



Sustainable
Insurance Forum

NAVIGATING NATURE-RELATED FINANCIAL RISKS AND OPPORTUNITIES

**A Practical Roadmap
for Insurance Supervisors**

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Case-study inputs and factual validation were provided by colleagues at the Autorité de contrôle prudentiel et de résolution, Banque de France; California Department of Insurance; De Nederlandsche Bank; European Insurance and Occupational Pensions Authority; Pensions and Insurance Authority, Zambia; Superintendencia General de Seguros (SUGESE), Costa Rica; and Swiss Financial Market Supervisory Authority.

We thank SIF members for reviewing the draft and contributing to the development of this Roadmap through the member survey, exchanges of supervisory experience and practical insights.

Photo credits: Ahmed Yaaniu, Birger Strahl, Daniela Kokina, Fabio Fistarol, Libby Penner, Shifaaz Shamoan, Vania Medina (Unsplash).

Published: October 2026

Suggested citation: Sustainable Insurance Forum (2026), Navigating Nature-Related Financial Risks and Opportunities: A Practical Roadmap for Insurance Supervisors, United Nations Development Programme, New York.

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About SIF

The Sustainable Insurance Forum (SIF) was established by the UN with the support of the International Association of Insurance Supervisors (IAIS) in December 2016. SIF is a global network of 41 insurance supervisors and regulators overseeing 80 percent of the global insurance market. This collaborative network aims to address sustainability and climate change issues impacting insurance companies and markets and policyholders in their jurisdictions. The SIF Secretariat is hosted by UNDP.

For more information, please visit sustainableinsuranceforum.org

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Foreword

Nature underpins economic activity, livelihoods and resilience, and its degradation can create material risks for insurers and insurance markets. Supervisors therefore need a forward-looking understanding of how deteriorating ecosystems could affect insurers, policyholders and the broader sector. Although insurance cannot replace conservation or sound environmental policy, effective supervision of nature-related financial risks can help preserve reliable protection and strengthen resilience.

The work on nature-related risks extends existing climate-related supervisory work rather than creating a separate agenda. Supervisors increasingly recognize its prudential and financial stability implications. SIF's 2021 scoping study established how nature-related risks can affect insurers and markets, while its subsequent survey found growing knowledge and capacity but uneven progress in risk assessment. Translating awareness into supervisory practice remains challenging. Supervisors must decide where to begin, which exposures to prioritize and how to integrate findings into existing processes, despite limited data, evolving methods and capacity constraints.

The Roadmap responds to this need for a practical approach that insurance supervisors can adapt to their mandates and market circumstances. Drawing on international guidance and the emerging experience of insurance supervisors, the Roadmap provides a flexible pathway from building internal capability to supervisory engagement and continuous learning. It also recognizes opportunities: protecting or restoring ecosystems can reduce physical risks, support adaptation and help preserve insurability. Nature-related products and risk-reduction approaches should be assessed carefully, but they can form part of broader strategies for resilience and protection-gap reduction.

The main message of the Roadmap is clear: Supervisors at every stage can identify a practical starting point within their mandates. Reviewing available information or opening a focused dialogue with insurers can reveal vulnerabilities, clarify priorities and expose knowledge gaps. Incomplete information should prompt careful assessment and continued learning, not prevent proportionate action where risks may be material.

Looking ahead, SIF will support members in applying the Roadmap through peer exchange, practical implementation assistance and shared learning. I thank the members, contributing authorities, partners and Secretariat whose expertise and commitment have made this publication possible.

Executive Summary

Nature and its ecosystem services support economic activity, livelihoods and resilience. Its degradation can generate financial risks for insurers through investments, underwriting, claims, reserving, reinsurance and operations. These effects may extend beyond individual firms and have broader implications for the insurance industry by affecting the insurability of certain risks, insurance capacity and the availability and affordability of coverage, potentially widening protection gaps and affecting policyholder outcomes.

For insurance supervisors, the central question is not whether every nature-related issue requires intervention, but whether dependencies, impacts and changes in nature could create material financial risks. Depending on the authority's mandate, these considerations may be relevant to both firm-level prudential supervision and broader market-wide or financial stability oversight. Nature-related financial opportunities may include products, investments and risk-finance mechanisms linked to nature-based solutions that could support risk reduction and resilience. Supervisory attention may nevertheless be warranted where their design or implementation has implications for prudential soundness, policyholder protection, market conduct or the credibility of nature-related claims.

This roadmap supports insurance supervisors and regulators in moving from awareness towards practical supervisory integration. It provides a five-phase, proportionate and learning-oriented pathway that can be adapted to different legal mandates, institutional arrangements, market structures, material exposures and levels of supervisory capacity. It does not create new standards, prescribe a single supervisory model or rank jurisdictions by maturity.

1. Nature-related financial risks are relevant to insurance supervision

Nature-related financial risks can affect both sides of an insurer's balance sheet and its own operations. On the asset side, insurers may be exposed through investments in sectors and counterparties that depend on or have impacts on nature. Physical risks may arise from nature degradation and the loss of ecosystem services, while transition risks may arise where counterparties are not aligned with measures intended to protect or restore nature or reduce negative impacts on it. Through underwriting, nature-related risks may affect insured assets and activities as well as the wider businesses and asset bases of current or potential policyholders, with implications for claims, pricing, reserving, accumulation risk and reinsurance.

Nature-related financial risk depends on location, ecosystem conditions and the characteristics of an insurer's exposure. Exposure to a nature-dependent sector does not, by itself, establish financial materiality. Assessments should identify the relevant dependencies and impacts, then examine how location, concentration and vulnerability may translate them into underwriting, investment or operational risks.

At the systemic level, interconnected ecosystems can generate cascading effects across locations and sectors, particularly where ecological tipping points are crossed. These effects may create spillovers within the financial system, across jurisdictions, and between the financial system and the real economy through supply chains, investment portfolios and reinsurance arrangements. Correlated losses may affect multiple insurers, constrain insurance capacity and weaken broader financial and economic resilience.

Climate-related financial risks form part of the broader category of nature-related financial risks and interact closely with other dimensions of nature. Climate-related supervisory approaches provide a useful starting point, particularly where supervisors already have experience with governance, risk management, scenario analysis, data collection and supervisory dialogue. Nature-related risks, however, require additional attention to ecosystem condition, spatial data, local dependencies, biodiversity impacts and scenario analysis capable of capturing physical and transition risks and their interactions.

2. International guidance provides a foundation, but an implementation gap remains

Supervisors can draw on a growing body of international frameworks, supervisory guidance, assessment approaches and insurance-specific resources. The Network for Greening the Financial System (NGFS) 2026 Nature Package, including the four-step approach¹ set out in its *Note on the supervision of nature-related financial risks*, provides the roadmap's principal supervisory foundation, while work by the Organization for Economic Co-operation and Development (OECD), International Association of Insurance Supervisors (IAIS), Taskforce on Nature-related Financial Disclosures (TNFD), Sustainable Insurance Forum (SIF), United Nations Development Programme (UNDP), United Nations Environment Programme Finance Initiative (UNEP FI) and other organizations offers complementary concepts, tools and practical experience.

Taken together, these resources provide a strong conceptual and practical foundation. However, they were not designed to provide a single, insurance-specific supervisory roadmap that brings this material together and helps authorities sequence action across mandate interpretation, internal capacity, exposure assessment, supervisory expectation, engagement and review. The remaining challenge is therefore not the absence of guidance, but translating and applying it coherently within each authority's legal mandate, market structure, risk profile, available data and institutional capacity.

The roadmap responds to that implementation challenge. It does not determine materiality or prescribe uniform supervisory outcomes. Instead, it provides a structured, proportionate pathway and practical entry points that authorities can adapt to their circumstances.

3. Supervisors can begin through existing mandates, processes and tools

Supervisory action does not necessarily require a new nature-specific mandate, regulatory framework or analytical tool. Nature-related financial risks may arise from physical changes in nature and from transition responses, including changes in policy, regulation, technology, markets and legal expectations. They may materialize through established risk categories, including underwriting and reserving, market, credit, liquidity and operational risks, as well as legal, reputational and strategic risks. Changes in the availability, terms or cost of reinsurance may also affect insurers' underwriting capacity and overall risk profile.

Existing supervisory processes can provide practical starting points. These may include governance and risk-management reviews, ORSA processes, investment and underwriting oversight, supervisory reporting, catastrophe and accumulation risk analysis, thematic reviews, questionnaires, supervisory dialogue, market-wide stocktakes and scenario analysis. Given the close interconnections between climate and other dimensions of nature, existing climate-related governance, analytical capabilities and supervisory expectations may also be adapted where appropriate.

Supervisors do not need to wait for complete data or universally accepted methodologies before beginning, as delaying proportionate action may allow material risks to build, including potentially irreversible impacts where ecological tipping points are crossed. Initial exposure screening, qualitative assessment, proxy indicators and simplified scenarios can provide useful signals where their assumptions and limitations are transparent. These early findings can help authorities identify priorities, improve data and determine whether more detailed analysis or supervisory action is warranted.

4. The roadmap provides a flexible five-phase pathway

The roadmap focuses on how insurance supervisors can integrate nature-related financial risks and, where

¹ See Chapter 1, "Relationship with the NGFS four-step approach".

relevant, opportunities into existing supervisory functions. It translates the NGFS four-step approach² into five phases designed around the functions, risk channels and practical needs of insurance supervision.

Phase 1: Building Internal Supervisory Capacity

Supervisors develop a shared understanding of nature-related financial risks and opportunities, clarify their connection to the supervisory mandate, assign clear internal responsibility, and begin building the knowledge, analytical tools, coordination and external partnerships needed for implementation.

Phase 2: Identifying Priority Nature-related Financial Exposures

Supervisors use available supervisory and external data to identify the sectors, geographical areas, ecosystem services, insurers, portfolios and lines of business that may warrant further analysis or supervisory attention.

Phase 3: Integrating Nature into Supervisory Expectations

Supervisors may consider whether further clarification would help insurers assess material nature-related financial risks and address them through existing expectations for governance, risk management, ORSA, underwriting, pricing, reserving, reinsurance, investments and business model resilience. The approach can reflect the authority's mandate, the materiality of the risks and the maturity of available data and methods.

Phase 4: Supervisory Engagement and Review

Supervisors engage with insurers and relevant stakeholders, including peer financial authorities and relevant government bodies to understand current practices, assess implementation, identify common gaps and good practices, and determine whether further supervisory action is needed. Engagement may also begin before formal expectations have been established.

Phase 5: Developing, Applying and Refining Supervisory Tools

Supervisors develop, adapt and apply proportionate tools to support insurers' management of material nature-related financial risks. They assess the effectiveness of those tools using evidence from analysis, engagement and implementation, refine them as needed and feed lessons back into earlier phases.

Each phase connects its objective and supervisory relevance with indicative actions, existing supervisory levers, enabling conditions and practical outputs. The roadmap offers both a strategic pathway and a set of practical entry points for action.

5. Proportionality, different entry points and continuous learning are central

The five phases are not a checklist, fixed sequence or maturity ranking. Supervisors may enter at different points, work across phases in parallel and return to earlier phases as evidence and experience develop.

Authorities may begin with internal learning, limited exposure screening or informal engagement before progressing towards more structured analysis, supervisory expectations or thematic review. More intensive measures should be directed towards the most material risks, while implementation arrangements should reflect differences in insurer size, complexity, risk profile and capacity.

The scope, depth and pace of action should remain proportionate to each authority's mandate, market context, material exposures and capabilities. The illustrative case studies demonstrate that supervisory progress can begin through varied entry points including capacity building, participation in international initiatives, market-wide exposure analysis, integration into existing supervisory expectations, reviews of

² See Chapter 1, "Relationship with the NGFS four-step approach", for the detailed mapping and rationale for the five-phase structure.

insurer practices, stakeholder engagement and iterative research. They also show that exploratory work can be valuable even when it does not produce a definitive risk estimate, particularly where it identifies data gaps, methodological limitations or priorities for further analysis.

The roadmap's central message is that, where nature-related financial risks may be material, supervisors should begin with the information and tools already available within their existing mandates rather than wait for perfect data or dedicated methodologies. By building knowledge, identifying priority exposures, clarifying expectations, engaging with insurers and applying appropriate supervisory tools, authorities can progressively integrate these risks into routine supervisory practice. Experience should inform continued refinement, with action remaining proportionate to their market circumstances and supervisory capabilities.

The publication is organized in two chapters. Chapter 1 presents the five-phase supervisory roadmap and practical entry points for action. Chapter 2 sets out the rationale for supervisory action, including why nature matters for insurance supervision and why implementation remains challenging.



Chapter 1

The Five-phase supervisory roadmap

Purpose, Scope and Positioning

Purpose of the Roadmap

This roadmap supports insurance supervisors and regulators in moving from awareness of nature-related financial risks towards practical supervisory integration, while also considering nature-related financial opportunities where relevant. It provides a phased, proportionate and learning-oriented pathway that can be adapted to different legal mandates, institutional arrangements, market structures, levels of data availability and supervisory capacity.

The roadmap provides practical entry points for supervisors at different stages of work and a common basis for peer learning and exchange across jurisdictions. It does not create new standards, prescribe a single supervisory model or rank jurisdictions by maturity.

The phased structure reflects differences across jurisdictions in supervisory mandates, market conditions, material exposures, data availability and institutional capacity, as well as the continuing development of relevant data and methodologies. Chapter 2 explains the rationale for this approach in greater detail.

Intended Audience

The primary audience for this roadmap is insurance supervisors and regulators. Where insurance and other financial sectors are overseen by the same or closely coordinated authorities, the roadmap may also support cross-sector consistency while allowing for sector-specific differences. It is intended both for authorities beginning to explore nature-related financial risks and opportunities and for those already conducting exposure analysis, developing supervisory expectations, engaging with insurers or integrating nature into existing supervisory processes.

The roadmap may also be useful to standard-setting bodies, central banks, ministries of finance, environmental authorities, securities regulators, development partners and other institutions working across sustainable finance, insurance supervision and resilience. Its focus, however, remains insurance supervision. It does not provide guidance to insurers on preparing disclosures, developing nature strategies, designing nature-positive products or setting corporate targets, except where these activities are relevant to supervisory assessment, dialogue or review.

Scope of the Roadmap

This publication focuses on how insurance supervisors can integrate nature-related financial risks and, where relevant, opportunities into existing supervisory functions. It covers risk assessment, supervisory dialogue, governance and risk management expectations, Own Risk and Solvency Assessment (ORSA) processes where applicable, investment and underwriting oversight, scenario analysis, thematic reviews and market-wide stocktakes. Taken together, these activities span both institution-level and market-wide supervisory perspectives, depending on each authority's mandate and institutional arrangements. Where relevant to an authority's mandate, the roadmap also considers market-conduct issues, including policyholder protection and the credibility of nature-related claims.

The terminology summarized in the accompanying **Box 1** draws on the NGFS Conceptual Framework on nature-related financial risks³ and the TNFD Glossary of Key Terms⁴. Its application to insurance underwrit-

3 NGFS (2024) Nature-related Financial Risks: a Conceptual Framework to Guide Action by Central Banks and Supervisors. Network for Greening the Financial System. Available at: <https://www.ngfs.net/system/files/import/ngfs/medias/documents/ngfs-conceptual-framework-nature-risks.pdf> (Accessed: 24 September 2026)

4 Taskforce on Nature-related Financial Disclosures (TNFD) (2023) Glossary of Key Terms. Version 1.0. London: TNFD. Available at: https://tnfd.global/wp-content/uploads/2023/09/Glossary_of_key_terms_v1.pdf (Accessed: 16 July 2026).

ing is also informed by UNEP FI's Rooted in Risk: Framing Nature-Related Assessments for Insurers⁵. The formulations have been shortened and, where necessary, adapted to the insurance supervisory purpose of this roadmap. They are intended to support consistent interpretation and do not establish new formal definitions.

How Key Terms Are Used in This Roadmap

The terms below draw on established international usage but are adapted, where necessary, to the insurance supervisory scope of this roadmap. They are provided to support consistent interpretation and do not create new formal definitions.

The term **Nature-related issues** is used as an umbrella term for dependencies, impacts, risks and opportunities (DIROs) connected with nature, including issues associated with nature loss, ecosystem degradation, biodiversity loss, water stress and land degradation. This usage is adapted from the TNFD framing of nature-related issues.

The term **Nature-related financial risks** refers, consistently with the NGFS Conceptual Framework, to risks of negative effects on economies, individual financial institutions or financial systems arising from nature degradation and the loss of ecosystem services, or from misalignment with actions aimed at protecting or restoring nature and reducing negative impacts on it. Climate-related financial risks form part of this broader category and interact closely with other dimensions of nature.

The term **Nature-related financial opportunities** is used in this roadmap as practical supervisory shorthand for nature-related opportunities that take a financial or insurance form, including products, services, investments, financial instruments and risk-finance mechanisms. This usage is adapted from the TNFD concept of nature-related opportunities and does not imply that claimed financial or nature-related benefits have been verified.

Box 1: How key terms are used in this roadmap

The roadmap does not propose a new definition of nature. It draws primarily on the IPBES Conceptual Framework, which defines nature as “the natural world with an emphasis on the diversity of living organisms and their interactions among themselves and with their environment”.⁶ The NGFS applies this definition to the financial supervisory context and includes both the living and non-living elements of the planet, such as biodiversity, water, air, soils, minerals and climate⁷. This broad framing allows supervisors to consider nature across the four interconnected TNFD realms of land, ocean, freshwater and atmosphere,

5 United Nations Environment Programme (2025) Rooted in Risk: Framing Nature-Related Assessments for Insurers. Geneva: United Nations Environment Programme. Available at: <https://www.unepfi.org/wordpress/wp-content/uploads/2025/06/Rooted-in-Risk-1.pdf> (Accessed: 29 April 2026).

6 Díaz, S. et al. (2015) 'The IPBES Conceptual Framework: connecting nature and people', Current Opinion in Environmental Sustainability, 14, pp. 1-16. DOI: <https://doi.org/10.1016/j.cosust.2014.11.002>.

7 NGFS (2024) Nature-related Financial Risks: a Conceptual Framework to Guide Action by Central Banks and Supervisors. Network for Greening the Financial System. Available at: <https://www.ngfs.net/system/files/import/ngfs/medias/documents/ngfs-conceptual-framework-nature-risks.pdf> (Accessed: 24 September 2026).

including the relationships among biodiversity, ecosystems, water, land and climate. Supervisors may prioritize issues according to mandate, materiality, data availability and market context.

The roadmap treats nature-related financial risks, like climate-related risks, as potential drivers of established financial risk categories, including insurance, market, credit, liquidity, operational, legal, reputational and strategic risks⁸. For insurers, these risks may affect both sides of the balance sheet through investments and assets, as well as underwriting, claims, reserving, liabilities and reinsurance arrangements.

Nature-related financial opportunities are considered only where they are relevant to the supervisor's mandate. Nature-based solutions integrated into underwriting, insurance products or investments may support risk mitigation and resilience, although their effectiveness and potential trade-offs should be assessed rather than assumed. Relevant considerations may include prudential soundness, policyholder protection, market conduct, financial stability and the credibility of nature-related claims. The roadmap does not treat these opportunities as a substitute for robust risk management or presume that they are inherently beneficial. It considers how supervisors may assess whether they are credible, appropriately governed and consistent with policyholder protection and the insurer's broader risk profile.

Positioning Relative to International Frameworks, Standards and Supervisory Guidance

This roadmap complements, rather than duplicates, existing international frameworks, standards and guidance. It is not a disclosure framework, taxonomy, sustainability reporting standard, scenario methodology, corporate nature strategy or transition planning guide. Its purpose is to translate relevant international work into practical, proportionate and mandate-consistent action for insurance supervisors. It therefore helps bridge a gap between cross-sector nature-related guidance and insurance-specific materials that are primarily market-facing or climate-focused, by concentrating on supervisory implementation for nature-related financial risks.

The roadmap is most directly aligned with the NGFS note on the supervision of nature-related financial risks, which provides its principal supervisory anchor. The NGFS approach covers enhancing understanding of risks and mandates, defining supervisory expectations, engaging in supervisory dialogue and supporting risk management by financial institutions through supervisory tools⁹. The OECD provides a complementary methodological framework for risk identification and prioritization, economic risk assessment, financial risk assessment and considerations for supervisory action¹⁰. IAIS work on climate-related risks also offers relevant insurance supervisory lessons concerning governance, risk management, scenario analysis, proportionality and the use of existing supervisory processes¹¹.

This roadmap applies these foundations to the distinctive characteristics of insurance supervision. Insurers are exposed through both their investments and their underwriting activities, with potential effects on market, credit, counterparty default and liquidity risks, as well as claims, pricing, reserving, accumulation risk and reinsurance. Nature-related risks may therefore affect insurers' financial condition as well as the affordability, availability and terms of coverage, with implications for policyholders and protection gaps. The SIF's 2021 scoping study established an important early evidence base on these risks and the practical challenges facing insurance supervisors¹².

8 See Chapter 2, "Nature and climate risks are interconnected, but not identical", for further discussion of the relationship between climate-related and nature-related financial risks, including their overlaps and distinct characteristics.

9 NGFS (2026) Note on the supervision of nature-related financial risks. Network for Greening the Financial System. Available at: https://www.ngfs.net/system/files/2026-04/NGFS_Supervision%20of%20nature%20risks.pdf (Accessed: 29 April 2026)

10 OECD (2023) A Supervisory Framework for Assessing Nature-related Financial Risks: Identifying and Navigating Biodiversity Risks. OECD Business and Finance Policy Papers, No. 33. Paris: OECD Publishing. Available at: <https://doi.org/10.1787/a8e4991f-en> (Accessed: 15 July 2026).

11 IAIS (2025) Application Paper on the Supervision of Climate-related Risks in the Insurance Sector. Basel: International Association of Insurance Supervisors. Available at: <https://www.iais.org/uploads/2025/04/Application-Paper-on-the-supervision-of-climate-related-risks-in-the-insurance-sector.pdf> (Accessed: 1 May 2026)

12 Sustainable Insurance Forum (SIF) (2021) Nature-related Risks in the Global Insurance Sector. Geneva: Sustainable Insurance Forum.

Other frameworks and publications provide complementary market and industry perspectives. The TNFD provides a voluntary disclosure framework and market-facing guidance supporting the identification, assessment, management and disclosure of nature-related dependencies, impacts, risks and opportunities, including through the LEAP approach¹³ and its Additional Guidance for Financial Institutions, which covers insurance¹⁴. IFRS S1 establishes general requirements for disclosing financially material sustainability-related risks and opportunities. On 22 October 2026, the ISSB published an Exposure Draft proposing a Practice Statement on nature-related disclosures to support companies in applying IFRS S1 to nature-related risks and opportunities.¹⁵ GRI 101: Biodiversity 2024 provides an impact-focused standard for reporting biodiversity-related impacts and their management¹⁶. UNEP FI publications, including Rooted in Risk¹⁷ and Breaking Ground¹⁸, adapt nature-related concepts and assessment approaches to non-life and life & health insurance underwriting business. Disclosure standards, analytical tools and corporate target-setting approaches may also provide useful information for supervisory assessment and dialogue, but they are not themselves insurance supervisory frameworks.

