions or areas with high biodiversity sensitivity (such as alpine zones, flood plains, and water-stressed regions).

Once the portfolios have been segmented by sector and geography, banks should:

- i. assess dependencies and the impact on nature by using tools – such as ENCORE³ – to evaluate how borrowers depend on specific ecosystem services and how their operations may contribute to environmental degradation;
- ii. assess exposure to acute events (flooding, storms, heatwaves) and chronic risks (drought, biodiversity loss, changing precipitation patterns) by using climate hazard maps and environmental datasets to overlay risk zones with borrower locations;
- iii. identify counterparties exposed to regulatory changes, carbon pricing, reputational risks, or market shifts (e.g., the demand for low-carbon products, the pressure to meet biodiversity targets).

At this stage larger or high-risk exposures should be flagged as potentially high risk and, similarly as for mortgage portfolios, materiality of these exposures for the business has to be assessed.

Materiality assessment and scenario analysis

Once banks have identified their exposures, they will have to integrate in the analysis considerations related to the materiality of these exposures for their business.

In order to do so, banks should proceed in their materiality assessment, by evaluating – for all relevant time horizons – the probability of occurrence and the severity linked to the exposure, and defining materiality thresholds which will define what risks should be

addressed further and integrated into the regular risk management processes.

This materiality assessment can be performed by adopting a qualitative (e.g. a heatmap) or quantitative approach (such as scenario analysis through modelling), but complementing qualitative considerations with quantifications should always be the preferred option, if sufficient data is available. Your approach will also

define how your materiality threshold looks and whether this threshold will be a qualitative scoring, such as a scale from 1 to 4, or rather defined in monetary terms or % of loss (e.g. max expected credit loss).

As part of the quantification, banks should identify and select relevant financial risk drivers that can be influenced by the identified climate and nature risks and exposures. With regard to credit risk, the impact of climate and nature risks on the probability of default (PD) and the loss given default (LGD) should be evaluated.

For PD, banks should consider how physical risks (e.g. floods, droughts, biodiversity loss) or transition risks (e.g. carbon pricing, regulatory changes) may impair a borrower's cash flow, disrupt operations, or increase input costs, thereby weakening their capacity to meet debt obligations and repay the loan. This requires integrating forward-looking risk drivers into credit scoring models and stress testing frameworks, using scenario analysis to estimate how adverse environmental developments could raise default probabilities over time.

For LGD, banks must assess how nature and climate risks affect the recoverability of the collateral (whether

properties or other physical assets) by evaluating the exposure to depreciation, devaluation, or destruction from environmental hazards. In mortgage lending, for instance, properties in flood-prone or landslide-prone areas may experience structural damage or declining market value, increasing expected losses in the event of default. For corporate loans, sectoral vulnerability, asset location, and insurance coverage are key inputs to determining recovery rates under stressed environmental conditions.

Although a quantitative assessment would be the best practice, the current lack of consistent, readily available, high-quality and granular data related to ecosystem services and biodiversity may currently pose challenges for banks and insurers. Unlike climate-related risks, which benefit from relatively mature data frameworks, nature-related data is fragmented, localised, and often not standardised across sectors or geographies. It can therefore be more challenging to evaluate how environmental degradation could translate into financial risks, even more so due to the limited access to forward-looking metrics and scenario analysis related to nature risks.

Refresher: the requirement from the Circular

B. Risk identification, materiality assessment and scenario analyses

- (16) The institution shall periodically identify the nature-related financial risks that could affect it and assesses their financial materiality for its risk profile. The institution shall also take into account the strategic impact of nature risks as well as potential legal and reputational risks.
- (17) The design of the risk identification and materiality assessment shall take particular account, where relevant, of:
 - (18) information from internal and external sources;
 - (19) indirect effects of nature risks;
 - (20) exposure to regions, jurisdictions and economic sectors with increased nature risks;
 - (21) quantitative or qualitative indicators and materiality thresholds for the individual risks.
- (22) In justified cases, a deviation from margin nos. 18–21 is possible.
- (23) The materiality assessment shall be based in particular on scenario analyses in order to assess the impact of nature risks on the risk profile under various plausible assumptions. These scenario analyses shall include at least qualitative evaluations of the impact of relevant adverse scenarios on the institution and the possible negative effects on its business model. Various future developments shall be analysed, including events with a low probability and potentially major impact. The scenario analyses shall take into account possible direct and indirect effects of nature risks and consider different relevant time horizons.
- (24) To improve their scenario analyses, institutions in categories 1 and 2 shall use quantitative methods where possible and appropriate. Category 3 institutions shall also apply quantitative methods – where possible and appropriate – for specific portfolios with increased exposure to nature-related financial risks.
- (25) The content, procedure and results of the risk identification and materiality assessment in accordance with margin nos. 16–24 shall be documented. In particular, the criteria applied and the assumptions made shall be justified.
- (26) The documentation must clearly state material nature-related financial risks and categorise them appropriately for risk management purposes, namely according to the risk type concerned in accordance with margin no. 10, whether they arise from physical risks or transition risks, and according to time horizon (short-, medium-, long-term). Justifications must be provided for any missing categorisations or categorisations that deviate due to the specific circumstances of the institution.
- (28) The frequency of the risk identification and materiality assessment shall depend on the significance of nature-related financial risks for the institution's risk profile and on new findings and changes at the institution itself or in the institution's environment that may have a material impact on its exposure to nature-related financial risks. The frequency of quantitative scenario analyses may deviate in justified cases.

Conclusion

Incorporating climate and nature-related risks into the risk process is no longer optional but essential for Swiss banks seeking to safeguard portfolio resilience and meet evolving regulatory expectations.

By systematically identifying material exposures across their portfolios, assessing their impact on traditional risk metrics, and embedding these insights into internal risk frameworks, banks can make more informed decisions and enhance long-term financial stability.

How can Deloitte help you?

- Assessment of your process to identify and assess the materiality of nature-related financial risks to identify potential areas of improvement
- Support in identifying potential risks and in performing a materiality assessment
- Support in performing scenario analysis, including modelling



Key takeaways

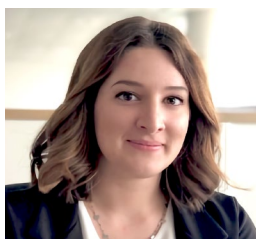
- The materiality assessment is the starting point of your process and determines which risks should be addressed further and integrated in your regular risk management process.
- Your assessment should ensure comprehensive coverage of all your portfolios and relevant risk drivers.
- Assess and re-evaluate the materiality of your risks regularly as you would do for your traditional financial risks.
- Also adopt a forward-looking approach and do not limit the assessment to the identification of current exposures.
- Smaller size does not necessarily mean less risk exposure, especially if the geographical concentration of your risks is high – this is particularly relevant for cantonal and regional banks.
- Scenario analysis should be used; although qualitative scenario analysis is accepted, consider gradually moving to a more quantitative analysis to make your assessment more accurate.
- Your approach and methodology should be sufficiently formalised and your assumptions should be reasonable and clearly stated in your methodology, along with the data sources and tools used for the assessment.

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Endnotes

- 1 [WALKING THE WALK? Measuring progress on the climate goal alignment & climate actions of Swiss financial institutions, PACTA Climate test Switzerland 2024](#)
- 2 While Switzerland doesn't have a large-scale industrial mining sector for commodities like coal or metals, it is a significant player in mining-related activities. Switzerland is a global hub for commodities trading, particularly in precious metals, with major refineries and trading companies based in the country.
- 3 [ENCORE](#)