Taken together, these resources provide important foundations and practical inputs. This roadmap does not prescribe how individual authorities should interpret their mandates or organize their supervisory response. Instead, it supports them in selecting and adapting relevant approaches according to their legal context, market structure, material exposures and institutional capacity. It is designed to evolve as nature-related data, methodologies, supervisory practices and market capabilities develop.

How to Use the Roadmap

The roadmap is organized into five flexible phases. Each phase sets out an objective, its supervisory relevance, indicative supervisory actions, existing supervisory levers, enabling conditions and practical outputs. Case studies illustrate how different authorities and organizations have approached particular elements in practice.

The phases are not a checklist, maturity ranking or strictly linear implementation sequence. Supervisors may begin at different points, work across several phases in parallel or return to earlier phases as evidence, market practice and supervisory capacity evolve, as illustrated in the case studies. This iterative approach allows supervisors to begin with available evidence, test approaches, document limitations and refine their priorities and tools over time. Findings from later phases may also prompt authorities to revisit earlier work on internal capacity, exposure prioritization or supervisory expectations.

Proportionality and Mandate Sensitivity

The roadmap should be applied in a proportionate and mandate-sensitive manner. The scope, depth and pace of supervisory action should reflect the authority's legal objectives, powers, institutional capacity, market structure and available resources, as well as the materiality of the risks, the maturity of insurer practices and the availability of data and methodologies. Supervisors are not expected to undertake every

13 Taskforce on Nature-related Financial Disclosures (TNFD) (2023) Guidance on the identification and assessment of nature-related issues: The TNFD LEAP approach. Version 1.1, October. London: TNFD. Available at: https://tnfd.global/wp-content/uploads/2023/08/Guidance_on_the_identification_and_assessment_of_nature-related_Issues_The_TNFD_LEAP_approach_V1.1_October2023.pdf?v=1698403116 (Accessed: 7 May 2026)

14 Taskforce on Nature-related Financial Disclosures (TNFD) (2024) Additional Guidance for Financial Institutions. Version 2.0. London: TNFD. Available at: https://tnfd.global/wp-content/uploads/2024/06/TNFD-Additional-guidance-for-financial-Institutions_v2.0.pdf (Accessed: 21 September 2026).

15 IFRS Foundation (2026) 'ISSB consults on its proposals for nature-related disclosures'. Available at: <https://www.ifrs.org/news-and-events/news/2026/10/issb-consults-on-proposals-nature-related-disclosures/> (Accessed: 26 October 2026).

16 Global Reporting Initiative (GRI) (2024) GRI 101: Biodiversity 2024. Amsterdam: GRI. Available at: <https://www.globalreporting.org/publications/documents/english/gri-101-biodiversity-2024-english/> (Accessed: 21 September 2026).

17 United Nations Environment Programme (2025) Rooted in Risk: Framing Nature-Related Assessments for Insurers. Geneva: United Nations Environment Programme. Available at: <https://www.unepfi.org/wordpress/wp-content/uploads/2025/06/Rooted-in-Risk-1.pdf> (Accessed: 29 April 2026).

18 United Nations Environment Programme Finance Initiative (UNEP FI) (2025) Breaking Ground: Getting Practical with Nature-Related Assessments for Insurers. Geneva: UNEP FI. Available at: <https://www.unepfi.org/wordpress/wp-content/uploads/2025/10/UNEP-FI-Breaking-Ground-Getting-practical-with-nature-related-assessments-for-insurers.pdf> (Accessed: 15 July 2026).

action described in the roadmap, and more intensive measures should be directed towards the most material risks. These considerations are reflected throughout the objectives, indicative actions, existing supervisory levers, enabling conditions and practical outputs presented for each phase.

Overview of the Roadmap

The five-phase pathway

The roadmap is organized around five connected phases covering internal supervisory capacity, the identification of priority exposures, supervisory expectations, engagement and review, and the development, application and refinement of supervisory tools. Together, the phases connect supervisory objectives with indicative actions, existing supervisory levers, enabling conditions and practical outputs. Case studies in each phase provide practical examples. **Figure 1** presents the five-phase pathway and illustrates how supervisors may enter at different points while using evidence from later phases to strengthen earlier work.

The five phases are:

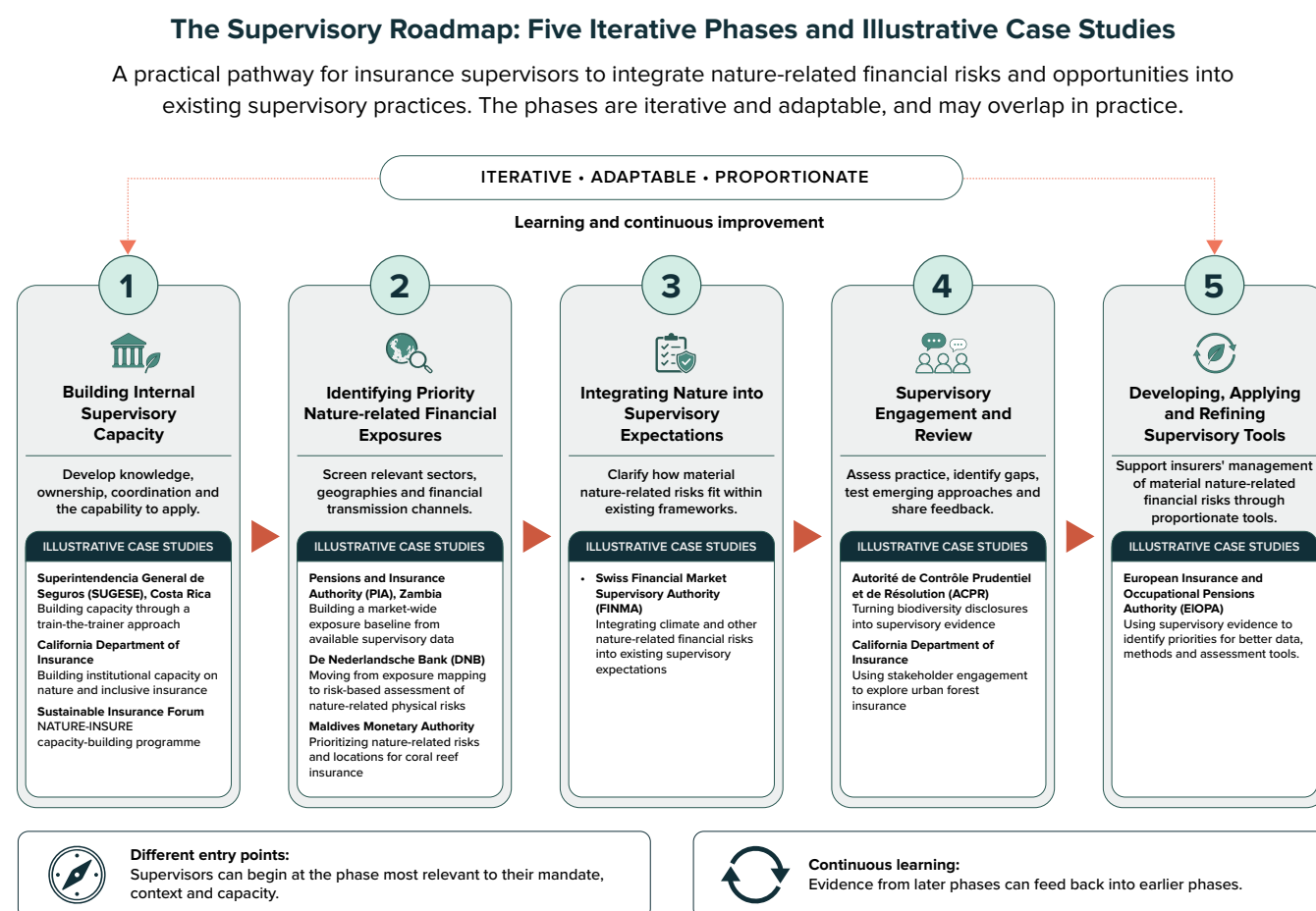


Figure 1: The five-phase SIF supervisory roadmap and illustrative case studies. Source: Authors' own elaboration

1. Building Internal Supervisory Capacity

Supervisors develop a shared understanding of nature-related financial risks and opportunities, clarify their connection to the supervisory mandate, assign clear internal responsibility and begin building the knowledge, analytical tools, coordination and external partnership needed for implementation.

2. Identifying Priority Nature-related Financial Exposures

Supervisors use available supervisory and external data to identify the sectors, geographical areas, ecosystem services, insurers, portfolios and lines of business that may warrant further analysis or supervisory attention.

3. Integrating Nature into Supervisory Expectations

Supervisors may consider whether further clarification would help insurers assess material nature-related financial risks and address them through existing expectations for governance, risk management, ORSA, underwriting, pricing, reserving, reinsurance, investments and business model resilience. The approach can reflect the authority's mandate, the materiality of the risks and the maturity of available data and methods.

4. Supervisory Engagement and Review

Supervisors engage with insurers and relevant stakeholders, including peer financial authorities and relevant government bodies to understand current practices, assess implementation, identify common gaps and good practices, and determine whether further supervisory action is needed. Engagement may also begin before formal expectations have been established.

5. Developing, Applying and Refining Supervisory Tools

Supervisors develop, adapt and apply proportionate tools to support insurers' management of material nature-related financial risks. They assess the effectiveness of those tools using evidence from analysis, engagement and implementation, refine them as needed and feed lessons back into earlier phases.

Relationship with the NGFS four-step approach

The NGFS four-step approach¹⁹ provides the principal supervisory foundation for this roadmap. It describes a progression from enhancing understanding of nature-related risks and supervisory mandates, to defining supervisory expectations, engaging in supervisory dialogue and supporting financial institutions' management of these risks through supervisory tools. The SIF roadmap retains this logic but translates it into five phases designed around the functions, risk channels and practical needs of insurance supervision.

Figure 2 shows how the SIF roadmap translates the NGFS four-step approach into an insurance-specific pathway.

The most significant adaptation is the division of NGFS Step 1 into two phases: Phase 1 on institutional capacity and Phase 2 on identifying priority exposures. Phase 1 focuses on institutional readiness, including knowledge, mandate interpretation, internal responsibility, coordination and capability. Phase 2 moves from readiness to analysis by identifying priority sectors, geographies, ecosystem dependencies and financial exposures across investments and underwriting. Separating these activities recognizes that building the capability to examine nature-related risks and conducting the analysis itself are distinct tasks. It also enables supervisors to begin with proportionate exposure screening without treating an initial assessment as a complete measure of financial risk.

NGFS Step 2 aligns with Phase 3, where supervisors consider how material nature-related financial risks should be reflected within existing expectations for governance, risk management, ORSA, underwriting, reserving, reinsurance and investments. NGFS Step 3 aligns with Phase 4, although the roadmap recognizes that supervisory engagement can begin before formal expectations are established. Dialogue, questionnaires, market stocktakes and thematic reviews can help supervisors understand current practices and determine whether further action is needed.

¹⁹ NGFS (2026) Note on the supervision of nature-related financial risks. Network for Greening the Financial System. Available at: https://www.ngfs.net/system/files/2026-04/NGFS_Supervision%20of%20nature%20risks.pdf (Accessed: 29 April 2026)

How the SIF Roadmap Builds on the NGFS Four-Step Approach

The SIF Supervisory Roadmap translates the NGS four-step approach into an insurance-specific pathway. Primary alignments are shown below; the phases are iterative and may overlap in practice.

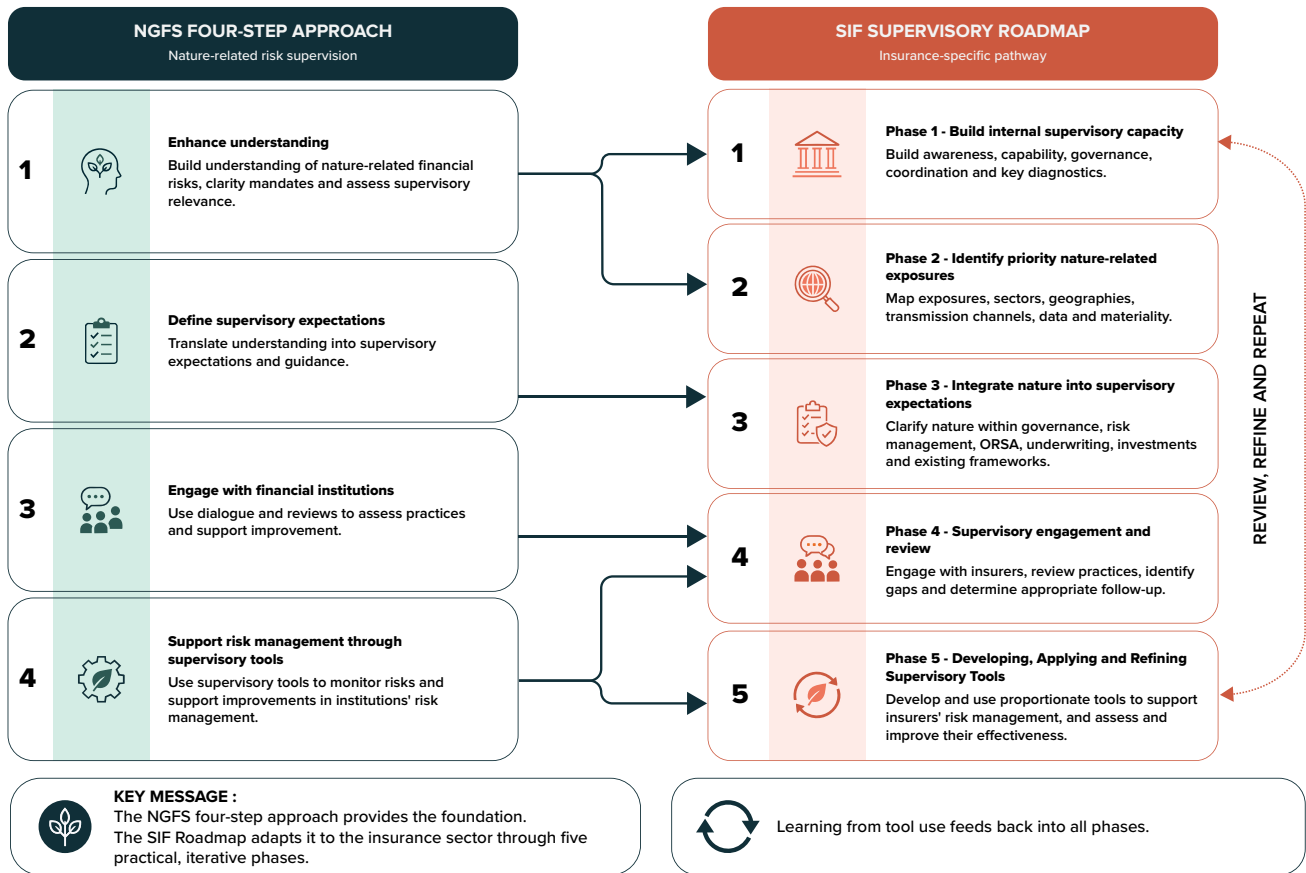


Figure 2: Relationship between the NGFS four-step approach and the SIF five-phase supervisory roadmap. NGFS Step 4 informs both the follow-up arising from supervisory engagement and review in Phase 4 and the development, application and refinement of supervisory tools in Phase 5. Source: Authors' own elaboration based on NGFS (2026)

NGFS Step 4 is reflected in both Phases 4 and 5. Phase 4 connects findings from engagement and review to feedback and appropriate follow-up with insurers. Phase 5 focuses on developing, adapting and applying supervisory tools to support insurers' management of material nature-related financial risks, and assessing their effectiveness. These activities may proceed together: supervisors can use available tools during engagement and review while identifying where further development or refinement is needed. Evidence from implementation feeds back into earlier phases.

Box 2 summarizes the principal ways in which the SIF roadmap adapts the NGFS approach to the functions, risk channels and practical needs of insurance supervision.

What the roadmap adds:

- **An insurance-specific lens:** The roadmap considers both sides of insurers' balance sheets, including investments, underwriting, claims, reserving, reinsurance and policyholder outcomes.
- **A clearer separation between readiness and analysis:** The roadmap translates NGFS Step 1 into Phase 1 on internal capacity and Phase 2 on identifying priority exposures, recognizing these as related but distinct tasks.
- **Practical supervisory entry points:** Each phase connects objectives with indicative actions, existing supervisory levers, enabling conditions and practical outputs.
- **Evidence from different approaches:** Case studies show how supervisors can act through research, exposure analysis, existing expectations, engagement, capacity building and iterative review.
- **Feedback in practice:** Building on NGFS's iterative approach, the roadmap links findings from engagement, review and tool use to refinements across all five phases.

Box 2: *What the SIF supervisory roadmap adds to the NGFS four-step approach*

Phase 1: Building Internal Supervisory Capacity

Objective

The first phase focuses on building the knowledge, institutional responsibility and foundational capabilities needed to begin addressing nature-related financial risks and, where relevant, opportunities. Supervisors do not need to develop specialist expertise across the entire organization before acting. The immediate objective is to establish a shared understanding of why nature may be relevant to insurance supervision, identify the functions that need to be involved and ensure that a small number of staff have sufficient knowledge and capability to support further work.

Existing staff training, climate-related work and internal coordination arrangements provide a starting point. Additional capability may be needed to understand ecosystem services, local dependencies and impacts, and how changes in nature can affect insurers' assets and liabilities. Supervisors can identify these gaps within existing teams and address them through targeted learning and access to ecological expertise.

Figure 3 summarizes the enabling conditions and practical outputs that support this work.

Supervisory Relevance

Implementing Phase 1 gives supervisors the institutional foundation needed to consider nature-related issues consistently as potential drivers of financial risk and, where relevant to their mandates, market conduct or policyholder concerns. A shared conceptual foundation helps prudential, actuarial, investment, data, policy and market conduct teams use common terminology, connect nature-related dependencies and impacts with established supervisory risk categories, and avoid fragmented or ad hoc interpretations. Clear ownership and a baseline understanding of existing capabilities also provide senior management with a more informed basis for determining how nature relates to the supervisory mandate, which functions need to be involved and where limited resources should be directed.

Building a core level of expertise strengthens the supervisor's ability to recognize direct and indirect transmission channels, ask informed questions and interpret evidence from insurers, external datasets and technical partners. It can help supervisors distinguish broad connections to nature from issues that may warrant closer examination because of their potential effects on underwriting, investments, reserving, reinsurance, insurer resilience or policyholder outcomes. Where relevant to the mandate, the same foundation supports consideration of aggregate exposure concentrations, protection gaps and spillovers affecting the wider insurance market or financial system. This does not require specialist expertise across the entire authority. A proportionate model can combine shared awareness across relevant functions with deeper capability in a focal point or cross-functional core team.

Phase 1 also establishes a baseline for further supervisory action. The practical outputs summarized in **Figure 3** help supervisors identify what information, tools and expertise are already available and what needs to be strengthened. Phase 1 does not itself determine which exposures are financially material or replace the forward-looking analysis undertaken in later phases. Its supervisory value lies in establishing the capability, coordination and continuity needed to undertake those later steps credibly and proportionately.

Indicative Supervisory Actions

Assess Existing Capabilities, Define Learning Objectives and Plan. Supervisors may begin with a baseline assessment of existing knowledge, relevant expertise, staff capacity, available resources and ongoing initiatives. This can identify where nature-related issues are already being considered through climate risk, catastrophe risk, investments, sustainable finance, consumer protection, insurance availability, disaster resilience or other established workstreams. The assessment can then inform a proportionate, role-based

training and learning plan, distinguishing between shared awareness needs and deeper specialist capability, and identifying the protected staff time and resources needed to deliver it.

Build Shared Conceptual Foundations. An initial awareness programme may introduce the relationship between nature, ecosystems, ecosystem services and insurance; dependencies, impacts, risks and opportunities; relevant financial transmission channels; and emerging international frameworks. Senior-level briefings can help establish sponsorship and clarify institutional relevance, while broader introductory sessions can develop a shared vocabulary across supervisory functions.

Deepen Core Expertise. A smaller core group may then undertake more focused learning. Relevant topics could include the NGFS conceptual framework, the TNFD recommendations and LEAP approach, ecosystem-service dependencies, location-specific risks, insurance underwriting and investment transmission channels, available data and tools, and lessons from climate-related supervision. Training-of-trainers approaches can help spread knowledge and reduce dependence on external expertise.

Assign Internal Responsibilities. Supervisors may designate a senior sponsor and establish operational ownership through a dedicated staff role, focal point or cross-functional working group with participation from relevant prudential, actuarial, investment, policy, market conduct, data and sustainability teams. Where particular ecosystem services or nature-related themes are material to the domestic insurance market, supervisors may also identify internal subject-matter contacts for areas such as water-related dependencies, land use or biodiversity, drawing on external expertise where needed. The appropriate arrangement will depend on the supervisor's mandate, available resources and the need for sustained coordination. Responsibilities may include coordinating training, monitoring international developments, maintaining internal resources and connecting emerging knowledge with supervisory work.

Engage with Partners. Engagement with environmental authorities, scientific institutions, universities, insurers, industry associations, communities and data providers can supplement internal learning. Supervisors may also establish or join domestic cross-authority working groups that bring together insurance, banking, pension and securities authorities, ministries of finance and other relevant stakeholders to support peer learning and coordinate workstreams on nature-related risks and disclosures. Participation in initiatives such as the NGFS Task Force on Nature-related Risks, SIF and IAIS activities, the Climate Training Alliance (CTA)²⁰, TNFD Consultation Groups and train-the-trainer programmes²¹, and UNDP-BIOFIN capacity-building initiatives²² can provide access to common concepts, emerging tools, peer experience and technical expertise while helping to avoid duplication. Participation should remain connected to internal learning and supervisory priorities. Supervisors may capture these relationships in a simple partner map or, where useful, establish a stakeholder forum to support continued exchange and coordination.

Consolidate Learning and Prepare for Phase 2. The phase may conclude with a short internal scoping note and initial supervisory work programme setting out the supervisory rationale, initial mandate considerations, knowledge gaps, governance arrangements, priority learning needs and proposed next steps. Depending on mandate and capacity, Phase 1 may also establish a partner network or commission, undertake a feasibility study, or develop a carefully bounded pilot pipeline that applies learning in practice. These outputs should identify the information, analytical capabilities and priority areas needed to begin exposure identification in Phase 2, without attempting to resolve detailed exposure or methodological questions prematurely.

20 The Climate Training Alliance, established by the BIS, IAIS, NGFS and SIF, centralizes climate- and environmental-risk training resources for central banks and supervisors. See the website: <https://fsi.bis.org/cta/> (accessed 22 September 2026)

21 TNFD Consultation Groups support national and regional engagement, while TNFD's train-the-trainer resources help organizations deliver consistent training on its recommendations and guidance. See TNFD's capacity-building platform: <https://tnfd.global/tnfd-launches-new-capacity-building-platform-to-scale-market-confidence-and-capabilities-on-nature-related-issues/> (accessed 22 September 2026)

22 UNDP BIOFIN works with governments, regulators, financial institutions and businesses to strengthen capacity on biodiversity finance and nature-related disclosure, including through TNFD readiness assessments and training. See UNDP BIOFIN's work supporting private finance for nature: <https://www.biofin.org/news-and-media/10-ways-undp-biofin-supporting-countries-catalyze-private-finance-nature/> (accessed 22 September 2026).

Existing Supervisory Levers

Existing supervisory levers are the established institutional mechanisms and channels through which the Phase 1 actions can be delivered. Phase 1 can generally be implemented without new supervisory powers or standalone structures. Staff-development programmes, senior-management briefings, induction and professional training, internal seminars, climate or sustainable-finance committees, research and horizon-scanning functions, supervisory working groups and knowledge-management systems can support capability assessment, shared learning, specialist development, internal coordination and preparation for Phase 2.

Existing relationships with environmental authorities, scientific institutions, universities, industry bodies and international organizations, together with domestic cross-authority forums, supervisory networks, peer exchanges, workshops, secondments and joint projects, can supplement internal expertise and provide access to training, tools, data and practical experience. These mechanisms may be particularly useful where specialist capacity or resources are limited, provided that external engagement remains connected to clear internal responsibilities and supervisory priorities.

These levers can also help embed the practical outputs of Phase 1 into routine institutional practice. Lessons can be incorporated into internal guidance, glossaries, training materials, supervisory manuals, knowledge repositories and future workplans, while designated focal points or working groups can maintain continuity and coordination. Existing climate-related governance arrangements can provide a useful starting point, provided that nature-specific expertise, ecosystem considerations and relevant prudential, market conduct and market-wide perspectives are included where needed.

Enabling Conditions and Practical Outputs

The broad emphasis on enhancing supervisory understanding, awareness raising and capacity building, drawing on external expertise and partnerships, and establishing supervisory work programmes with appropriate resources is informed by NGFS (2026). The specific enabling conditions, practical outputs and their organization within Phase 1 reflect the authors' synthesis of the analysis and case studies in this report.

Effective capacity building benefits from visible senior-level sponsorship, clear ownership and coordination, and protected time and resources. Other enabling conditions include access to relevant expertise, a role-based learning approach, external networks and partnerships, practical opportunities to apply learning, and mechanisms for retaining and sharing knowledge. These conditions should be tailored to the supervisor's mandate, market structure and jurisdictional context.

Supported by these enabling conditions, the indicative supervisory actions described above can generate the practical outputs shown in **Figure 3**: a shared conceptual foundation; a capability and knowledge-gap assessment; a designated role, focal point or core team; a structured training and learning plan; a partner map or stakeholder forum; a feasibility study or pilot pipeline; and an initial supervisory work programme.

Success should not be measured only by the number of training sessions or participants. Where feasibility work or pilot development begins during Phase 1, progress should be assessed against clearly defined learning objectives and the development of a credible pipeline, rather than completion of a product or formal supervisory measure. Capacity building should enable staff to explain the supervisory relevance of nature, identify potential insurance transmission channels, recognize important limitations and determine what information or analysis should be prioritized in Phase 2. **Figure 3** summarizes the institutional conditions that can support effective capacity building and the practical outputs that can help supervisors progress from initial awareness towards exposure identification in Phase 2.

From Enabling Conditions to Practical Outputs

Phase 1 builds the institutional knowledge, ownership and capability needed to begin supervisory action. These enablers help supervisors move from initial awareness to an organised and practical work programme.

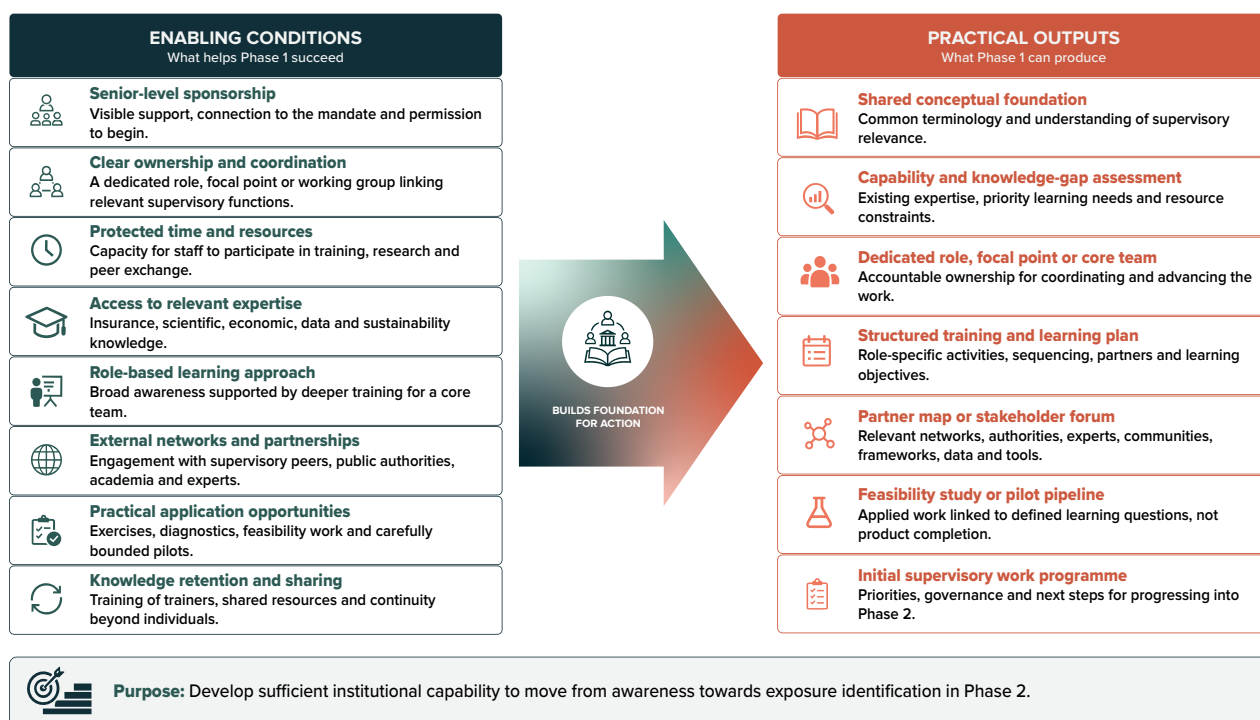


Figure 3: Phase 1 enabling conditions and practical outputs for building internal supervisory capacity. Source: Authors' own elaboration. The broad emphasis on enhancing supervisory understanding, awareness raising and capacity building, drawing on external expertise and partnerships, and establishing supervisory work programmes with appropriate resources is informed by NGFS (2026). The specific enabling conditions, practical outputs and their organization within Phase 1 reflect the authors' synthesis of the analysis and case studies in this report.

ILLUSTRATIVE CASE STUDY: SUPERINTENDENCIA GENERAL DE SEGUROS (SUGESE), COSTA RICA

Building Capacity Through A Train-The-Trainer Approach

Costa Rica's experience illustrates how a structured capacity-building programme can establish foundational knowledge across regulators, financial institutions and other national stakeholders. With support from UNDP-BIOFIN under a joint project with the TNFD Secretariat, the country delivered its first dedicated TNFD training programme for participants with limited or no prior knowledge of the framework. The Superintendencia General de Seguros (SUGESE) and the Superintendencia General de Entidades Financieras (SUGEF) participated alongside representatives from financial institutions, academia, business and civil society.

How was the programme structured?

The programme used a train-the-trainer model intended to create a specialized group capable of delivering further training within financial and non-financial institutions. It comprised 63 hours of hybrid learning over eight weeks. Asynchronous modules covered pedagogical skills and the technical foundations of TNFD, followed by an intensive face-to-face phase focused on practical application of the LEAP approach.

Participants developed knowledge of the TNFD framework's four pillars—governance, strategy, risk and impact management, and metrics and targets—together with the identification and disclosure of nature-related dependencies, impacts, risks and opportunities. Combining technical content with pedagogical preparation was intended to help participants apply the framework and transfer knowledge within their own institutions.

Why was broad participation important?

The programme brought together SUGESE and SUGEF with universities, banks, cooperatives, private-sector organizations and sustainability-focused bodies. This multi-sectoral model exposed participants to different perspectives on data, implementation and institutional readiness while building a network of professionals able to support further national learning.

For an insurance supervisor, such participation can help build internal capability while also establishing relationships with institutions that may later provide scientific, financial or market expertise. It can also create a common vocabulary across regulators and regulated institutions before more formal supervisory analysis or expectations are considered.

What can other supervisors learn?

Costa Rica's experience demonstrates the value of combining broad foundational learning with deeper technical and practical training for a smaller core group. A train-the-trainer model can extend the reach of limited resources, reduce reliance on individual experts and support continuity as nature-related work develops.

Similar approaches are also being applied at regional level. In 2026, UNDP-BIOFIN and TNFD convened an Africa training-of-trainers programme in South Africa for more than 70 financial- and private-sector practitioners from eight countries, with participating BIOFIN national coordinators expected to extend similar capacity-building efforts across the region.

The case also shows that capacity building can benefit from collaboration beyond the insurance sector. Nature-related financial risks cut across financial institutions, economic sectors and scientific disciplines, making engagement with other regulators, universities and market participants particularly valuable.

Participation in the programme should not itself be interpreted as evidence that formal nature-related supervisory expectations or methodologies have been adopted. Its principal contribution is the development of knowledge, networks and institutional readiness from which further supervisory work can proceed.

Source: UNDP-BIOFIN Costa Rica (2026) written information provided to the Sustainable Insurance Forum concerning the TNFD Capacity Building Programme in Costa Rica; and United Nations Development Programme (2024) 'Costa Rica destaca sus avances y retos para alinear el financiamiento a objetivos de cambio climático y biodiversidad', 12 June. Available at: <https://www.undp.org/es/costa-rica/comunicados-de-prensa/costa-rica-destaca-sus-avances-y-retos-para-alinear-el-financiamiento-objetivos-de-cambio-climatico-y-biodiversidad> (Accessed: 14 July 2026).

Additional comparative source: UNDP-BIOFIN (2026) 'Strengthening Africa's capacity for nature-related disclosure', LinkedIn post. Available at: https://www.linkedin.com/posts/biofin-undp_biofin-tnfd-africa-activity-7433005527393042432-LJoW (Accessed: 1 October 2026).

Building Institutional Capacity on Nature and Inclusive Insurance

The California Department of Insurance's experience illustrates how a supervisor can establish ownership of an emerging topic before developing a formal, department-wide approach. Under Insurance Commissioner Ricardo Lara, CDI created a Special Advisor on Biodiversity and Inclusive Insurance within its Climate and Sustainability Branch after recognizing that its established climate team did not include anyone focused specifically on biodiversity and nature. CDI also framed this work through inclusive insurance, recognizing that nature loss and related financial shocks can fall disproportionately on vulnerable and historically underserved communities.

How did CDI establish ownership?

The Special Advisor advises the Commissioner, coordinates with leadership across CDI's branches, and develops strategic initiatives and partnerships relating to biodiversity and inclusive insurance. According to CDI, establishing a dedicated role has provided continuity and enabled work that might otherwise have lacked a clear institutional owner. The role provides a point of coordination across policy, legal, consumer protection, market analysis, resilience, data and community-engagement functions as particular initiatives require.

Formal nature-specific coordination arrangements have not yet been established because CDI's work remains at an early stage. However, CDI expects the structures developed for climate-related work to support broader coordination as nature becomes more integrated into its activities. This sequencing shows that a supervisor can begin with clear sponsorship and operational responsibility without first establishing an elaborate committee structure.

The Special Advisor's prior experience in environmental protection, climate, ocean and land-use policy also provided a foundation of relevant technical and policy knowledge. Expert exchanges and participation in external networks have been particularly valuable because the community working at the intersection of biodiversity and insurance remains relatively small in the United States. CDI has also adapted lessons from climate-related work, particularly experience with pilot projects and nature-based solutions, while recognizing that nature is broader than climate and may require additional expertise and approaches. CDI's engagement has included insurers, communities, academic experts, environmental agencies and resilience practitioners, helping the Department connect supervisory learning with practical market and community perspectives.

How did learning lead to practical work?

CDI did not begin with a comprehensive assessment of all nature-related exposures. Instead, it selected specific risks and potential insurance solutions, sought external partners and tested their feasibility.

Early outputs include a feasibility assessment undertaken with the University of California, Santa Cruz on insurance for urban forests; the Green Ribbon Commission on Biodiversity and Insurance, convened to explore possible policy and regulatory levers; contributions to an Adaptation Finance report for California's Fifth Climate Assessment; and a developing pipeline of pilot projects. CDI has also contributed to international discussions and publications, using external feedback to test and refine its emerging approach. At the time of its response, CDI reported that several pilot projects had been launched and that additional pilots were being finalized. The urban-forest initiative is examined separately in a later case study in this roadmap under Phase 4.

This approach demonstrates that Phase 1 learning can be connected to practical, carefully bounded activities. Feasibility work and pilots can help staff identify data, design, governance and mandate questions. However, they should not be presented as completed insurance products or formal supervisory expectations. CDI also cautioned that pilots take time to develop and should not necessarily be expected to conclude within the first one or two years.

What can other supervisors learn?

CDI's experience suggests four practical lessons.

First, visible senior sponsorship should be paired with clear operational ownership. Depending on resources and institutional context, this could take the form of a funded specialist position, a focal point or a cross-functional working group.

Second, existing climate and sustainability arrangements can provide a useful institutional base, but nature-specific expertise and perspectives still need to be added. Third, expert exchanges and external networks can be core capacity-building tools, particularly where internal or domestic expertise is limited. Fourth, early progress can be measured through continuity, stronger partnerships and a credible pipeline of analysis and pilot activities, rather than solely through training participation or the completion of a product.

The CDI model is illustrative rather than prescriptive. A dedicated position may not be feasible or appropriate in every jurisdiction. The transferable principle is to establish accountable ownership, connect learning to carefully scoped practical work and preserve space to refine the approach as evidence and experience develop.

Source: California Department of Insurance (2026), written responses to the SIF case-study questionnaire on nature-related risks and opportunities, provided 21 August 2026.



ILLUSTRATIVE CASE STUDY: SUSTAINABLE INSURANCE FORUM

NATURE-INSURE Capacity Building Programme

NATURE-INSURE was a global capacity-building programme delivered from June 2025 to June 2026 by the Sustainable Insurance Forum, in partnership with the Taskforce on Nature-related Financial Disclosures (TNFD) and KPMG. It aimed to strengthen insurance regulators' and supervisors' understanding of biodiversity and nature-related financial risks and introduce practical approaches that could be adapted to different mandates and market contexts.

The programme built on SIF's 2021 scoping study and was informed by its 2024 survey of 27 insurance regulators and supervisors. The survey indicated that, although many authorities had begun capacity building, practical assessment and monitoring of nature-related financial risks remained limited. Respondents identified data gaps, unfamiliar tools and methodologies, insufficient awareness and limited internal technical capacity as barriers to further progress.

How was the learning structured?

Using TNFD's capacity-building curriculum, adapted to the insurance supervisory context, NATURE-INSURE delivered four modules comprising 11 hours of training. The curriculum progressed from foundational concepts relating to nature, biodiversity and ecosystem services to the TNFD recommendations and LEAP approach. It then examined nature-related metrics, data, tools and scenario analysis before considering practical examples of nature-positive insurance products, investments and risk-finance mechanisms.

The partnership combined SIF's supervisory network, TNFD's assessment framework and technical and practitioner perspectives. The international format allowed authorities at different stages of readiness to consider how emerging tools and practices might be adapted to their mandates, markets and available data.

What did the programme achieve?

NATURE-INSURE received 630 registrations from insurance regulators and supervisors across 65 organizations. Among 25 respondents to a survey following the final webinar, 96 percent said the session improved their understanding of how nature-positive insurance solutions could be developed or supported.

These findings indicate the programme's reach and positive self-reported learning, but do not establish whether participating authorities subsequently integrated nature-related considerations into supervisory practice.

What can other supervisors learn?

NATURE-INSURE demonstrates how a structured programme can help supervisors develop a common vocabulary, become familiar with emerging tools and identify areas requiring deeper analysis, internal coordination or engagement with insurers.

Capacity building provides a foundation for further supervisory work rather than an end point. Each authority must determine how the learning applies to its mandate, material exposures and institutional capabilities before progressing into the later phases of this roadmap.

Source: Sustainable Insurance Forum (2026) 'NATURE-INSURE'. Available at: <https://sustainableinsuranceforum.org/project/nature-insure> (Accessed: 11 September 2026)

Phase 2: Identifying Priority Nature-related Financial Exposures

Objective

The second phase focuses on identifying where nature-related financial risks may be most relevant to insurers, insurance markets and policyholders. The aim is to move from a broad understanding of nature-related dependencies and impacts towards a more focused assessment of priority sectors, geographical areas, ecosystem services, lines of business, investment exposures and potential transmission channels.

The intention is not to quantify every nature-related risk or develop a comprehensive nature stress test. Instead, it supports a proportionate process for determining where further analysis, supervisory dialogue or data collection may be most useful. Supervisors may begin with high-level exposure mapping and progressively deepen the analysis as data, tools and internal capability improve.

Existing catastrophe, concentration and investment analysis can provide a starting point for identifying exposures. These approaches may need additional information on ecosystem dependencies and condition, the locations of insured activities and investee operations, and relevant value chains. Supervisors can combine available financial and claims data with this information to identify vulnerabilities that existing assessments may overlook and prioritize further analysis. **Figure 4** summarizes the enabling conditions and practical outputs that support this work.

Supervisory Relevance

Implementing Phase 2 enables supervisors to move from broad awareness of nature-related issues to an evidence-based view of where risks may be concentrated and which exposures warrant priority attention. By examining both sides of insurers' balance sheets across sectors, locations, ecosystem services, institutions, portfolios and lines of business, supervisors can identify concentrations, dependencies and potential transmission channels that may not be visible through conventional sector-level analysis alone. This can help distinguish broad links to nature from exposures more likely to affect underwriting, investments, claims, reserving, reinsurance, solvency, insurance availability and policyholder outcomes. It can also reveal where location-specific vulnerabilities, supply-chain dependencies or wider ecological and financial spillovers may create risks for individual insurers or, where relevant to the mandate, the wider market.

Phase 2 also provides a baseline for further supervisory work. The practical outputs summarized in **Figure 4** can establish a repeatable starting point against which changes in exposures and emerging risks can be monitored over time. The assessment process can make existing information more usable by combining supervisory data with external nature, economic and scientific datasets. At the same time, it can reveal material gaps in sector classifications, operating-location data, ecosystem information, portfolio coverage and analytical methods. These findings can support a targeted data-improvement plan, more focused information requests and collaboration with environmental authorities, scientific bodies, statistical agencies and data providers, helping to improve the availability, quality, consistency and comparability of information over time.

The resulting evidence supports proportionate supervisory decision-making and provides a bridge to later phases of the roadmap. It can help authorities direct limited analytical capacity towards the most relevant sectors, institutions and portfolios; prioritize supervisory dialogue and deeper analysis; and identify where targeted data collection, thematic work or further validation is needed. It can also provide a transparent basis for determining whether supervisory expectations, guidance or more structured engagement may be warranted. Phase 2 is therefore not intended to produce a definitive measure of nature-related financial risk. Its value lies in establishing a defensible baseline, strengthening the information available to supervi-

sors and supporting informed decisions about what further action should follow.

Indicative Supervisory Actions

Define purpose and scope. Supervisors may begin by defining the purpose and scope of an initial exposure assessment. This could include the insurance market as a whole, selected insurers, specific lines of business, investment portfolios, high-risk economic sectors or priority geographical areas. When selecting priority lines of business, supervisors should consider potentially material exposures across life, health and non-life insurance, including long-tail and latent liabilities. Where data are limited, qualitative assessment may help identify exposures that warrant closer attention. The depth and approach of the assessment should reflect the materiality and characteristics of the lines selected.

To determine an initial scope, supervisors may prioritize sectors, activities, locations, institutions or portfolios based on a combination of existing evidence on financial exposure, dependencies on ecosystem services, the condition or degradation of nature, the potential severity and evolution of financial impacts, including emerging risks identified through available forward-looking information, and relevance to the domestic insurance market. These initial priorities can be refined as exposure mapping reveals concentrations, transmission channels and data gaps.

Map exposures. An initial assessment may combine existing supervisory data with external nature and economic datasets. A practical sequence may be to: (i) inventory available underwriting and investment data; (ii) assign exposures to relevant economic sectors and, where possible, geographical locations; (iii) identify direct and indirect dependencies on, and impacts on, ecosystem services; (iv) overlay information on ecosystem extent and condition, including relevant degradation trends and species-level information where available; and (v) assess concentrations and potential ecological, economic and financial transmission channels, including direct and indirect exposures through insured activities, investment portfolios and supply chains, to determine which exposures warrant further analysis, data collection or supervisory dialogue²³. Where material, this may include commodity value chains that are not fully captured by sectoral or geographical classifications alone. Where datasets use different sector classifications or geographic resolutions, supervisors may document any mapping assumptions and apply classifications consistently at a level of granularity proportionate to the assessment.

The analysis may also examine concentrations, correlations and accumulation risks across underwriting, investments, operations and reinsurance arrangements. Common nature-related drivers may affect several of these areas simultaneously through shared exposures to sectors, locations, ecosystems or counterparties. For example, a deterioration in ecosystem conditions could increase covered claims, reduce investment values and disrupt operations, while also weakening reinsurance recoverability where reinsurers are exposed to the same or correlated shocks. Supervisors should consider these combined effects, including potential limitations on diversification benefits and implications for liquidity, solvency and the wider insurance market.

Where fully developed nature scenarios are not available, supervisors may use qualitative or proxy scenarios. Where proportionate to the purpose of the assessment, these may include multiple scenarios and severe but plausible outcomes, provided that their design, assumptions and limitations are clearly documented^{24,25}. For example, a qualitative scenario could assume that, over a defined three-year period, prolonged drought combined with catchment and wetland degradation significantly reduces water availability within a priority basin, triggering water-use restrictions and disrupting agriculture, food processing and power

23 NGFS (2026) Note on the Supervision of Nature-related Financial Risks. Network for Greening the Financial System, particularly sections 1.1 and 2. Available at: https://www.ngfs.net/system/files/2026-04/NGFS_Supervision%20of%20nature%20risks.pdf (Accessed: 29 April 2026).

24 NGFS (2023) Recommendations toward the Development of Scenarios for Assessing Nature-related Economic and Financial Risks. Network for Greening the Financial System, particularly Chapter 2. Available at: https://www.ngfs.net/system/files/import/ngfs/medias/documents/ngfs_nature_scenarios_recommendations.pdf (Accessed: 28 August 2026).

25 TNFD (2023) Guidance on Scenario Analysis. Taskforce on Nature-related Financial Disclosures. Available at: <https://tnfd.global/publication/guidance-on-scenario-analysis/> (Accessed: 28 August 2026)

generation. Supervisors could first consider the economic losses arising from this disruption, then assess potential gross insured losses, including business-interruption claims where covered, taking account of policy triggers, exclusions, deductibles and limits. They could then assess potential reinsurance recoveries under the applicable arrangements and the resulting losses retained by insurers. The assessment could also consider effects on investment asset values, credit quality and coverage availability. The geographic scope, time horizon, assumptions and transmission pathways should be clearly documented, even where precise loss estimates are unavailable.

Distinguish core risk concepts. It is useful to distinguish between exposure, dependency, impact, vulnerability and financial risk. Exposure indicates where insurers are connected to particular sectors, activities or locations. Dependency describes the extent to which those activities rely on ecosystem services, while impact describes the pressures they may place on nature. Dependencies may signal potential physical risk, while impacts may signal potential transition, legal or reputational risk. Neither dependency nor impact alone constitutes a measure of financial risk.

Exposure to a natural catastrophe does not, by itself, establish a nature-related financial risk. Assessment should identify the relevant climate, ecosystem or transition channel through which financial risks arise or change. For example, changing rainfall patterns may alter flood hazards, while wetland degradation may increase the vulnerability of insured assets by reducing natural flood protection. Precise attribution or quantification need not be a prerequisite for an initial assessment, provided that the potential transmission pathways, assumptions and uncertainties are clearly documented.

A more risk-based assessment may also consider the condition of the relevant ecosystem, the susceptibility of the activity to disruption, its capacity to adapt, the potential severity of a nature-related shock and the transmission of that shock into financial loss. This can help supervisors distinguish broad links to nature from exposures that warrant further analysis or supervisory attention.

Explore forward-looking financial impacts. Nature-related scenario analysis remains at an early stage, with limited established methodologies, data and practical applications. It should therefore be distinguished both from exposure mapping and from formal stress testing. Exposure mapping identifies where dependencies, impacts and concentrations may lie. Forward-looking scenario analysis explores how defined changes in nature could transmit to financial outcomes over time, including through qualitative or proxy scenarios. Stress testing is generally a more demanding application that assesses resilience under severe but plausible assumptions and, where methods permit, translates impacts into quantitative financial and prudential metrics.

Supervisors may nevertheless choose to extend an initial exposure assessment through a defined forward-looking scenario where this is appropriate to their objectives, capabilities and available data. Where sufficiently robust data and methods are available, they may explore potential directional effects on financial indicators such as asset values, probabilities of default, claims, solvency metrics, coverage availability or the expected evolution of protection gaps. Findings from existing climate stress tests may also provide useful evidence or a methodological starting point where climate and wider nature-related risks interact.

Assessments should distinguish risks affecting obligations under existing insurance contracts from those relevant to future underwriting, business strategy and longer-term resilience. For existing obligations, the assessment should reflect contractual coverage and the expected timing of claims and payments, including long-tail and latent liabilities. For future underwriting and strategy, it should make explicit assumptions about new business, renewals and potential changes in pricing, coverage and risk management. The assessment horizons should reflect these different purposes, recognizing that existing obligations may also extend over long periods.

Where relevant and supported by credible evidence, the analysis may also consider how intact or restored ecosystems, including nature-based solutions, could reduce expected losses and strengthen resilience. The results should be treated as exploratory rather than as a precise forecast or, without further validation,

a basis for setting capital requirements. Given current data and methodological limitations, the absence of a demonstrated material financial impact should not be interpreted as evidence that no nature-related risk exists.

Validate and prioritize. Supervisors may conduct the assessment through a cross-functional team and test preliminary findings through dialogue with insurers, environmental authorities, scientific bodies, statistical agencies, data providers and other relevant stakeholders. Validation should examine data coverage, classifications, proxy assumptions, methodological limitations and whether the results provide a sufficiently credible basis for supervisory prioritization. Based on this review, supervisors may consolidate the analysis into an internal supervisory risk dashboard; identify institutions, portfolios, sectors or regions for follow-up; issue targeted data requests or thematic questionnaires; and prepare a data-improvement plan and recommendations for further analytical or supervisory work.

Existing Supervisory Levers

Supervisors may draw on existing regulatory reporting, underwriting and claims data, ORSA submissions, catastrophe and accumulation risk reporting, reinsurance information, thematic questionnaires, market-wide stocktakes, supervisory risk assessments and scenario analysis frameworks.

Many authorities may already hold data on insurers' securities, counterparties, sectors, locations and capital positions. These data can be combined with external information on ecosystem-service dependencies, environmental degradation, land use, water stress or other nature-related indicators.

Existing supervisory dialogue can also be used to test findings, clarify data gaps and understand how insurers currently identify and assess nature-related exposures. This may include reviewing the environmental information insurers already use in underwriting, investment due diligence and risk management, and whether nature-related and location-specific information is adequately represented²⁶. Available disclosure evidence across financial institutions suggests that climate-related considerations remain more widely integrated than forests, water and broader nature-related issues²⁷. Collaboration with central banks, environmental authorities, statistical agencies, scientific bodies and research institutions may further strengthen the analysis. Supervisors may also contribute to closing nature-related data gaps where appropriate, including by supporting access to relevant public data and tools²⁸.

Enabling Conditions and Practical Outputs

Phase 2 benefits from a defined analytical scope, sufficiently granular financial data, transparent recognition of limitations and cooperation across supervisory, actuarial, data, sustainability and financial stability functions. Understanding the relevant nature and economic context, together with a clear perspective on how nature-related shocks may transmit through insurers' assets, liabilities, revenues and capital, supports interpretation of the findings. Engagement with insurers, environmental authorities, scientific bodies, statistical agencies and data providers can help test assumptions, validate results and identify data gaps. A pragmatic and iterative approach allows supervisors to begin with available data, proxies and simplified scenarios and strengthen the assessment as evidence and capability improve. Exchange with central banks and banking supervisors can also provide cross-sector insights, help test assumptions and clarify interactions across the financial system²⁹. International and regional supervisory networks can facilitate peer learning on emerging data and assessment methodologies.

26 The ACPR case study, "Turning Biodiversity Disclosures into Supervisory Evidence," in Phase 4 illustrates how existing insurer disclosures can provide a baseline for more structured, market-wide supervisory assessment.

27 CDP (2023) Nature in Green Finance: CDP 2022 Financial Services Report. Bridging the Gap in Environmental Reporting. London: CDP. Available at: <https://www.cdp.net/en/insights/nature-in-green-finance-cdp-2022-financial-services-report> (Accessed: 31 August 2026).

28 Bank Negara Malaysia, World Bank and United Nations Development Programme Biodiversity Finance Initiative (2026). A LEAP for Nature: Advancing Nature-related Financial Risk and Opportunity Assessment in Malaysia. Washington, DC: World Bank.

29 The Phase 2 illustrative case study, "Moving from Exposure Mapping to Risk-Based Assessment of Nature-related Physical Risks," shows how DNB applied a cross-sector framework to banks and insurers using existing supervisory data, proxy scenarios and familiar risk models.

From Enabling Conditions to Practical Outputs

Phase 2 can begin with available data and be strengthened iteratively. These enablers help supervisors identify where nature-related risks may be most relevant and prioritise areas for further analysis and supervisory attention.

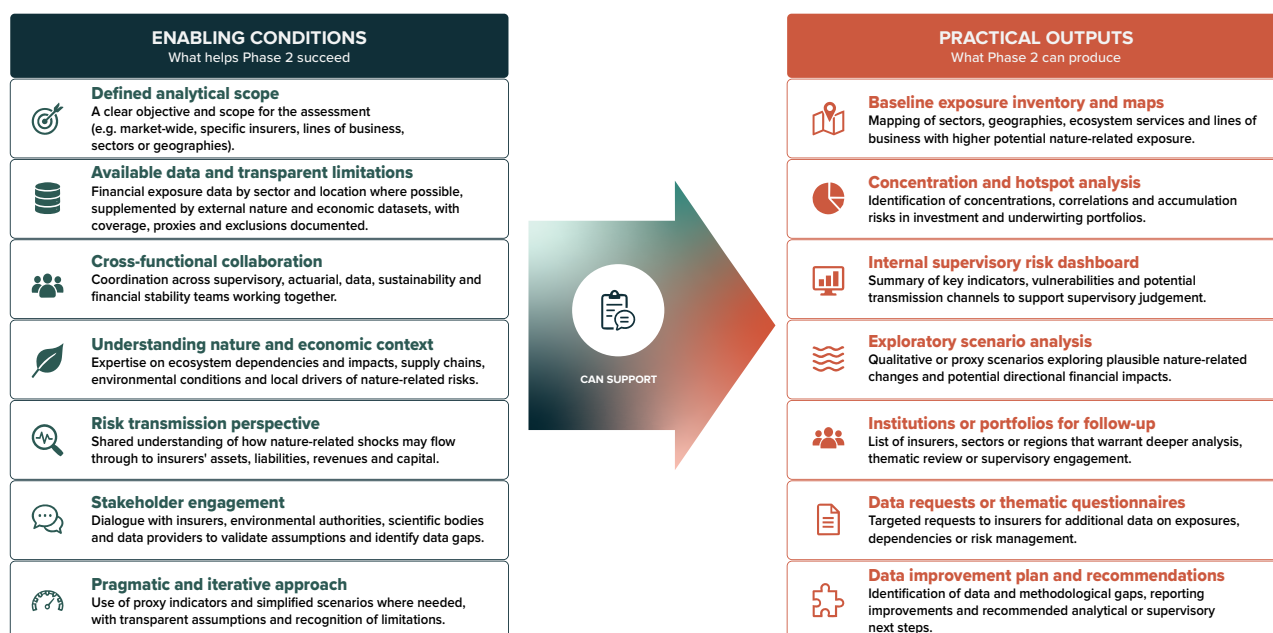


Figure 4: Phase 2 enabling conditions and practical outputs for identifying priority nature-related financial exposures. Source: Authors' own elaboration, informed by NGFS (2026) and the analysis and case studies in this report

The credibility of the assessment depends on transparent documentation of data coverage, exclusions, classifications, transformations, proxy assumptions and methodological limitations. Results based on different measures of financial exposure should not be aggregated or directly compared without a clear and consistent basis. These limitations should inform how findings are communicated and used for supervisory prioritization.

Supported by these enabling conditions, the indicative supervisory actions described above can generate the practical outputs shown in **Figure 4**: a baseline exposure inventory and maps; concentration and hotspot analysis; an internal supervisory risk dashboard; exploratory scenario analysis; a list of institutions or portfolios for follow-up, targeted data requests or thematic questionnaires; and a data-improvement plan with recommendations for further analytical or supervisory work. Together, these outputs support prioritization rather than provide a definitive measure of financial risk and can inform subsequent supervisory expectations and engagement.

Building a Market-wide Exposure Baseline from Available Supervisory Data

The Study on Nature-Related Financial Risks in Zambia was undertaken collaboratively by the Pensions and Insurance Authority, the Bank of Zambia and other national stakeholders. This cross-institutional approach supported peer learning and helped develop a broader, economy-wide view of nature-related dependencies, exposures and data gaps.

Why did PIA participate in the study?

As a member of Zambia's Green Finance Mainstreaming Working Group, PIA wanted to understand the relevance of nature-related risks to insurance and pensions and support further industry assessment. The work also supported Pillar 4 (Financial Inclusion) of PIA's 2022 to 2026 Strategic Plan, which includes an objective to mainstream green finance in the pensions and insurance sector. PIA had not previously analysed supervisory data for this purpose, and covering insurance and pensions alongside other sectors helped capture financial-sector interconnections.

How were available supervisory data used?

PIA's Insurance and Pensions departments supplied the large-risk register and pension investment data, including exposure value, sector and location, and facilitated interviews with regulated entities. The insurance analysis covered 672 high-risk general insurance policies written in 2023; pension property locations were also mapped where available.

These data were combined with ENCORE, GLORIA, WWF risk tools and provincial information to assess concentrations and direct and supply-chain dependencies. PIA validated the results with the consultants and presented them to industry and senior management. Global tools provided useful starting points but require Zambia-specific data and scenarios.

The dataset excluded smaller and long-term insurance risks, and some pension holdings lacked sector or operating-location data. Given these limitations, the results represent an initial exposure baseline rather than a complete market-wide financial-risk measure.

What did the assessment reveal?

Within the portfolio analysed, 31.0% of insurance exposure was linked to metal-ore mining and 15.5% to power supply, while approximately 95% was registered in Lusaka, Copperbelt and North-Western provinces. The study found substantial dependencies on multiple ecosystem services, particularly water. PIA cautioned that registered location may not represent underlying operating risk, reinforcing the need to assess sector, operating location and supply chains together.

PIA saw the findings as a basis for underwriting dialogue, pricing and product design. It also highlighted agriculture's sensitivity to drought, floods, rainfall shifts, soil degradation, pests and biodiversity loss, which may increase claims and affect insurance availability and affordability. The assessment indicates exposure and dependency, not quantified financial loss.

How is PIA using the findings?

PIA is incorporating the findings into industry dialogue and sees entry points through risk-based supervision, off-site monitoring, governance and risk-management reviews, investment oversight, thematic reviews and ORSA. It reported that mining generates over 60% of general insurance business, making immediate negative screening difficult; staged engagement on data, underwriting, pricing and product design is more practicable. Priorities include a fit-for-purpose data tool, industry training and Zambia-specific scenarios, while safeguarding affordability and availability.

What can other supervisors learn?

PIA's experience shows that supervisors can begin with available data if coverage, proxy choices and limitations are transparent. Even a partial baseline can be useful despite these limitations, helping supervisors identify priorities, support industry dialogue and guide improvements to future data collection and analysis.

The case also demonstrates the value of combining supervisory data with external tools, distinguishing direct and supply-chain dependencies, and validating findings with industry and senior management. This can help supervisors strengthen future reporting and develop more locally relevant data and scenarios.

Source: United Nations Development Programme (2025), Study on Nature-Related Financial Risks in Zambia, The Biodiversity Finance Initiative, UNDP Zambia. Available at: https://www.biofin.org/sites/default/files/content/knowledge_products/Final%20Report%20on%20Study%20on%20Nature%20Related%20Financial%20Risks_with%20Logos.pdf (Accessed 5 August 2026); and written responses provided by the Pensions and Insurance Authority to the SIF Phase 2 case-study questionnaire, 2026.

Moving from Exposure Mapping to Risk-Based Assessment of Nature-related Physical Risks

DNB's work shows how supervisors can move beyond identifying where financial institutions depend on nature and begin estimating how nature degradation may translate into financial losses and prudential impacts, using existing supervisory data, proxy scenarios and familiar risk models.

Why did DNB develop the framework?

Earlier nature-related assessments largely focused on mapping financial institutions' exposures and dependencies on ecosystem services. While useful for identifying where potential vulnerabilities might lie, these approaches did not indicate the possible scale of financial losses. DNB therefore developed a top-down stress-testing framework that links a shock to nature with effects on economic production, company default risk, asset valuations and ultimately the prudential position of banks and insurers.

How did DNB identify priority exposures?

DNB focused its quantitative application on water-related physical risks because water-related ecosystem services are economically significant, measurable and relatively well represented in available datasets. Rather than relying on sectoral dependency alone, the framework estimates vulnerability by combining the extent to which a sector depends on water-related ecosystem services with the condition or degradation of water in the country where production takes place.

The approach also incorporates indirect dependencies through supply chains. This allows losses to vary across sectors and geographies according to their effective vulnerability, rather than assuming that all firms exposed to the same economic sector face the same level of risk.

How were nature shocks translated into financial and prudential impacts?

In the absence of fully developed nature scenarios, DNB used three proxy approaches to calibrate a severe but plausible production shock. The working paper applied a 10% aggregate production loss at EU level as an illustrative benchmark, not as a scientifically validated forecast.

The shock was allocated across sector-country combination according to vulnerability and translated through a modified Merton model into changes in company default probabilities, credit losses and asset revaluations. For insurers, DNB combined debt and equity holdings with Solvency II data to estimate impacts on Solvency Capital Requirement ratios.

What did the analysis show for insurers?

The impact varied substantially because of differences in portfolio composition and sectoral exposure. Under the illustrative water-related shock, the median SCR ratio fell from about 185% to 165%, although all insurers assessed remained above the 100% requirement because of their initial capital buffers.

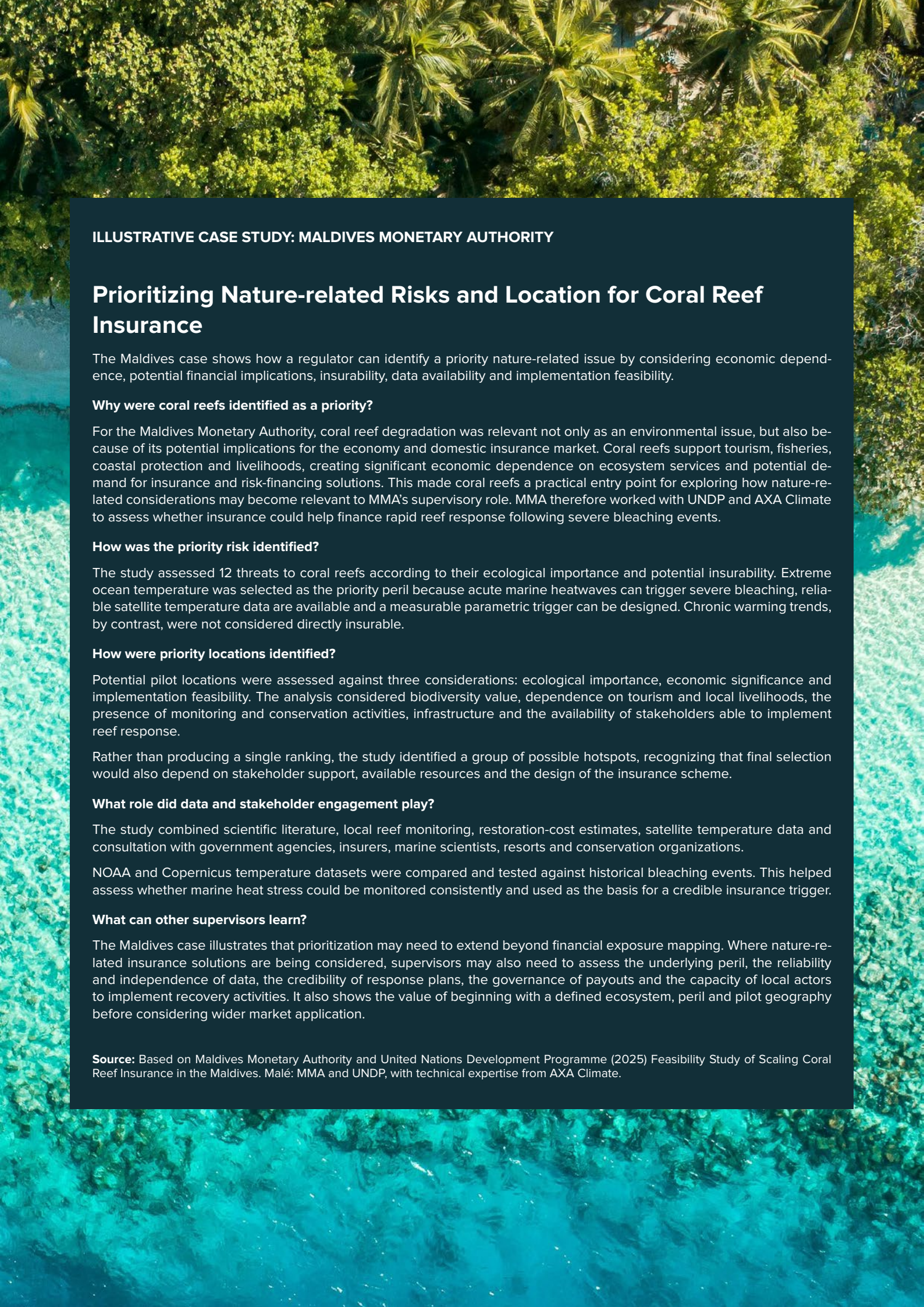
The results cover asset-side market risk only and do not fully capture liability effects, diversification or wider macro-financial feedbacks. They should therefore be read as exploratory sensitivity estimates rather than forecasts or formal capital adequacy assessments.

What can other supervisors learn?

DNB's experience illustrates that supervisors do not need to wait for perfect nature data or fully developed scenarios before beginning more risk-based analysis. Existing financial reporting, securities holdings, nature-dependency data, environmental indicators and standard prudential metrics can be combined to identify concentrations and compare vulnerability across institutions.

The case also highlights the importance of moving beyond dependency alone. Incorporating the condition of nature, supply-chain effects and financial transmission channels can produce a more decision-useful picture of where nature-related risks may be most material. Proxy scenarios can support this process, provided their assumptions and limitations are transparent and the results are used to inform supervisory judgement rather than treated as precise forecasts.

Source: Based on Gallet, S., Prodani, J. and Rang, K. (2026) From nature shocks to financial stability: Incorporating nature physical risks, in particular water-related risks, into banks' credit risk models and insurers' market risk models. DNB Working Paper No. 857. Amsterdam: De Nederlandsche Bank; and written responses provided by De Nederlandsche Bank to the SIF case study questionnaire on nature-related financial risks and insurance supervision, 2026.



ILLUSTRATIVE CASE STUDY: MALDIVES MONETARY AUTHORITY

Prioritizing Nature-related Risks and Location for Coral Reef Insurance

The Maldives case shows how a regulator can identify a priority nature-related issue by considering economic dependence, potential financial implications, insurability, data availability and implementation feasibility.

Why were coral reefs identified as a priority?

For the Maldives Monetary Authority, coral reef degradation was relevant not only as an environmental issue, but also because of its potential implications for the economy and domestic insurance market. Coral reefs support tourism, fisheries, coastal protection and livelihoods, creating significant economic dependence on ecosystem services and potential demand for insurance and risk-financing solutions. This made coral reefs a practical entry point for exploring how nature-related considerations may become relevant to MMA's supervisory role. MMA therefore worked with UNDP and AXA Climate to assess whether insurance could help finance rapid reef response following severe bleaching events.

How was the priority risk identified?

The study assessed 12 threats to coral reefs according to their ecological importance and potential insurability. Extreme ocean temperature was selected as the priority peril because acute marine heatwaves can trigger severe bleaching, reliable satellite temperature data are available and a measurable parametric trigger can be designed. Chronic warming trends, by contrast, were not considered directly insurable.

How were priority locations identified?

Potential pilot locations were assessed against three considerations: ecological importance, economic significance and implementation feasibility. The analysis considered biodiversity value, dependence on tourism and local livelihoods, the presence of monitoring and conservation activities, infrastructure and the availability of stakeholders able to implement reef response.

Rather than producing a single ranking, the study identified a group of possible hotspots, recognizing that final selection would also depend on stakeholder support, available resources and the design of the insurance scheme.

What role did data and stakeholder engagement play?

The study combined scientific literature, local reef monitoring, restoration-cost estimates, satellite temperature data and consultation with government agencies, insurers, marine scientists, resorts and conservation organizations.

NOAA and Copernicus temperature datasets were compared and tested against historical bleaching events. This helped assess whether marine heat stress could be monitored consistently and used as the basis for a credible insurance trigger.

What can other supervisors learn?

The Maldives case illustrates that prioritization may need to extend beyond financial exposure mapping. Where nature-related insurance solutions are being considered, supervisors may also need to assess the underlying peril, the reliability and independence of data, the credibility of response plans, the governance of payouts and the capacity of local actors to implement recovery activities. It also shows the value of beginning with a defined ecosystem, peril and pilot geography before considering wider market application.

Source: Based on Maldives Monetary Authority and United Nations Development Programme (2025) Feasibility Study of Scaling Coral Reef Insurance in the Maldives. Malé: MMA and UNDP, with technical expertise from AXA Climate.

Phase 3: Integrating Nature into Supervisory Expectations

Objective

The third phase focuses on **reflecting material nature-related financial risks within existing supervisory expectations, frameworks and processes**. This may include governance, risk management, materiality assessment, ORSA-related processes, underwriting, reserving, reinsurance, investments, scenario analysis and business model resilience.

This phase does not require supervisors to create a standalone nature-related supervisory regime. In many jurisdictions, nature-related financial risks may be addressed as risk drivers that materialize through existing financial risk categories, including insurance risk, market risk, credit risk, liquidity risk, operational risk, legal risk, reputational risk and strategic risk. The purpose of this phase is to help supervisors consider whether further clarification of existing expectations would support insurers' identification, assessment and management of material nature-related financial risks, within the applicable domestic framework.

Existing expectations for governance, risk management and ORSA provide a starting point. However, insurers may need clarity on how these expectations apply to ecosystem dependencies, nature-related physical and transition risks, and the limitations of available data and methods. Supervisors can clarify their application to material nature-related risks across underwriting, reserving, reinsurance and investments, adapting existing climate-related guidance where appropriate. **Figure 5** summarizes the enabling conditions and practical outputs that support this work.

Supervisory Relevance

Once insurance supervisors have built internal capability and begun identifying priority exposures, they may need to provide greater clarity to insurers on how nature-related risks fit within existing supervisory expectations. Without such clarity, insurers may treat nature-related risks as a voluntary sustainability issue, rather than as a potential driver of core business risk that may affect governance, risk management, underwriting, reserving, reinsurance, investments and financial performance. The need for supervisory clarification is heightened by the uncertainty, non-linear dynamics and potentially long time horizons associated with nature-related risks, including ecological tipping points, which may not be adequately captured by assessments relying primarily on historical data.

Supervisory expectations can help insurers draw on existing risk identification and assessment processes to examine material nature-related financial risks, adapting their approaches as data, methodologies and practical experience develop. Such expectations can also clarify that the absence of quantified financial effects does not, by itself, indicate immateriality, particularly where relevant data or methodologies remain incomplete. Available disclosure data illustrate why this distinction matters; fewer than half of the forest-related risks identified by reporting companies had quantified potential financial impacts³⁰. Together, these principles can support greater consistency across firms while allowing flexibility and proportionality in implementation.

This phase is closely linked to the NGFS step on defining supervisory expectations. For insurance supervisors, the key question is not whether nature-related risks require an entirely new supervisory architecture, but how they can be reflected within existing supervisory frameworks in a way that is materiality-based, proportionate and aligned with the supervisor's mandate.

Together, the practical outputs summarized in **Figure 5** can give supervisors a consistent basis for commu-

30 CDP (2025) Blind Spots on the Balance Sheet: Uncovering Financial Implications of Deforestation. London: CDP. Available at: <https://www.cdp.net/en/insights/uncovering-financial-implications-of-deforestation> (Accessed: 1 September 2026).

nicating expectations, assessing implementation and structuring the engagement and review described in Phase 4.

Indicative Supervisory Actions

Confirm mandate and framework. Supervisors may begin by confirming how nature-related financial risks fit within their existing legal mandates, regulations and supervisory frameworks. This includes determining whether the existing basis is sufficient to address material nature-related financial risks and clarifying how these risks may act as drivers of traditional financial risks, including insurance, market, credit, liquidity, operational, legal, reputational and strategic risks. Before formalizing expectations, supervisors may also confirm senior-level support, coordinate the relevant internal functions, assess supervisory capacity and tools, and consider the need for supporting analysis, stakeholder consultation, implementation timelines and accompanying guidance. Where appropriate, such guidance may be developed through consultation with insurers and other relevant stakeholders, while remaining grounded in the supervisor's mandate and independent judgement.

Clarify materiality expectations. Supervisors may then set out how insurers are expected to identify and assess material nature-related financial risks within existing risk-management processes. Expectations may focus primarily on financial materiality. An insurer's impacts on nature may be relevant where they translate, or could reasonably be expected to translate over time, into financial risks. Supervisors whose mandates encompass broader sustainability or impact considerations may also address such impacts directly. Supervisors may address the frequency and robustness of materiality assessments, the use of qualitative or quantitative scenario analysis, relevant internal and external data sources, sectoral and geographical exposures, and appropriate indicators or thresholds. Depending on the purpose and scope of an assessment, relevant considerations may include short-, medium- and long-term horizons, indirect effects and adverse but plausible scenarios. Where ORSA or equivalent processes apply, supervisors may consider how material nature-related financial risks are reflected in those processes and whether complementary qualitative analysis could help address risks extending beyond their assessment horizons. The findings can help inform insurers' business strategy and planning.

Set clear guiding principles. Supervisors may use guiding principles or assessment criteria to clarify how existing expectations apply to material nature-related financial risks, taking account of differences in business models, risk profiles and methodological maturity. Clear guidance can support consistent interpretation and supervisory comparison while allowing insurers to adopt approaches suited to their circumstances. For underwriting, pricing, reserving, reinsurance, investments and business resilience, supervisors may consider how such risks could affect loss potential, pricing assumptions, reserving adequacy, reinsurance needs, investment exposures or business strategy. The same high-level expectations may be applied to climate-related and wider nature-related financial risks, while recognizing that data, methodologies and scenario tools for nature beyond climate are generally less mature and may require additional guidance or longer implementation periods. Peer exchange through international and regional supervisory networks, including SIF, can help authorities compare emerging approaches, build shared knowledge and refine expectations as methodologies and supervisory practice evolve.

Clarify actuarial responsibilities. Supervisors may clarify how the actuarial function or equivalent, where applicable, should consider material nature-related financial risks within its existing responsibilities. This may include evaluating implications for underwriting policy, pricing, claims assumptions, technical provisions and reinsurance, and contributing to relevant scenario analysis and stress testing. Supervisors may also consider whether actuarial assessments clearly document material assumptions, uncertainties and methodological limitations, and whether relevant findings and concerns are reported to senior management and the board, as appropriate, to inform decisions and follow-up.

Address policyholder implications. Where relevant to their mandates, supervisors may also clarify expect-

tations concerning policyholder and market-conduct implications of insurers' responses to nature-related risks. Insurers may be expected to assess how changes in underwriting, pricing, exclusions or withdrawal of coverage in nature-exposed areas could affect availability, affordability, protection gaps, transparency and the fair treatment of existing and prospective policyholders. Maintaining long-term insurability and limiting protection gaps may also depend on wider efforts to reduce the underlying drivers of risk, including climate change and nature loss, even where those efforts fall outside the supervisor's mandate.

Apply proportionality. Supervisors may tailor their approach to an insurer's nature-related risk profile, size, complexity and implementation capacity. Depending on the domestic framework, options may include simplified assessments, exemptions from particular requirements where legally permitted, more detailed assessments where risks may be material, and phased implementation timelines. An initial materiality assessment can help inform the choice of approach, while periodic review can help determine whether exemptions, reduced requirements or transitional arrangements remain appropriate as the insurer's risk profile, available evidence and assessment capabilities evolve. Relevant international supervisory guidance can inform these choices within the domestic legal and supervisory context.

Prepare to apply expectations. Supervisors may translate agreed expectations into instruments suited to their legal framework, such as circulars, supervisory statements, expectations papers or ORSA-related guidance. Supporting assessment criteria, questionnaires and review tools can help communicate the intended outcomes and assess implementation consistently. Supervisors may also establish proportionate implementation timelines or transitional arrangements, taking account of materiality, legal powers, methodological maturity and market readiness. Phase 5 addresses the broader development, application and refinement of supervisory tools to support insurers' risk management.

Existing Supervisory Levers

Phase 3 can generally be implemented through existing legal and supervisory instruments rather than through a new nature-specific framework. Relevant levers may include requirements and guidance relating to corporate governance, risk management, ORSA, investments, underwriting, pricing, reserving, reinsurance, operational resilience and business model assessment. Existing powers to address material financial risks may provide the basis for clarifying how nature-related risks should be identified, assessed, governed and managed.

Depending on the domestic framework, supervisors may communicate expectations through amendments or clarifications to existing regulations, circulars or guidance; supervisory statements or letters; ORSA guidance; public consultations; implementation communications; or incorporation into supervisory manuals and assessment methodologies. Existing climate-related expectations may provide a useful starting point where they can lawfully be broadened and adapted to the location-specific, ecosystem-specific and methodological characteristics of nature-related financial risks.

Internal assessment criteria, materiality indicators, proportionality arrangements and transitional measures can support consistent and risk-based application across firms. These levers can also establish a clear basis for the supervisory dialogue, review and feedback described in Phase 4. **Box 3** provides a non-exhaustive set of illustrative questions that supervisors may adapt to support supervisory assessment and structure dialogue with insurers.

Enabling Conditions and Practical Outputs

Phase 3 is more likely to be effective where material nature-related financial risks are clearly linked to the authority's mandate and existing supervisory framework with senior-level support and cross-functional co-ordination across relevant policy, prudential, insurance, sustainability, risk, actuarial and data teams. Other important enabling conditions may include a shared understanding of how nature-related risks transmit into existing financial risk categories, alignment with relevant international guidance and market practice,

Illustrative Questions to Support Supervisory Assessment and Dialogue

The following non-exhaustive questions may help supervisors assess insurers' practices and structure supervisory dialogue. They do not establish additional requirements or a uniform scoring methodology and should be adapted to the authority's mandate, domestic framework and the insurer's nature-related risk profile.

- **Materiality and risk assessment:** Does the insurer use a clear methodology to identify and assess material nature-related financial risks? Does it consider physical and transition risks, dependencies and impacts, concentrations, relevant sectors and geographical areas, and different time horizons?
- **Governance and accountability:** Are responsibilities for identifying, assessing, managing and monitoring material nature-related financial risks clearly assigned across the board, senior management and relevant control functions? Is appropriate expertise and reporting in place?
- **Methods, indicators and evidence:** Which risk metrics or indicators does the insurer use to identify, assess and monitor its nature-related financial risks? Are the underlying data, thresholds, assumptions and limitations appropriate and clearly documented?
- **Forward-looking assessment:** Where relevant, does the insurer use qualitative or quantitative scenario analysis or stress testing? Does the analysis distinguish risks affecting existing contractual obligations from those relevant to future underwriting, business strategy and longer-term resilience? Are the time horizons and assumptions appropriate to each purpose, including the duration of existing obligations? Does the analysis consider adverse but plausible developments and indirect effects?
- **Integration and action:** How do the findings affect the insurer's risk appetite, governance, ORSA, underwriting, pricing, reserving, reinsurance, investments, risk management and business planning? Are identified gaps supported by appropriate actions and timelines?
- **Actuarial assessment:** Where applicable, has the actuarial function or equivalent assessed the implications of material nature-related financial risks for underwriting policy, pricing, claims, technical provisions and reinsurance, and contributed to relevant scenario analysis? Are the assumptions, uncertainties and methodological limitations clearly documented, and are material findings and concerns reported to senior management and the board, as appropriate, to inform decisions and follow-up?
- **Policyholder outcomes:** Where relevant to the supervisor's mandate, has the insurer considered potential implications for insurance availability, affordability, protection gaps and the fair treatment of existing and prospective policyholders?

Source: Adapted for the insurance context from NGFS (2026), Note on the Supervision of Nature-related Financial Risks, Box 12, pp. 30–31, and informed by the analysis in this roadmap.

Box 3: Illustrative questions to support supervisory assessment and dialogue.

consultation with insurers and other stakeholders, a clear approach to proportionality, and sufficient supervisory capacity and tools to assess firms' governance, data, materiality assessments and scenario analysis.

Supported by these enabling conditions, the indicative supervisory actions described above can generate

the practical outputs shown in **Figure 5**: one or more supervisory instruments, such as a circular, statement, guidance, or expectations paper; internal supervisory assessment criteria; ORSA-related clarification or guidance; proportionality criteria; implementation timelines or transitional arrangements; a supervisory questionnaire or self-assessment tool; and a benchmarking or review tool. The choice of outputs should reflect the supervisor's legal powers, the materiality of the risks, methodological maturity and market readiness. Together, these outputs can support consistent application across firms and provide a basis for the supervisory engagement and review described in Phase 4.

The purpose of these outputs is not to create a separate nature-specific supervisory regime. Rather, they can help supervisors clarify how material nature-related financial risks should be considered within existing governance, risk management, ORSA, underwriting, reserving, reinsurance, investment and business model resilience processes.

From Enabling Conditions to Practical Outputs

Phase 3 is most effective when key enabling conditions are in place. These enablers help supervisors translate early analysis into clear, proportionate supervisory expectations.

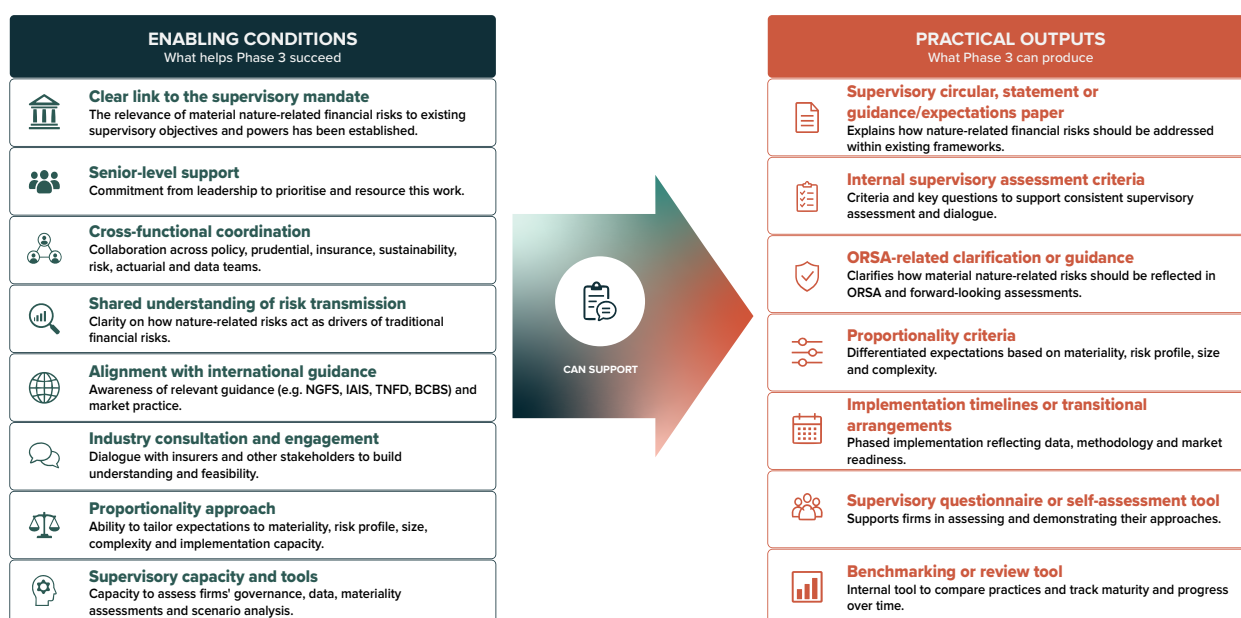


Figure 5: Phase 3 enabling conditions and practical outputs for integrating nature into supervisory expectations. Source: Authors' own elaboration, informed by NGFS (2026) and the analysis and case studies in this report.

Integrating Climate and Other Nature-Related Financial Risks into Existing Supervisory Expectations

The Swiss Financial Market Supervisory Authority's Circular 2026/1 provides an example of how a supervisor can integrate climate-related and other nature-related financial risks into established governance, risk management and supervisory processes rather than creating a separate nature-specific regime.

Why did FINMA develop the circular?

FINMA first confirmed that existing Swiss risk-management requirements provided a sufficient basis for addressing material climate-related and other nature-related financial risks. It then developed Circular 2026/1 to clarify how these risks should be identified, assessed and managed within established supervisory frameworks. Climate and wider nature-related risks were addressed together because of their interdependencies, with both treated as drivers of established financial risk categories, including insurance, market, credit, liquidity, operational, legal and reputational risks.

How are materiality and proportionality applied?

Banks and insurers must identify nature-related financial risks and assess their financial materiality at least once during each strategy period. The circular focuses on financial materiality rather than double materiality: an institution's impacts on nature are relevant where they may feed back into its financial risk profile. The robustness of this assessment is an important focus of supervision. It should consider direct and indirect effects, higher-risk sectors and locations, relevant indicators and thresholds, different time horizons, and at least qualitative scenario analysis of adverse but plausible developments.

Proportionality is built into the circular. Institutions apply the requirements according to their size, complexity, structure, risk profile and business model. Firms admitted to FINMA's small insurers or small banks regimes fall outside its mandatory scope, although the circular remains relevant as guidance. Implementation is phased. The climate-related requirements apply to larger banks and insurers from 1 January 2026 and to medium-sized and smaller institutions within scope from 1 January 2027, while the requirements for other nature-related financial risks beyond climate apply to all institutions within scope from 1 January 2028.

What makes the approach insurance-specific?

For insurers, the circular includes dedicated expectations covering both sides of the balance sheet. Material nature-related financial risks must be reflected in the type and configuration of insurance coverage, pricing, underwriting, concentrations and accumulations, claims reserving, investments, liquidity and operational risk management. Material nature-related financial risks must also be incorporated into ORSAs, including their effects on the insurer's overall risk profile, capital requirements, scenarios and risk-mitigation measures. Where relevant risks extend beyond the conventional ORSA horizon, complementary qualitative analysis may be used. The responsible actuary must also consider and report on material nature-related financial risks.

How does FINMA assess implementation?

FINMA uses the circular through supervisory dialogue and formal review. It may discuss common focus topics with several insurers and compare their responses through qualitative benchmarking. During on-site inspections, FINMA uses an internal benchmark tool with common assessment criteria and a maturity score from 1 to 4. This supports consistency and comparison across firms and is an internal supervisory tool rather than a public industry standard.

What can other supervisors learn?

FINMA's experience shows that nature-related financial risks can be embedded within existing governance and risk-management frameworks rather than addressed through a parallel regime. Principle-based expectations can provide flexibility, but should be sufficiently clear and granular to support consistent implementation and supervisory comparison. The approach should be grounded in the jurisdiction's legal and supervisory context, supported by analysis demonstrating potential financial materiality, and accompanied by proportionate and phased implementation. For insurers, general expectations should also be translated into relevant areas such as underwriting, pricing, reserving, reinsurance, investments, ORSA and actuarial oversight.

Source: Swiss Financial Market Supervisory Authority (FINMA) (2024) Circular 2026/1: Nature-related financial risks: Management of climate- and other nature-related financial risks. Bern: FINMA. Available at: <https://www.finma.ch/en/~media/finma/dokumente/dokumententcenter/myfinma/rundschreiben/finma-rs-2026-01.pdf> (Accessed: 10 July 2026); and FINMA written responses to the SIF case study questionnaire on nature-related financial risks and insurance supervision, provided to the Sustainable Insurance Forum.

Phase 4: Supervisory Engagement and Review

Objective

The fourth phase focuses on using supervisory engagement and review to build evidence about how nature-related risks and, where relevant, opportunities are understood and addressed in practice. Depending on the supervisor's starting point, this may involve assessing implementation of existing requirements or expectations, or exploring an emerging issue before a formal supervisory approach has been established.

Supervisors may use bilateral dialogue, ORSA or disclosure reviews, thematic assessments, questionnaires, peer comparisons, workshops and industry engagement to identify common strengths, gaps and emerging practices. Engagement may also help supervisors examine the feasibility, governance and potential implications of nature-related insurance products or risk-reduction approaches. The purpose is to improve supervisory understanding, clarify whether further action is warranted and identify priorities for follow-up.

Existing supervisory dialogue, ORSA reviews and thematic assessments provide channels for examining insurers' practices. These processes may need more focused questions about how insurers identify ecosystem dependencies, use location-specific evidence and translate their findings into business decisions. Supervisors can adapt established review processes to examine these issues, discuss uncertainties with insurers and identify proportionate follow-up. **Figure 6** summarizes the enabling conditions and practical outputs that support this work.

Supervisory Relevance

Implementing Phase 4 gives supervisors direct evidence of how nature-related risks and, where relevant, opportunities are being understood and addressed in practice. Where supervisory expectations or disclosure requirements already exist, engagement and review can test whether insurers are translating them into governance, risk management, ORSA, underwriting, reserving, reinsurance, investment and other business decisions, rather than treating them only as a formal reporting exercise. Where formal expectations have not yet been established, exploratory dialogue, workshops or feasibility work can help supervisors scope emerging issues, identify relevant stakeholders and determine whether further analysis, guidance or supervisory action is warranted. Beginning with a defined purpose, scope and intended outcome helps ensure that engagement supports a supervisory work programme rather than becoming an end in itself.

Structured review and comparison across firms can generate supervisory intelligence that may not be available from individual disclosures alone, particularly while practices remain uneven and methodologies continue to develop. It can help supervisors benchmark practices, distinguish the presence of an approach from its quality, identify common gaps and emerging good practices, and examine the purpose, form, follow-up and escalation of insurers' engagement with clients or counterparties. Dialogue with insurers and technical stakeholders can also clarify data limitations, methodological choices, assumptions and whether indicators are sufficiently understood and useful for decision-making. Repeated reviews, supported where appropriate by sufficiently reliable external datasets, can establish a baseline and show how practices change over time. This helps supervisors calibrate proportionality, target limited resources and decide where firm-specific feedback, market-wide follow-up or clearer expectations are needed.

Where relevant to their mandates, supervisors can also use engagement to examine risk-reduction approaches, new products, services or markets and potential public-private partnerships. Risk-reduction approaches may be considered through existing risk-management and resilience frameworks, while new products, services or markets may warrant attention to feasibility, governance, data and trigger design, basis risk where relevant, affordability, policyholder protection and market-conduct. Supervisors may contribute risk perspectives to public-private initiatives without assuming responsibility for product or policy

design or implying endorsement. Findings can then be translated into firm-specific feedback, thematic or market-wide reporting, further analysis or targeted follow-up and, subject to mandate and confidentiality requirements, communicated to public authorities or the wider public to support broader risk-reduction and policy responses. In this way, the practical outputs summarized in **Figure 6** can guide supervisory follow-up and inform the development, application and refinement of tools described in Phase 5.

Indicative Supervisory Actions

Define purpose and scope. Supervisors may begin by defining the purpose, scope and intended outcome of the engagement. This may involve assessing compliance with an existing requirement, examining how firms are addressing a particular risk, identifying market-wide practices and gaps, or exploring the feasibility and implications of an emerging insurance approach. The scope may cover all relevant insurers or a proportionate sample, and may focus on particular disclosures, ORSAs, portfolios, lines of business, ecosystems, locations or risk transmission channels. Supervisors may also establish governance and responsibilities for the exercise, including how information and confidentiality will be handled, how its status and findings will be communicated and, for exploratory product work, that participation does not imply endorsement or approval.

Structure supervisory reviews. For structured reviews, supervisors may develop standardized assessment criteria, matrices or questionnaires to support consistent comparison across firms and reporting cycles. Assessments should reflect applicable proportionality arrangements and distinguish clearly between mandatory requirements, supervisory expectations and broader recommendations or emerging good practice. Reviewing multiple reporting cycles can help supervisors identify progress, persistent weaknesses and differences in market maturity. Where a review examines insurers' engagement with clients or counterparties, supervisors may consider not only whether engagement occurs, but also its purpose, form and follow-up, including whether it involves information gathering, capacity building, risk-reduction incentives or collaborative approaches, and whether escalation mechanisms are defined. Where relevant, supervisors may complement their own information requests with sufficiently reliable external datasets to establish baselines and track developments over time, taking account of their coverage, comparability and methodological limitations. Publicly available disclosure platforms may, for example, provide repeated observations across financial portfolio activities, including insurance underwriting³¹.

Complement reviews with dialogue. Document-based analysis may be complemented by bilateral discussions, internal supervisory working groups, industry roundtables, technical workshops and engagement with relevant public authorities, scientific institutions, data providers and civil-society organizations. These exchanges can help supervisors test interpretations, understand methodological and data limitations, validate emerging findings and ensure that the review remains relevant to insurance practice.

Explore potential insurance solutions. Where engagement concerns a potential nature-related insurance solution, supervisors may convene relevant parties to examine the insured asset or ecosystem, covered peril, geographical scope, data and triggers, potential policyholder or beneficiary, governance of payouts and the underlying business case. Such exploratory engagement should also consider consumer protection, basis risk, affordability and public-interest implications, while making clear that participation does not constitute endorsement or approval of a proposed product. Meaningful assessment of basis risk and trigger design may require supervisors to draw on or develop appropriate actuarial, ecological and data expertise, building on the capacity-development approaches described in Phase 1.

Translate findings into action. Findings may be translated into firm-specific feedback, market-wide observations, public reports, recommendations, targeted follow-up or further analytical work. The response should reflect the supervisor's mandate, the materiality of the findings and the improvements needed in

31 CDP (2025) Financial Sector Water Action Platform. London: CDP. Available at: <https://www.cdp.net/en/insights/financial-sector-water-action-platform> (Accessed: 2 September 2026).

insurers' practices³². Where appropriate and consistent with their mandates, supervisors may communicate relevant market-wide findings to public authorities and the wider public, subject to confidentiality requirements, to support broader risk-reduction and policy responses. Supervisors should document findings, limitations and follow-up decisions to guide future engagement and inform the development, use and improvement of the supervisory tools described in Phase 5.

Existing Supervisory Levers

Phase 4 can generally be implemented through existing supervisory processes and does not necessarily require new legal powers or a dedicated nature-specific review mechanism. Relevant levers may include off-site supervision, ORSA and disclosure reviews, thematic assessments, supervisory questionnaires, information requests, bilateral meetings, on-site inspections and established risk-assessment processes.

Supervisors may also draw on internal working groups, cross-functional review teams, supervisory colleges, climate or sustainable-finance committees, public consultations and existing stakeholder forums. Industry roundtables, technical workshops and regulator-led convenings can be used to explore emerging risks, methodologies or insurance approaches where formal requirements have not yet been established.

Existing reporting cycles can support repeated assessments and comparison over time. Findings may be communicated through supervisory letters, firm-specific feedback, public reports, market-wide observations, recommendations, speeches or guidance, depending on the supervisor's mandate and the purpose of the exercise. Where appropriate, supervisors may publish market-wide findings as a standalone assessment or within an existing insurance-market, financial-stability or annual report. In Phase 4, such publications may build on an exposure baseline developed in Phase 2 by reporting on insurers' practices, common gaps, methodological limitations and areas for supervisory follow-up over time³³.

Enabling Conditions and Practical Outputs

Phase 4 is more likely to be effective where supervisors have a clear purpose and scope for the engagement, access to relevant and sufficiently comparable information, and assessment criteria appropriate to the exercise. Structured governance, senior-level support and cross-functional participation from supervisory, actuarial, investment, sustainability, data and policy teams can help ensure that findings are interpreted consistently and remain connected to supervisory objectives.

Other enabling conditions may include technical or scientific expertise, constructive participation by insurers and other stakeholders, transparent communication about the purpose and status of the exercise, and arrangements for documenting findings and methodological limitations. Where potential insurance solutions are being explored, supervisors may also need participation from ecosystem managers, public authorities, communities, data providers and prospective beneficiaries. Clear communication is important to avoid implying endorsement of a product or predetermined supervisory outcome.

Supported by these enabling conditions, the indicative supervisory actions described above can generate the practical outputs shown in **Figure 6**: a market-wide baseline or maturity assessment; firm-specific feedback and follow-up; a thematic or public report; a data and methodological gap analysis; improved supervisory review tools, such as updated questionnaires, assessment matrices, criteria or data requests; a feasibility assessment and related design questions; and evidence for future supervisory action. Depending on the exercise, these outputs may also include recommendations for improving disclosures or risk management, a stakeholder map or priorities for further testing. Findings and limitations should be

32 NGFS (2026) Note on the Supervision of Nature-related Financial Risks. Network for Greening the Financial System, pp. 31–32. Available at: https://www.ngfs.net/system/files/2026-04/NGFS_Supervision%20of%20nature%20risks.pdf (Accessed: 29 April 2026).

33 EIOPA (2025) Report on biodiversity risk management by insurers. EIOPA-BoS-25-251, 30 June. Available at: https://www.eiopa.europa.eu/document/download/e85268dc-f9dc-4d9b-86f0-bb81b7725d0e_en?filename=EIOPA%20report%20on%20biodiversity%20risk%20management%20by%20insurers.pdf (Accessed: 14 July 2026)

documented so that progress can be tracked and lessons carried into Phase 5.

From Enabling Conditions to Practical Outputs

Phase 4 can use both structured supervisory review and exploratory engagement. These enablers help supervisors turn engagement into decision-useful findings and practical follow-up.

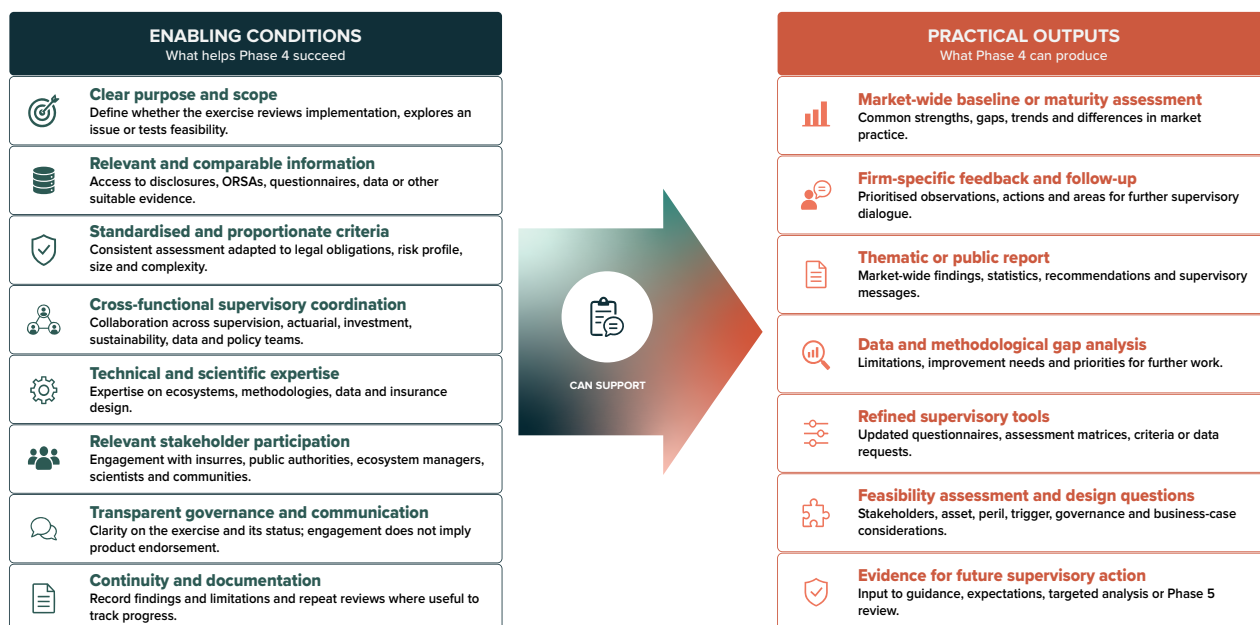


Figure 6: Phase 4 enabling conditions and practical outputs for supervisory engagement and review. Source: Authors' own elaboration, informed by NGFS (2026) and the analysis and case studies in this report.

Turning Biodiversity Disclosures Into Supervisory Evidence

The Autorité de contrôle prudentiel et de résolution (ACPR) used successive reviews of insurers' biodiversity disclosures, complemented by engagement with industry and other stakeholders, to assess how the French insurance sector was responding to an emerging area of risk. The approach shows how reporting requirements can support supervisory diagnosis, comparison and dialogue, even where data and methodologies remain immature.

How was the supervisory review structured?

Article 29 of the French Energy and Climate Law requires relevant financial institutions to disclose information on their biodiversity strategies, impacts, dependencies and risks. The ACPR reviewed reports published by 47 insurers and mutual insurers in 2022 and 113 reporting institutions in 2023.

A structured assessment framework covered both regulatory requirements and supplementary ACPR recommendations. Keeping these categories separate allowed the ACPR to identify compliance gaps without presenting emerging good practices as binding obligations. Applying common criteria also enabled comparison across institutions and reporting cycles.

What did the review reveal?

Insurers were increasingly addressing biodiversity, but reporting remained uneven. In 2023, 62 of the 113 institutions reviewed (approximately 55%) reported a biodiversity footprint indicator. However, no insurer addressed more than half of the regulatory requirements assessed by the ACPR.

The review also revealed an imbalance between measuring impacts on nature and assessing financial risks arising from ecosystem-service dependencies. Around 79% of insurers did not address all four required elements concerning biodiversity in ESG risk assessment. Only 15 institutions identified risks arising from the biodiversity impacts of their investment strategies, while 17 considered how biodiversity loss could affect their investments.

Footprint indicators provided a useful starting point but were often based on sectoral averages, limited portfolio coverage and external methodologies. Their presence did not necessarily demonstrate that biodiversity was understood internally or integrated into governance and financial risk management.

How did engagement support the assessment?

The ACPR complemented its review through working groups under its Climate and Sustainable Finance Commission, involving financial institutions, industry representatives and technical experts. These discussions helped explain practical challenges involving data availability, value-chain coverage, synthetic metrics and the connection between biodiversity impacts, dependencies and financial risk.

The combined findings informed public observations and recommendations. These emphasized clearer and better-documented disclosures, transparency about methodologies and portfolio coverage, stronger governance, and more focused assessment of material pressures and dependencies.

What can other supervisors learn?

The ACPR experience demonstrates that repeated disclosure reviews can establish a market-wide baseline, identify recurring weaknesses and track whether practices are improving. Separating regulatory requirements from recommendations also supports transparency and proportionality while allowing supervisors to encourage emerging good practice.

The case further shows that supervisors should not equate the production of a metric with effective risk management. Assessment should consider whether information is understood internally, supported by governance and capable of informing decisions. Combining structured review with stakeholder dialogue can help supervisors interpret limitations and identify priorities for future guidance, capacity building and supervisory follow-up.

Source: Autorité de contrôle prudentiel et de résolution (ACPR) (2024) French insurers facing the risks associated with biodiversity loss: Challenges and lessons learned for the insurance industry and supervisors. Analysis and Synthesis No. 159-2024. Available at: https://acpr.banque-france.fr/system/files/import/acpr/medias/documents/20240620_analyses_syntheses_biodiv_fr_en.pdf (Accessed: 14 July 2026); and ACPR (2026) written responses to the SIF case-study questionnaire on nature-related risks and opportunities.

ILLUSTRATIVE CASE STUDY: CALIFORNIA DEPARTMENT OF INSURANCE

Using Stakeholder Engagement to Explore Urban Forest Insurance

The California Department of Insurance (CDI) has used research and stakeholder convening to explore whether insurance could support the protection and recovery of urban forests. The initiative demonstrates how a supervisor can, where consistent with its mandate, use its convening role to investigate an emerging nature-related insurance opportunity, even where no formal supervisory expectations or established market yet exist.

Why did California explore urban forest insurance?

Urban forests provide cooling, stormwater management, carbon sequestration, habitat and health benefits, but are increasingly threatened by drought, extreme heat, storms, wildfire, pests and land-use change. California lost approximately 2% of its urban tree canopy between 2018 and 2022.

Working with the University of California, Santa Cruz, CDI examined whether insurance could provide rapid and predictable funding when major events threaten these ecosystems. Literature and expert input suggested that storms could potentially be insured across the state, while coverage for pests and other hazards might be feasible in particular cities or regions.

How was engagement structured?

CDI convened urban foresters, municipalities, insurers and other experts to examine potential insurance designs. Rather than beginning with a predetermined product, participants worked through practical questions: what constitutes the insured asset and peril; which geographical area should be covered; what data and thresholds could trigger payment; who would purchase the coverage; how funds would be governed and used; and whether a viable business case existed.

The discussions focused on storms in Sacramento and pests in Los Angeles. In Sacramento, the city manages approximately 100,000 public trees, while public and private trees together have an estimated replacement value exceeding USD 4 billion. Severe atmospheric rivers in 2023 caused more than USD 20 million in damage over three months, compared with typical annual tree-management expenditure of around USD 5.8 million.

Participants explored a parametric design that could provide rapid funding after a severe storm, potentially triggered by wind speed, canopy loss or a combination of wind and rainfall. Funds could support tree recovery and restoration after an event that exceeded the city's normal budget capacity.

For Los Angeles, the discussions considered coverage that would release funding when a new pest was detected or an existing pest entered a new area. A rapid payout of approximately USD 1–2 million could support monitoring, trapping, research and tree removal before an infestation became established, potentially avoiding substantially higher long-term management costs.

What can other supervisors learn?

California's experience shows that supervisory engagement can be exploratory as well as evaluative. By bringing together insurance expertise, ecosystem managers, local authorities and potential beneficiaries, supervisors can help clarify the practical conditions under which a nature-related insurance solution might operate.

A structured design process can also expose unresolved issues, including the definition and valuation of ecosystem assets, the reliability of parametric triggers, basis risk, premium funding, payout governance and the distribution of benefits between public and private stakeholders. These findings can inform further research or pilot development without requiring the supervisor to prescribe or endorse a particular product.

The Sacramento and Los Angeles designs remain preliminary and hypothetical. They should therefore be understood as tools for testing feasibility and supporting dialogue, rather than approved products or formal supervisory expectations.

Source: California Department of Insurance (2022) California Sustainable Insurance Roadmap. Sacramento, CA: California Department of Insurance. Available at: <https://www.insurance.ca.gov/01-consumers/180-climate-change/upload/CA-Sustainable-Insurance-Roadmap-2022.pdf> (Accessed: 14 July 2026); Halberstadt, D. (2026) 'Insuring the urban forest', presentation and accompanying remarks delivered at the UNDP NATURE-INSURE Webinar, 11 June 2026.

Phase 5: Developing, Applying and Refining Supervisory Tools

Objective

The fifth phase focuses on developing, adapting and applying supervisory tools to support insurers' management of material nature-related financial risks, and refining those tools as evidence and experience develop. Supervisors can draw on exposure analysis, supervisory engagement and reviews to identify where existing instruments need adjustment or additional approaches may be useful. This work may proceed alongside earlier phases, allowing supervisors to use available tools while strengthening their approaches over time.

The selection and use of tools should reflect the supervisor's mandate and powers, the materiality of the risks, available evidence and methodological maturity. Supervisors should assess whether these tools lead to the intended improvements in insurers' practices and use the findings to refine their approach across the roadmap. Refinement may involve strengthening, simplifying or discontinuing an instrument where appropriate; it does not necessarily mean introducing additional requirements.

Existing reporting templates, assessment criteria and scenario exercises provide a foundation for supervisory tools. Adaptation may be needed where they do not capture changes in ecosystem condition, indirect dependencies or interactions between climate and other nature-related risks. Supervisors can refine selected tools to address these gaps and assess whether the resulting information improves supervisory decisions and insurers' risk management. **Figure 7** summarizes the enabling conditions and practical outputs that support this work.

Supervisory Relevance

Implementing Phase 5 helps supervisors translate evidence and supervisory expectations into practical measures that strengthen insurers' management of material nature-related financial risks. Findings from exposure analysis and supervisory engagement can reveal where existing instruments are sufficient, where they need adjustment and where additional tools may be useful. Developing and applying proportionate tools gives supervisors a practical basis for assessing implementation, addressing identified weaknesses, and monitoring insurers' responses.

Supervisory tools serve different purposes. They can improve the availability and comparability of risk information, assess resilience under adverse scenarios, support the assessment of transition plans or enable proportionate measures to address shortcomings in risk management. For insurance supervisors, their application should connect nature-related findings to relevant decisions concerning underwriting, reserving, reinsurance, investments, ORSA and business resilience. Existing supervisory and climate-related tools can provide useful starting points, with adaptation where needed to capture location-specific dependencies, ecosystem conditions and interactions between climate and other dimensions of nature.

Regular review helps supervisors determine whether these tools identify priority risks, produce information useful for supervisory decisions and contribute to improvements in insurers' practices. Documenting results, assumptions and limitations supports decisions to retain, refine, simplify or discontinue an approach. More sophisticated methods can be introduced where they serve a clear supervisory purpose and are supported by sufficiently robust evidence. Lessons should inform subsequent tool development and feed back into internal capacity, exposure priorities, supervisory expectations and engagement across the earlier phases. The enabling conditions and practical outputs for this phase are summarized in **Figure 7**.

Indicative Supervisory Actions

Identify tool needs and assign responsibility. Supervisors may use findings from exposure analysis and supervisory engagement to identify weaknesses that existing instruments do not adequately address. An initial review can distinguish tools that are already usable, those requiring adaptation and areas where further development or collaboration is needed. Supervisors may assign responsibility for this work, identify the necessary expertise and resources, and establish priorities and implementation timelines. Priorities should reflect the materiality of the risks, available evidence and supervisory capabilities. Existing climate-related tools may provide a starting point where they can accommodate the characteristics of wider nature-related risks.

Strengthen reporting and assessment tools. Supervisors may adapt information requests, reporting templates, assessment criteria and internal benchmarks to obtain information relevant to material nature-related financial risks. For insurers, this may include more detailed information on investment sectors, insured activities, perils and geographical locations, addressing gaps identified through earlier analysis. Definitions, coverage, reporting frequency and validation arrangements should be proportionate to the intended use. Relevant disclosure standards and taxonomies may support consistency, while assessment criteria should explain how the information informs supervisory judgements.

Develop scenario and resilience exercises. Building on Phase 2, supervisors may develop or adapt scenario exercises and, where appropriate, stress tests to examine insurers' resilience to nature-related financial risks. Exercises should have a defined supervisory purpose, scope, time horizon and approach to interpreting results. Qualitative assessments may remain useful where financial quantification is limited. Findings can inform ORSA reviews, assessments of underwriting and investment risk, and business continuity planning. Documented assumptions and limitations should inform the choice of supervisory follow-up and further methodological work.

Support and assess transition planning. Where relevant to material risks and consistent with their mandates, supervisors may encourage insurers to address nature-related risks within transition planning and develop criteria for assessing those plans. Reviews may examine whether proposed actions, responsibilities, resources and milestones are connected to the insurer's risk exposures and business decisions. Supervisors may also assess whether implementation is progressing and whether climate-related actions create dependencies, trade-offs or additional risks for nature.

Apply measures and monitor responses. Drawing on findings from supervisory engagement and review in Phase 4, supervisors may consider whether further analysis, dialogue or other follow-up is warranted. Depending on the materiality of the findings, available evidence and domestic framework, possible responses may include recommendations, enhanced reporting or remediation plans. Where follow-up is undertaken, supervisors may specify the intended improvements, responsibilities, timelines and evidence needed to assess progress. More formal measures, including restrictions on particular activities or capital-related measures, may be considered where legally permitted and justified by the findings. The choice of response can take account of data and methodological limitations, alongside potential implications for policyholders and insurance availability.

Use findings for market-wide monitoring. Where relevant to their mandate, supervisors may aggregate information across insurers to assess concentrations, common vulnerabilities and potential spillovers. This can build on Phase 2's exposure mapping and inform further exercises, supervisory priorities and coordination with other authorities. Analysis should distinguish indicators of exposure from evidence of financial risk.

Review effectiveness and refine tools. Supervisors may establish proportionate review arrangements to assess whether tools identify relevant risks, produce useful information and support improvements in insurers' practices. Reviews may follow regular cycles or respond to material new supervisory, market or scientific evidence. Feedback from supervisory teams, insurers and technical partners can help identify

weaknesses or unnecessary burdens. Findings should support decisions to retain, adjust, simplify or discontinue tools and identify priorities for further research, data development or peer collaboration. Supervisors should document the reasons for changes, communicate them clearly and update implementation plans, feeding lessons back into earlier phases.

Existing Supervisory Levers

Supervisors can develop and apply nature-related tools through existing prudential frameworks and supervisory processes. Depending on their mandates and powers, relevant levers may include supervisory reporting and information requests, ORSA reviews, off-site analysis and on-site inspections, thematic reviews, scenario exercises and stress tests, supervisory guidance and follow-up measures. These processes can help supervisors assess material risks, identify weaknesses in insurers' risk management and monitor implementation of agreed or required improvements.

Tool refinement can be embedded in periodic policy or guidance reviews, annual supervisory planning, thematic follow-up and post-implementation evaluations. Supervisory colleges, internal working groups, data governance processes and staff training programmes can help translate findings into updated manuals, risk-assessment methodologies, reporting templates, internal benchmarks and workplans. Supervisors may also use existing domestic and international coordination arrangements, including networks such as SIF, to compare experience, share emerging practices and identify priorities for collaborative tool development or further analysis.

Enabling Conditions and Practical Outputs

From Enabling Conditions to Practical Outputs

Phase 5 develops, applies and refines supervisory tools.

These enablers help translate supervisory evidence into practical tools and improvements in insurers' risk management.

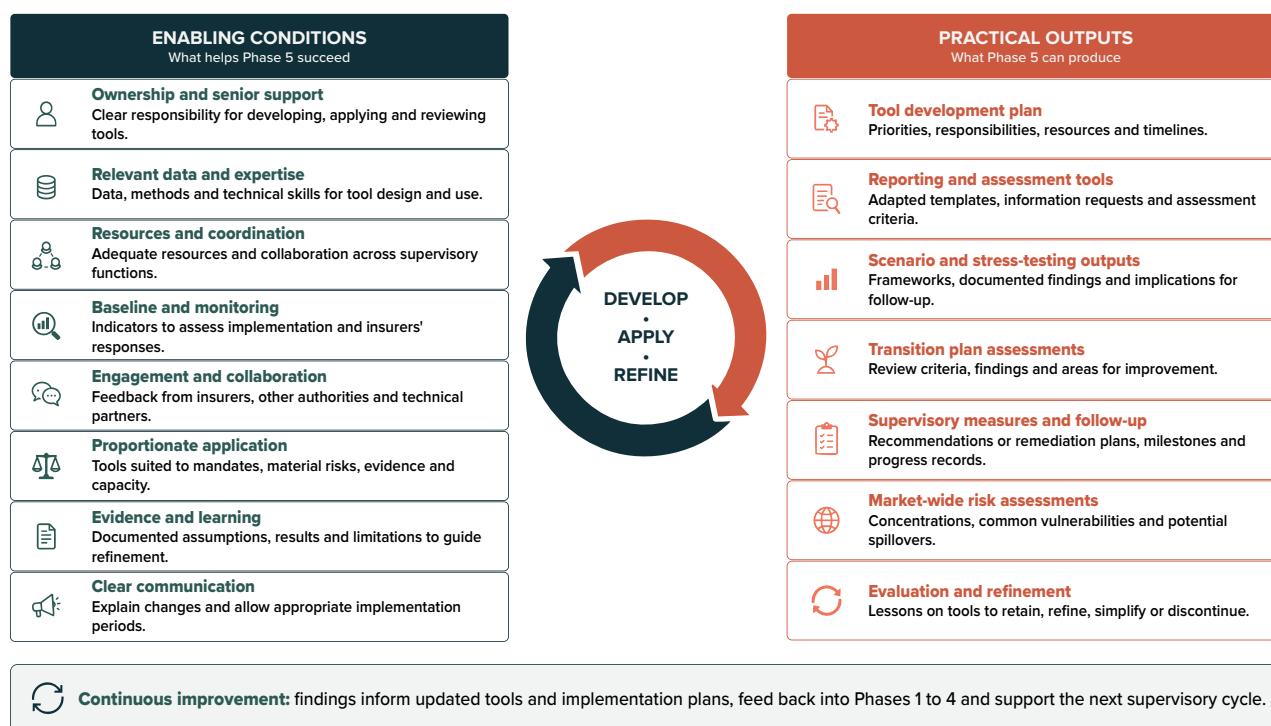


Figure 7: Phase 5 enabling conditions and practical outputs for developing, applying and refining supervisory tools. Source: Authors' own elaboration, informed by NGFS (2026) and the analysis and case studies in this report.

Phase 5 is more likely to be effective where responsibility for developing, applying and reviewing tools is clearly assigned and supported by senior-level commitment. Supervisors need access to relevant data, appropriate technical expertise and sufficient resources to design, test and use the selected tools. Coordination across prudential supervision, actuarial work, investments, sustainability, data, policy, legal and market conduct functions can help connect analytical findings to supervisory decisions. Documented methodologies, assumptions and limitations, together with a baseline and monitoring framework, support consistent application and assessment of whether tools produce useful information and contribute to improvements in insurers' risk management.

Engagement with insurers and other stakeholders can help supervisors test the clarity, feasibility and usefulness of tools, while collaboration with other authorities and technical partners can address gaps in data, methods and expertise. Tool development, application and review should be proportionate to the materiality of the risks, methodological maturity and available supervisory resources. Supervisors also need arrangements for monitoring insurers' responses and using findings to refine tools as evidence and experience develop. Changes should be evidence-based and communicated clearly, with appropriate implementation periods where needed to maintain predictability for regulated firms.

Supported by these enabling conditions, the indicative supervisory actions described above can generate the practical outputs shown in **Figure 7**: a prioritized plan for tool development and application, with assigned responsibilities; adapted reporting templates and assessment criteria; scenario or stress-testing frameworks and documented findings; criteria and findings from assessments of transition plans; supervisory recommendations or remediation plans with timelines and follow-up records; assessments of market-wide concentrations and vulnerabilities; and a lessons-learned review identifying tools to retain, refine, simplify or discontinue. The outputs selected should reflect the authority's mandate, priorities and capabilities. Findings can also inform updated guidance, supervisory manuals, training materials and implementation plans, feeding lessons back into Phases 1 to 4 and the next supervisory cycle.

EIOPA's experience in developing a supervisory approach to biodiversity risk

EIOPA's experience illustrates how existing supervisory information and analytical tools can be used to identify priorities for further tool development and refinement. Its reviews of insurers' practices, exposure analysis and stakeholder engagement have revealed gaps in data and methodologies, alongside priorities for improving models, scenarios and supervisory capacity.

How did EIOPA's approach evolve?

EIOPA's 2023 staff paper was the first step to develop supervisory expectations for nature-related risks and impacts. It examined transmission channels affecting insurers' assets and liabilities, insurers' impacts on nature, and the potential role of nature-based investment and underwriting, while identifying data, tools and scenarios as priorities for further work.

Building on a mandate associated with the revised Solvency II framework, EIOPA's 2025 report became the first European supervisory report mapping how insurers identify, measure and manage biodiversity risks. It reviewed ORSA practices, available methodologies and market experience, moving the work towards practical integration within the existing Solvency II risk management framework.

What evidence informed the work?

EIOPA combined supervisory review with portfolio analysis. Its assessment of more than 700 year-end 2023 ORSAs found that only around one in five undertakings mentioned biodiversity, with qualitative assessments generally remaining at an early stage. Analysis of approximately EUR 2.3 trillion in direct corporate bond and equity investments found that around 30% were invested in economic activities highly dependent on at least one ecosystem service, particularly water resources and flood and storm protection.

An attempted assessment of underwriting exposures revealed important limitations. Solvency II reporting classifies underwriting activity mainly by broad line of business and country of risk, without sufficient information on economic activities, insured perils or local ecosystem conditions. Although this prevented a meaningful financial risk assessment, it clarified the more granular data needed for future analysis.

How did engagement and market practice support learning?

EIOPA observed promising practices, including sector screening, geospatial analysis and ecosystem-service tools applied to agriculture, forestry, health, chemicals, real estate and property insurance. However, biodiversity risk was often treated primarily as a reputational issue, and underwriting assessment remained particularly underdeveloped.

Stakeholders emphasized the lack of mature quantitative methods and the difficulty of capturing local biodiversity risks through global metrics. EIOPA concluded that these constraints should not prevent action: proportionate qualitative assessments, targeted tools and plausible adverse scenarios can provide a practical starting point while data and methodologies develop.

How are the lessons informing future priorities?

EIOPA identified three broad areas for further work: stronger coordination among supervisors, policymakers and other stakeholders to improve data, models and scenarios; targeted initiatives addressing the climate-biodiversity nexus, including ecological inputs into catastrophe models and nature-based solutions for reducing protection gaps; and structured capacity building among supervisors and industry.

What can other supervisors learn?

The transferable lesson is to connect supervisory findings to concrete priorities for improving data, methods and tools. Supervisors can begin with qualitative and exposure-based approaches, use the limitations revealed to identify what needs further development, and test improvements within existing supervisory frameworks. Even an assessment that cannot quantify financial risk can identify data and methodological gaps and help prioritize further work.

Sources: European Insurance and Occupational Pensions Authority (EIOPA) (2023) EIOPA staff paper on nature-related risks and impacts for insurance. EIOPA-23/247, 29 March. Available at: <https://www.eiopa.europa.eu/system/files/2023-03/EIOPA%20Staff%20paper%20-%20Nature-related%20risks%20and%20impacts%20for%20insurance.pdf> (Accessed: 14 July 2026); EIOPA (2025) Report on biodiversity risk management by insurers. EIOPA-BoS-25-251, 30 June. Available at: https://www.eiopa.europa.eu/document/download/e85268dc-f9dc-4d9b-86f0-bb81b7725d0e_en?filename=EIOPA%20report%20on%20biodiversity%20risk%20management%20by%20insurers.pdf (Accessed: 14 July 2026); and EIOPA (2026) written responses to the SIF case-study questionnaire on nature-related risks and opportunities, provided to the Sustainable Insurance Forum.



Chapter 2

**Supervisory
rationale and
implementation
context**

Nature-related financial risks and, where relevant, opportunities matter to insurance supervisors where they affect insurers' risk profiles, market functioning or policyholder outcomes. This chapter sets out the rationale for supervisory action and considers the implementation challenges that make a phased and proportionate approach necessary.

Why Nature Matters for Insurance Supervision

Five direct drivers contribute to changes in nature: land and sea-use change, direct exploitation of organisms, climate change, pollution and invasive alien species³⁴. These drivers contribute to ecosystem degradation and biodiversity loss, which together with nature-related transition dynamics, can affect insurers through underwriting, claims, reserving, reinsurance, investments, operational resilience and business models. Their effects may also extend beyond individual firms by influencing the affordability and availability of insurance, protection gaps and wider resilience. **Figure 8** summarizes these pathways from direct drivers and changes in nature through physical and transition risk sources and the real economy, to insurers, insurance markets and policyholder outcomes.

Nature-related financial risks can affect insurers' risk profiles

Nature-related financial risks may affect both sides of an insurer's balance sheet. On the asset side, insurers may hold investments linked to sectors that depend heavily on ecosystem services, including agriculture, fisheries, forestry, food production, tourism, real estate, infrastructure, energy and manufacturing. They may also be exposed to companies facing transition pressures arising from biodiversity protection policies, land use rules, water restrictions, litigation or changing consumer and investor preferences. Existing supervisory analysis has identified significant nature-related dependencies within insurance investment portfolios. One assessment found that, of approximately EUR 2.3 trillion in insurers' direct corporate bond and equity investments by European Economic Area insurers, 30 percent was directed towards economic activities that depend highly on at least one ecosystem service³⁵. This indicates potentially material exposure, while data limitations continue to constrain comparable assessments of underwriting exposures.

On the liability side, ecosystem degradation may change the frequency, severity and geographic distribution of insured losses. These changes are relevant to how insurers identify, assess, price and manage risks across different lines of business³⁶. The degradation of wetlands, forests, mangroves, coral reefs, soils and watersheds can weaken natural protection against flooding, storms, erosion, drought, heat and water stress³⁷. These changes may affect claims experience, pricing assumptions, accumulation risk, reserving, reinsurance needs and the continued availability of coverage³⁸.

Assessment should also consider relevant exposures in life and health insurance, including potential effects on mortality, morbidity, disability and health claims. Long-tail and latent liabilities may require particular attention where claims emerge or develop over extended periods, including after the underlying exposure has ceased. The choice of methods, data and assessment horizons should reflect the characteristics of each line of business, including policy coverage, the duration of obligations and claims development patterns. A differentiated approach can help supervisors assess how the same nature-related risk driver

34 IPBES (2019) Summary for Policymakers of the Global Assessment Report on Biodiversity and Ecosystem Services. Bonn: Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services. Available at: https://files.ipbes.net/ipbes-web-prod-public-files/ipbes_7_10_add.1_en_1.pdf (Accessed: 8 September 2026)

35 EIOPA (2025) Report on biodiversity risk management by insurers. Frankfurt: European Insurance and Occupational Pensions Authority. Available at: https://www.eiopa.europa.eu/publications/report-biodiversity-risk-management-insurers_en (Accessed: 7 May 2026).

36 University of Cambridge Institute for Sustainability Leadership (CISL) (2022) Why nature matters: Nature-related risks and opportunities for insurance underwriting. Cambridge: University of Cambridge Institute for Sustainability Leadership. Available at: <https://www.cisl.cam.ac.uk/news-and-resources/publications/why-nature-matters-nature-related-risks-and-opportunities-insurance> (Accessed: 7 May 2026)

37 UNDP (2025) Nature for disaster risk reduction. New York: United Nations Development Programme. Available at: <https://www.undp.org/sites/g/files/zskgk326/files/2025-12/undp-nature-for-disaster-risk-reduction.pdf> (Accessed: 7 May 2026)

38 Möhr, C., Yong, J. and Zweimueller, M. (2025) Mind the climate-related protection gap: reinsurance pricing and underwriting considerations. FSI Insights on Policy Implementation No. 65. Basel: Bank for International Settlements.

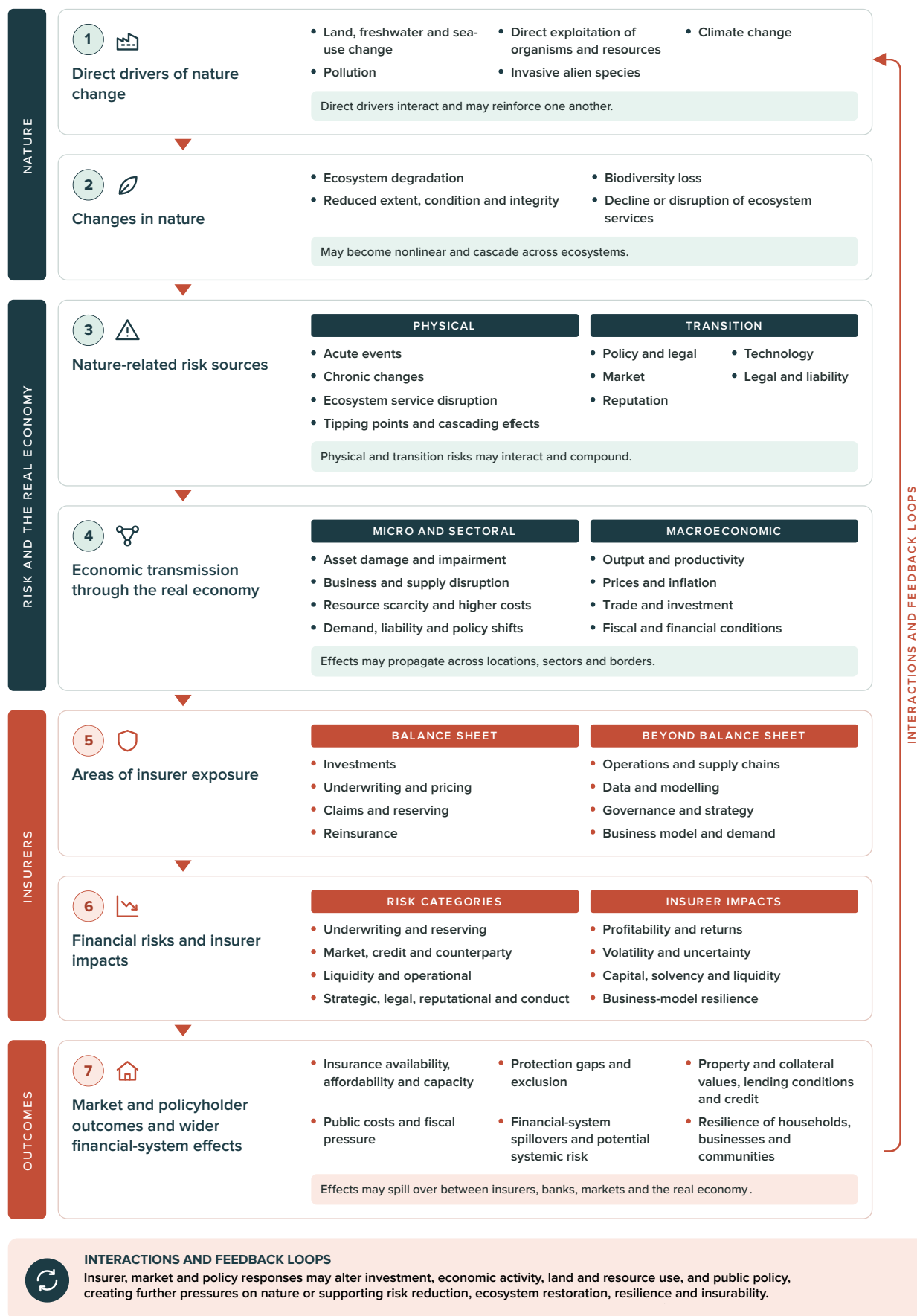


Figure 8: Transmission pathways linking changes in nature to financial risks for insurers, insurance markets and policyholder outcomes. Source: Adapted from SIF (2021), NGFS (2024), EIOPA (2025), UNEP FI (2025) and CISL (2022).

may have different implications across insurers' portfolios.

Nature-related financial risks may also affect operational resilience and business models. Disruption may arise where insurers' operations, service providers, policyholders or counterparties are exposed to ecosystem degradation, water stress, extreme heat, land degradation or other nature-related pressures. Over time, these risks may influence business strategy, product design, portfolio composition and reinsurance arrangements³⁹.

For supervisors, the key implication is that nature-related financial risk assessment should not be limited to assets and investment portfolios. Underwriting portfolios require a tailored approach that reflects the distinctive role of insurers in assuming, pricing and managing risk. Supervisors may therefore need to consider whether material nature-related dependencies, impacts and risk drivers are appropriately reflected in insurers' governance, risk management, underwriting, pricing, reserving, reinsurance and investment decisions⁴⁰.

Nature-related risks can affect market functioning and policyholder outcomes

Nature-related risks matter not only because they may affect individual insurers, but also because they may affect the functioning of insurance markets. Where ecosystem degradation increases physical risk, insurance may become more expensive, more restricted or less available, particularly in highly exposed locations. Correlated or increasingly concentrated losses may also reduce the effectiveness of traditional insurance mechanisms such as risk pooling and diversification, particularly where exposures span similar locations, sectors or ecosystems. This can widen protection gaps and leave households, businesses and communities with greater unprotected financial exposures, with implications for public finances, post-disaster recovery and wider resilience⁴¹. Uninsured losses do not disappear; they are absorbed by households, businesses and governments. This can reduce disposable income and investment, weaken business continuity, increase defaults and fiscal pressures, and depress property and collateral values. Where these effects are widespread or concentrated, they may create spillovers across the financial system, contribute to broader macro financial vulnerabilities and, in severe cases, affect financial stability⁴².

The connection is particularly direct where ecosystem services provide natural protection from hazards. The degradation of systems that reduce flood, storm, heat, erosion or water risks may increase claims and make risks more difficult to price. Conversely, measures that restore or protect ecosystems may support insurability and improve resilience over time, particularly where they are integrated into wider risk reduction strategies⁴³. An analysis of Florida flood insurance data for 2009 to 2022 found that greater protection from coastal habitats was associated with lower claims frequency from more frequent, less severe storm⁴⁴s. These findings relate to the locations, habitats and events studied. Their applicability to other settings or to losses from extreme events requires further assessment.

These market effects may not yet be fully recognized. A recent disclosure-based study found that companies anticipate substantial asset impairment from extreme weather risks, but few quantify the potential reduction in insurance availability for assets in high-risk locations. It also identified a gap between companies' expectations of higher insurance premiums and insurers' anticipated future claims liabilities. While

39 United Nations Environment Programme Finance Initiative (UNEP FI) (2024) Insuring a Resilient Nature-Positive Future: Priority Actions for Insurance. Geneva: UNEP FI. Available at: https://www.unepfi.org/wordpress/wp-content/uploads/2024/12/Insurance-for-Nature-Positive_Priority-Actions-for-Insurance.pdf (Accessed: 15 July 2026).

40 United Nations Environment Programme (2025) Rooted in Risk: Framing Nature-Related Assessments for Insurers. Geneva: United Nations Environment Programme. Available at: <https://www.unepfi.org/wordpress/wp-content/uploads/2025/06/Rooted-in-Risk-1.pdf> (Accessed: 29 April 2026).

41 WWF (2025) Tackling the Insurance Protection Gap: Focus on Advanced Economies. Gland: World Wide Fund for Nature. Available at: <https://www.fint.awsassets.panda.org/downloads/wwf-insurance-protection-gap-report-.pdf> (Accessed: 7 May 2026)

42 Ibid.

43 Kousky, C. and Burley, T. (2025) Nature for Insurance and Insurance for Nature. New York: Environmental Defense Fund

44 Swiss Re Institute (2025) Natural habitats can reduce flood losses. SRI Insights, February. Zurich: Swiss Re Institute.

the study focuses on extreme weather, its findings are relevant where ecosystem degradation amplifies physical hazards or weakens natural protection, suggesting that premium increases, coverage restrictions or insurer withdrawal may be greater than companies currently anticipate⁴⁵.

These dynamics are relevant to both prudential and market conduct supervision. From a prudential perspective, supervisors may consider whether insurers are adequately assessing, pricing, reserving and managing nature-related financial exposures. From a market conduct and consumer protection perspective, they may consider whether changes in coverage, exclusions, claims handling, product design or risk-based pricing affect the fair treatment of policyholders, particularly vulnerable groups and communities in nature-exposed locations. Supervisory attention to insurance availability, affordability and coverage conditions can therefore complement the assessment of risks to individual insurers.

Nature and climate risks are interconnected, but not identical

Figure 9 illustrates the relationships among nature, biodiversity, ecosystems, ecosystem services and climate, including the feedback loops through which climate change and ecosystem degradation can reinforce one another.

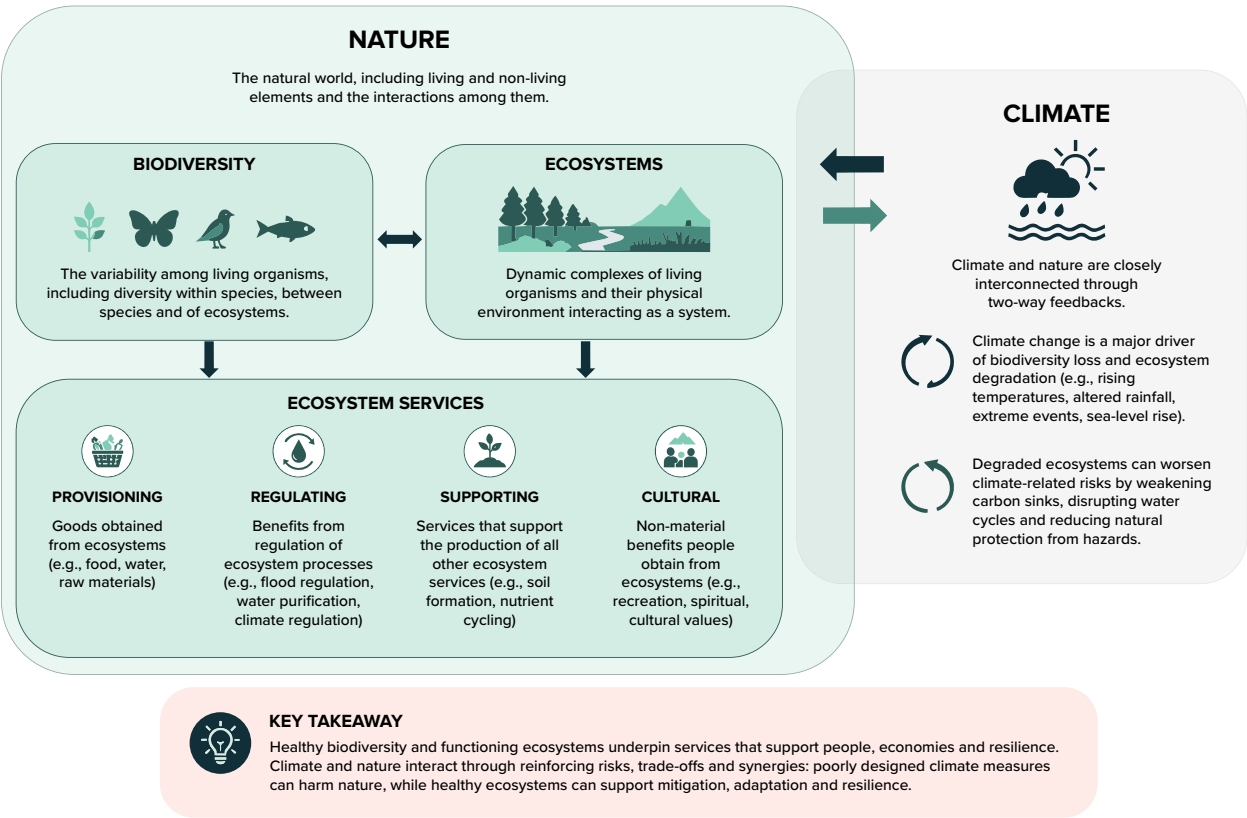


Figure 9: Relationship between nature, biodiversity, ecosystems, ecosystem services and climate. Source: Adapted from IPBES (n.d.), Convention on Biological Diversity (1992), Millennium Ecosystem Assessment (2005), IPBES-IPCC (2021) and NGFS (2024).

Nature and climate risks are closely connected. Climate change contributes to biodiversity loss and ecosystem degradation, while degraded ecosystems can intensify climate-related hazards by weakening carbon sinks, disrupting water cycles and reducing natural protection against floods, storms, coastal erosion, drought, wildfires and heat. These interactions can alter the severity, distribution and transmission of cli-

45 CDP (2026) Disconnected Defenses: Extreme Weather Risk Across Corporates, Cities and Financial Systems. London: CDP

mate-related physical risks⁴⁶. Climate mitigation and adaptation measures may also create nature-related risks where they place additional pressure on ecosystems, while protecting and restoring ecosystems can support climate mitigation and adaptation by strengthening carbon storage, natural hazard protection and wider resilience.

Climate risk supervision therefore provides a useful starting point. Supervisors can adapt existing approaches to governance, risk management, scenario analysis, data collection, supervisory dialogue and proportionality, particularly where climate-related risks have already been integrated into supervisory frameworks and tools⁴⁷.

Emerging supervisory practice illustrates how this can work. FINMA relied on its existing mandate for appropriate risk management and treated climate and other nature-related risks as drivers of established financial risk categories. It addressed both within the same supervisory circular and applied the same core expectations, rather than creating a separate framework for nature. The French insurance supervisor, the Autorité de contrôle prudentiel et de résolution (ACPR) similarly built on existing responsibilities and institutional structures, including its review of disclosures under Article 29 of the French Energy and Climate Law and engagement through its Climate and Sustainable Finance Commission, to examine biodiversity-related practices among insurers. These examples suggest that supervisors may be able to extend existing mandates, processes and climate-related capabilities to nature-related financial risks, where consistent with their legal and supervisory context.

Nature-related financial risks nevertheless require additional analysis because they are highly specific to locations, ecosystems and value chains, and cannot generally be represented by a single common metric. They may also transmit through local ecosystem conditions, sectoral dependencies, land use, water availability, biodiversity impacts and supply chain relationships⁴⁸. These characteristics mean that nature-related financial risks cannot be treated simply as an extension of climate risk.

A practical supervisory approach should therefore build on climate risk integration where useful, while giving additional attention to spatial data, ecosystem dependencies and local conditions. It should also consider nonlinear dynamics, cascading effects across interconnected ecosystems and ecological tipping points, together with the interaction between dependencies, impacts, risks and opportunities⁴⁹. For insurers, the central question is how these factors may alter hazard exposure, vulnerability, claims patterns, pricing assumptions, reinsurance needs, investment risks and policyholder outcomes.

Nature-related financial opportunities require supervisory attention

Nature-related financial opportunities may arise where insurers use their risk-carrying, risk-management and investment capabilities to respond to nature-related challenges while creating or strengthening commercially viable and resilient insurance markets. In this context, an opportunity involves positive outcomes for both the insurer and nature, through positive impacts on nature or the mitigation of negative impacts⁵⁰. These opportunities may include new products and markets, improved risk selection and pricing, reduced

46 Pörtner, H.O. et al. (2021) IPBES-IPCC co-sponsored workshop report on biodiversity and climate change. Bonn: IPBES and IPCC. Available at: https://ipcc.ch/site/assets/uploads/2021/07/IPBES_IPCC_WR_12_2020.pdf (Accessed: 1 May 2026).

47 IAIS (2025) Application Paper on the Supervision of Climate-related Risks in the Insurance Sector. Basel: International Association of Insurance Supervisors. Available at: <https://www.iais.org/uploads/2025/04/Application-Paper-on-the-supervision-of-climate-related-risks-in-the-insurance-sector.pdf> (Accessed: 1 May 2026)

48 NGFS (2024) Nature-related Financial Risks: a Conceptual Framework to Guide Action by Central Banks and Supervisors. Network for Greening the Financial System. Available at: <https://www.ngfs.net/system/files/import/ngfs/medias/documents/ngfs-conceptual-framework-nature-risks.pdf> (Accessed: 24 September 2026)

49 NGFS (2023) The Green Scorpion: the Macro-Criticality of Nature for Finance. NGFS Occasional Paper. Network for Greening the Financial System, particularly pp. 26-28. Available at: https://www.ngfs.net/sites/default/files/medias/documents/ngfs_occasional_paper_green-scorpion_macrocriticality_nature_for_finance.pdf (Accessed: 11 September 2026)

50 Taskforce on Nature-related Financial Disclosures (TNFD) (2025) Discussion Paper on Nature-related Opportunities. Version 1.0. Available at: https://tnfd.global/wp-content/uploads/2025/11/Discussion-paper-on-nature-related-opportunities_DIGITAL.pdf (Accessed: 8 September 2026)

losses through nature-based risk reduction, investments that strengthen resilience, and partnerships that mobilize financing for ecosystem protection and restoration. Opportunities may also arise where insurance and risk-management services enable businesses and sectors to transition towards less nature-damaging and more nature-positive practices. Insurance and risk finance can contribute through three complementary pathways: protecting ecosystems and species directly, managing financial losses arising from nature degradation, and recognizing how healthy ecosystems can reduce underlying physical risks and preserve insurability. Emerging examples include parametric insurance for coral reefs, mangroves and water funds, human-wildlife conflict insurance, and products that provide rapid funding for prevention, restoration and recovery⁵¹. **Box 4** provides a concrete example of how such a product can combine financial protection for rural communities with an intended conservation outcome. It also shows how insurance supervisors can support responsible innovation by assessing an unfamiliar product structure, clarifying its distinction from conventional cover and granting formal approval.

In 2025, the Government of Misiones, UNDP, Río Uruguay Seguros and local conservation organizations launched an insurance pilot designed to reduce retaliatory killings of jaguars while protecting rural livelihoods. The provincial government purchases the policy and provides it free of charge, without a deductible, to residents and farmers in the pilot area of Comandante Andresito. It covers verified losses of livestock and pets caused by jaguar predation. Following verification by conservation specialists, affected residents receive compensation and support to improve livestock management and prevent further incidents.

The initiative illustrates how insurance can respond simultaneously to financial loss and a conservation challenge. However, limited historical information on jaguar incidents and farm boundaries initially complicated the determination of premiums and insured amounts. Field visits and collaboration with local conservation organizations helped address these gaps, while reported claims are generating additional data with which to refine the product.

For supervisors, the example highlights the need to consider product design, pricing, claims verification, governance, policyholder outcomes and the credibility of stated conservation benefits. The product required consideration and formal approval by Argentina's insurance supervisor, including clarification of how its species-conservation purpose differed from conventional livestock insurance. As the initiative remains a pilot, its financial and biodiversity outcomes require continued monitoring.

Sources: Taskforce on Nature-related Financial Disclosures (TNFD) (2025) Case study on financial innovation, Box 6. Available at: <https://tnfd.global/wp-content/uploads/2025/12/Case-study-Financial-innovation-FINAL.pdf> (Accessed: 1 October 2026); and United Nations Development Programme Biodiversity Finance Initiative (UNDP-BIOFIN) (2025) 'World's first jaguar-protection insurance launched in Argentina by Government of Misiones with UNDP support', 22 May. Available at: <https://www.biofin.org/news-and-media/worlds-first-jaguar-protection-insurance-launched-argentina-government-misiones-undp/> (Accessed: 1 October 2026).

Box 4: *Jaguar protection insurance in Argentina*

These opportunities should not be presumed to deliver the outcomes claimed or to be free of material risks. Insurance is not a substitute for ecosystem protection or risk reduction. Supervisors may consider

51 UNDP (2026) Designing Insurance for Nature: A Practical Guide. New York: United Nations Development Programme.

whether nature-related claims are accurate, precise, adequately substantiated and aligned with the product’s actual features and the insurer’s internal processes⁵². Credible products and investment strategies may also require clear insurable interests and conservation objectives, reliable data and triggers, sustainable financing, appropriate safeguards, inclusive stakeholder participation, and monitoring of both financial performance and biodiversity outcomes⁵³. Poorly designed products may create moral hazard, reinforce harmful practices or fail to deliver the environmental benefits claimed.

From a supervisory perspective, the relevance of these opportunities depends on how they are designed, governed, priced, monitored and communicated. Nature-related products, investments and risk mitigation techniques may involve uncertainty around measurement, maintenance, long-term effectiveness, governance and accountability, particularly where nature-based solutions form part of risk reduction or risk transfer strategies⁵⁴. Supervisors may therefore consider whether insurers have the expertise, data, models and governance arrangements needed to assess these uncertainties, and whether underlying assumptions are appropriately reflected in pricing, reserving, disclosures and policyholder communications.

When assessing nature-based risk reduction, supervisors should distinguish reductions in average annual losses from changes in losses arising from infrequent, severe events. Lower average losses do not, by themselves, demonstrate a corresponding reduction in extreme losses or justify lower capital or reinsurance protection. Any assumed benefits for capital adequacy or reinsurance needs should be supported by assessment of performance across relevant event severities, taking account of ecosystem condition, uncertainty and the risks that remain.

Supervisory practice on nature-related risks is emerging, but uneven

Share of surveyed insurance regulators and supervisors reporting selected activities or gaps

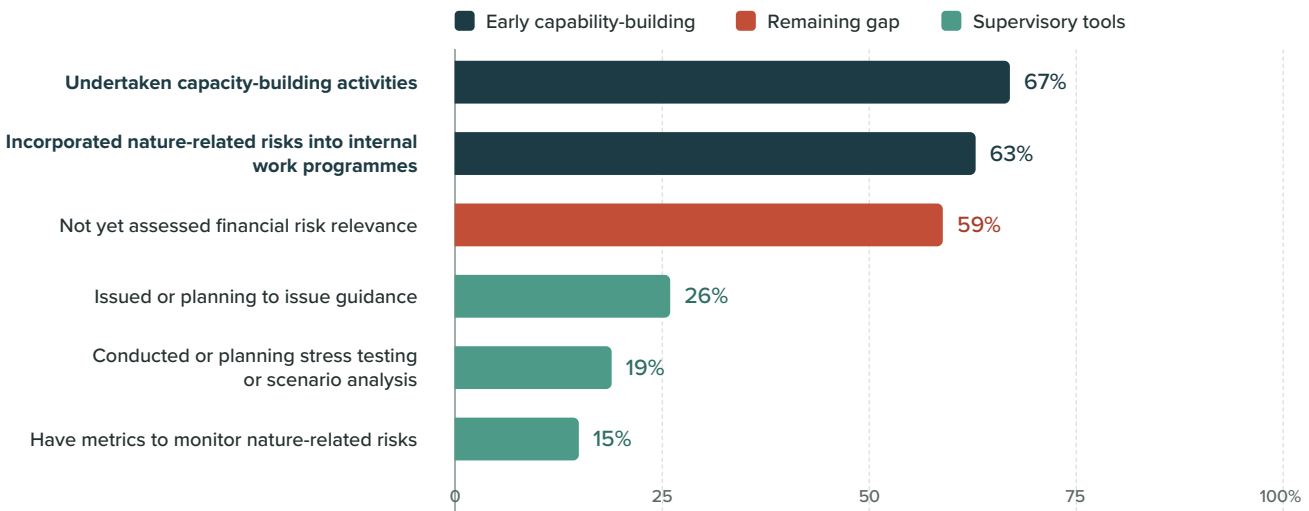


Figure 10: SIF survey findings on supervisory practice on nature-related risks. Source: SIF survey of 27 insurance regulators and supervisors (2024).

Unsupported claims about nature-positive products, investments or strategies may create reputational, conduct and greenwashing risks⁵⁵. Supervisory scrutiny can help ensure that nature-related financial opportunities are pursued consistently with sound risk management, policyholder protection and the insurer’s broader risk profile.

52 European Insurance and Occupational Pensions Authority (EIOPA) (2024) Opinion on sustainability claims and greenwashing in the insurance and pensions sectors. EIOPA-BoS-24/160. Frankfurt.

53 UNDP (2026) Designing Insurance for Nature: A Practical Guide. New York: United Nations Development Programme.

54 OECD (2021) Scaling up Nature-based Solutions to Tackle Water-related Climate Risks: Insights from Mexico and the United Kingdom. Paris: OECD Publishing. Available at: <https://doi.org/10.1787/736638c8-en> (Accessed: 7 May 2026)

55 RepRisk (2025) Where biodiversity risks grow, greenwashing follows. Zurich: RepRisk AG. Available at: <https://www.reprisk.com/insights/reports/where-biodiversity-risks-grow-greenwashing-follows/046603bd> (Accessed: 7 May 2026)

The Supervisory Challenge

International guidance has created a strong foundation for understanding nature-related financial risks, but translating concepts, tools and market-facing frameworks into day-to-day supervisory action remains challenging. The practical questions for insurance supervisors concern how to determine where these risks are material, how to engage with insurers and how to integrate the findings into existing supervisory processes in a proportionate and mandate-consistent manner.

Supervisors may need to clarify where nature fits within their mandates, which sectors or lines of business to prioritize, what information to request and how to interpret incomplete evidence. The existence of an assessment alone may therefore provide limited assurance; its scope, quality and integration into governance and risk management may also warrant supervisory attention. This is complicated by the location-specific, ecosystem-specific and value chain dependent characteristics of nature-related financial risks, as well as unfamiliar metrics, developing methodologies and the need for coordination across prudential, conduct, actuarial, investment, climate, sustainability and policy functions. The following sections examine how these practical constraints and differing levels of supervisory maturity support a phased and learning-oriented approach.

Supervisory practice is emerging but uneven

Supervisory work on nature-related financial risks remains at an early stage, although many SIF members have begun building capability. As shown in **Figure 10**, a 2024 SIF survey of 27 insurance regulators and supervisors found that 63 percent had incorporated nature-related risks into their internal work programmes and 67 percent had undertaken capacity-building activities. However, 59 percent had not yet assessed whether nature-related risks posed a relevant financial risk, only 15 percent had developed monitoring metrics, 26 percent had issued or planned to issue guidance, and 19 percent had conducted or planned stress testing or scenario analysis.

Respondents identified several barriers to further progress, including limited data, unfamiliar tools and methods, insufficient awareness and internal technical capacity, and the lower priority given to nature compared with climate risks. Other challenges included limited examples of supervisory guidance, competing priorities, mandate constraints and a lack of senior management support.

A broader 2025 assessment of insurance supervision across 46 jurisdictions points to a similar pattern⁵⁶. It found that wider environmental and nature-related considerations remained less integrated than climate-related considerations, with only 10 assessed jurisdictions meeting more than half of the environmental criteria. Across combined climate and environmental indicators, average fulfilment stood at 52 percent for basic measures, compared with 35 percent for intermediate measures and 24 percent for advanced measures. This suggests that foundational expectations are emerging, but more developed integration into areas such as own risk and solvency assessment, scenario analysis, pricing and capital requirements remains limited and uneven.

These findings show that supervisors are starting from different levels of capability and experience. A practical roadmap must therefore accommodate multiple entry points and allow supervisory approaches to deepen as knowledge, data, methodologies and institutional capacity develop.

From International Guidance to Supervisory Implementation

International frameworks and guidance provide supervisors with a strong conceptual foundation, a shared vocabulary and a growing range of assessment approaches, analytical tools and insurance-specific re-

⁵⁶ WWF (2025) 2025 SUSREG Annual Report: An Assessment of Sustainable Financial Regulations and Central Bank Activities. Available at: <https://wwfint.awsassets.panda.org/downloads/2025-susreg-annual-report.pdf> (Accessed: 9 September 2026).

sources. As discussed in Chapter 1, this means that authorities do not need to develop their understanding of nature-related financial risks or possible supervisory approaches entirely from first principles. These resources can support exposure identification, materiality assessment, scenario analysis, supervisory dialogue and the development of expectations.

However, international guidance does not provide a ready-made supervisory programme for an individual jurisdiction. It does not determine which nature-related risks are financially material within a particular market, how those risks fit within the supervisor's legal mandate, which sectors, locations or lines of business should be prioritized, or what information should be requested from insurers. Nor does it resolve how analytical approaches should be adapted to the distinct characteristics of investments and underwriting, how incomplete or exploratory findings should be interpreted, or when those findings warrant stronger supervisory attention.

The remaining challenge is therefore one of supervisory interpretation and implementation. Authorities must select and adapt relevant approaches according to their mandates, market structures, material exposures, available data and institutional capacity. They must also determine how nature-related considerations can be incorporated into existing supervisory processes without creating unnecessary parallel frameworks. This implementation gap, together with differing levels of supervisory and market maturity, supports the need for a phased, proportionate and learning-oriented approach.

Why a Phased Approach is Needed

Supervisors differ in their mandates, resources, market structures, exposure to nature-related risks and levels of experience. Data and methodologies are also still developing. Attempting to establish a comprehensive supervisory framework at the outset may therefore be neither practical nor necessary. At the same time, waiting for complete data or fully developed methodologies may delay supervisory action and insurers' management of material nature-related financial risks. A phased approach allows supervisors to begin with feasible actions, build an evidence base and progressively deepen their response.

Sequencing helps supervisors build internal capacity, identify priority exposures, clarify expectations, engage with insurers and develop, apply and refine supervisory tools. The phases should not be treated as a rigid or strictly linear maturity model. They may overlap, proceed in parallel or be revisited as new evidence emerges, and supervisors may begin at the point most appropriate to their circumstances.

The roadmap is guided by practicality, mandate sensitivity, flexibility, learning by doing and complementarity with international work. It supports the use of existing mandates, supervisory processes and tools to move from awareness to action and to strengthen supervisory practice over time.

Conclusion: From Awareness to Supervisory Practice

Nature-related financial risks are becoming increasingly relevant to insurance supervision. Ecosystem degradation, biodiversity loss, water stress, land degradation and related transition dynamics can affect insurers through investments, underwriting, claims, reserving, reinsurance, and operations, and may influence business strategy, product design and portfolio composition. Their consequences may also extend to insurance availability, affordability, protection gaps and the resilience of policyholders and communities.

The challenge for supervisors is to translate this broad relevance into action that is focused on material financial risks and consistent with their mandates. This does not necessarily require a separate nature-specific supervisory framework. Existing mandates, risk categories and supervisory processes can provide practical entry points, including governance and risk-management reviews, ORSA processes, investment and underwriting oversight, supervisory reporting, thematic assessments and engagement with insurers.

The roadmap provides a five-phase pathway for doing so. Building internal capability supports the identification of priority exposures and the clarification of supervisory expectations. Engagement and review help supervisors assess insurers' practices and determine appropriate follow-up. Developing, applying and refining supervisory tools supports these activities and strengthens insurers' risk management. Evidence from implementation informs improvements across the roadmap, with phases proceeding in parallel or being revisited as circumstances change.

Supervisors will begin from different positions. Mandates, market structures, resources, data availability and the maturity of insurer practices vary across jurisdictions. A proportionate approach may therefore range from internal learning and initial exposure screening to formal expectations, thematic reviews or integration into routine supervisory risk assessment. The appropriate depth and pace of action should reflect the materiality of the risks and the authority's institutional context.

Data and methodological limitations remain significant, particularly for underwriting exposures, location-specific analysis and the translation of nature-related dependencies and impacts into financial risk. These limitations should shape how results are interpreted and communicated, but they need not prevent work from beginning. Qualitative assessment, proxy indicators and exploratory scenarios can provide useful early signals when assumptions and limitations are transparent. An assessment may also be valuable where its principal result is a clearer understanding of data gaps, methodological constraints or priorities for further work.

The case studies included in this roadmap demonstrate that there is no single entry point for supervisory action. Authorities and organizations have begun through capacity building, research, exposure analysis, existing supervisory expectations, reviews of insurer practices, stakeholder engagement and iterative learning. Their experience shows that practical progress can be made by adapting existing capabilities to local mandates, market conditions and supervisory objectives.

Nature-related financial opportunities also require careful supervisory consideration where they are relevant to prudential soundness, market conduct or policyholder protection. Products, investments and risk-finance mechanisms should not be presumed to deliver positive outcomes solely because they carry a nature-related label. Their governance, pricing, risk management, disclosures and claimed benefits should be assessed with the same discipline applied to other material business activities.

The purpose of the roadmap is therefore not to prescribe a final supervisory model. It is to help authorities move from awareness towards informed and proportionate action. By beginning with available evidence, using existing supervisory levers, documenting limitations and learning from implementation, supervisors

can progressively integrate material nature-related financial risks into routine practice.

These priorities build on SIF's work to date. The 2021 scoping study established a baseline and described how nature-related risks may transmit through insurers' assets, liabilities and wider insurance markets. NATURE-INSURE has since supported capacity building and practical learning among supervisors, while this roadmap translates those foundations into a phased approach that authorities can adapt to their mandates, markets and capabilities⁵⁷.

The next step is implementation. SIF will work with members that are ready to begin applying, or to deepen their application of, the roadmap. Support will focus on peer exchange, practical implementation assistance and learning from early supervisory experience. Lessons from participating authorities can inform further tools, case studies and refinements to the roadmap, helping the wider membership move from awareness and assessment towards proportionate supervisory action.

⁵⁷ UNDP (2025) UNDP, TNFD, and KPMG partner to launch 'NATURE-INSURE', 27 June. Available at: <https://www.undp.org/nature/press-releases/undp-tnfd-and-kpmg-partner-launch-nature-insure> (Accessed: 23 July 2026).



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