

Part 1 of the PSI Nature Uncovered Series
Making Nature Visible and
Actionable for Insurers

UN 
environment
programme

finance
initiative

 Principles for
Sustainable Insurance

Rooted in Risk

Framing nature-related
assessments for insurers

June 2025



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Endorsed by the UN Secretary-General and insurance industry CEOs, the Principles for Sustainable Insurance (PSI) serve as a global framework for the insurance industry to address environmental, social and governance risks and opportunities—and a global initiative to strengthen the insurance industry's contribution as risk managers, (re)insurers and investors to building resilient, inclusive and sustainable communities and economies on a healthy planet.

Developed by the UN Environment Programme's Finance Initiative, the PSI was launched at the 2012 UN Conference on Sustainable Development (Rio+20) and has led to the largest collaborative initiative between the UN and the insurance industry. The PSI represents the most extensive global network of insurance and stakeholder organizations committed to addressing sustainability challenges and opportunities.

Learn more at: unepfi.org/psi

"The Principles for Sustainable Insurance provide a global roadmap to develop and expand the innovative risk management and insurance solutions that we need to promote renewable energy, clean water, food security, sustainable cities and disaster-resilient communities."

**UN Secretary-General
(PSI launch, 2012 UN Conference on Sustainable Development)**

About the PSI Working Group for Nature

Building on the PSI's long-standing work in addressing nature-related issues over the years, the PSI Working Group for Nature (WGN) was established in May 2024. The working group is a multistakeholder platform involving insurers, reinsurers, brokers, nature finance initiatives, environmental organizations, academic institutions, insurance regulators and supervisors, and insurance associations, among others.

The working group aims to support the industry and key stakeholders in advancing risk management, underwriting and insurance strategies, approaches, practices, products, services and solutions that address nature-related dependencies, impacts, risks and opportunities (DIROs) in order to contribute to achieving the mission of the Kunming-Montreal Global Biodiversity Framework (GBF) to halt and reverse nature loss by 2030, and its vision of a world living in harmony with nature by 2050. It gathers emerging practices and guides on methods available to support individual organizations in their own sustainable strategic design and development.

Learn more at: unepfi.org/psi-nature



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United Nations Environment Programme Finance Initiative

Project lead and chief editor Butch Bacani Head of Insurance & PSI Programme Leader	Project manager and lead author Verena Kraus Senior Manager, Nature team
Project co-lead & contributing author Romie Goedicke Co-lead, Nature team	Publications and communications lead Emily Banzet Communications Lead, Insurance
Counsel and review Laura Lightbody Governance & Legal Counsel	Project support Lilia Tchemchirova Programme Manager, Insurance
	Ylann Karmous Consultant, Nature team

Led by the UNEP FI team and the Co-Chairs of the project *Approaches for Nature-Related Assessments* under the PSI Working Group for Nature, the working group was primarily responsible for providing input to and reviewing this report. The working group is made up of representatives from PSI member organizations and technical partners with expert knowledge on nature and insurance.

PSI Working Group for Nature (WGN)

Co-Chairs for the project: *Approaches for Nature-Related Assessments*

Esther Egeter a.s.r (NL)	Aleena Dewji IAG (AU)
------------------------------------	---------------------------------



Member organizations for the project: *Approaches for Nature-Related Assessments*

Achmea Margot Hol	ICEA LION Group Caroline Wakesho Sonje, Griffin Onyim, Becton Nyakango, Theresiah Kasive
Aegon Carmel Lev	Insurance Group Australia Aleena Dewji
Aon Lauren Clarke Wiest	Iris Global
Aviva Thomas Viegas, Leanne Bradford, Ana Hamilton, Laura Fuentes de Maria, Amy Su, Tara Willoughby	MS&AD Hiroko Urashima, Ayako Yamaguchi, Kozou Tsujimoto, Kensuke Takatsuki
a.s.r. Esther Egeter	Pelayo Vida
AXA Aurélie Fallon-Saint Lo	Santam Limited Zimkita Matshaka, Thabiso Rulashe
Beneva Christelle Lim-Severe, Sandrine Bourassa	Santalucía
Crédit Agricole Assurances Mathilde Auffret	Seguros Bolívar Orlando José De La Ossa Vergara
Fidelidade Matteo Cola, Augusto Tomé Pires Fernandes Pedroso	Suramericana S.A. Luisa Fernanda Vallejo
Gard AS Björn Alfthan	TD Insurance Huma Pabani, Stephane Côté
Gjensidige Forsikring ASA Ajla Alagic, Ida Aronsen, Jørgen jetil Knudsen, Bente Sverdrup, Karoline Weidemann	Unicorp Vida
	Unipol Assicurazioni Marjorie Breyton

In producing this report, the PSI Working Group for Nature received input from individual experts from key stakeholders in the insurance ecosystem

Nancy Xie Australian Prudential Regulation Authority	Claudia Gray ShareAction
Dr. Corinne Martin University of Cambridge Institute for Sustainability Leadership	Alessandra Melis, Tom Hegarty Taskforce on Nature-related Financial Disclosures
Jurjen Boog, Pieter van Dusseldorp Deloitte Netherlands	Sebastian Bekker UN Environment Programme World Conservation Monitoring Centre
Élodie Chêne, Natalia Abril Bonilla Global Reporting Initiative	Regula Hess, Amandine Favier WWF Switzerland
Ange Nichols Insurance Council of Australia	Nicolas Poolen WWF International
Wijnand Broer Partnership for Biodiversity Accounting Financials	



Abbreviations and acronyms

ACT-D	Assess, Commit, Transform and Disclose
CBD	Convention on Biological Diversity
CC	Capitals Coalition
CICES	Common International Classification of Ecosystem Services
CISL	Cambridge Institute for Sustainability Leadership
CSRD	Corporate Sustainability Reporting Directive
DIROs	Dependencies, impacts, risks and opportunities
DSI	Digital sequencing information
EC	European Commission
EFRAG	Formerly the European Financial Reporting Advisory Group
EIOPA	European Insurance and Occupational Pensions Authority
ENCORE	Exploring Natural Capital Opportunities, Risks and Exposure
ESG	Environmental, social, and governance
ESRS	European Sustainability Reporting Standards
EU	The European Union
FIT	Forum for Insurance Transition to Net Zero
GBF	Kunming-Montreal Global Biodiversity Framework
GHG	Greenhouse gas
GRI	Global Reporting Initiative
IBAT	Integrated Biodiversity Assessment Tool
IFRS	International Financial Reporting Standards
IPBES	Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services
IPCC	Intergovernmental Panel on Climate Change
ISO	International Organization for Standardization
ISSB	International Sustainability Standards Board
IUU	Illegal, Unreported and Unregulated (Fishing)
IUCN	International Union for Conservation of Nature and Natural Resources
KBA	Key Biodiversity Area
LEAP	Locate, evaluate, assess and prepare
LoB	Line of Business
NbS	Nature-based solutions
NBSAP	National Biodiversity Strategies and Action Plan



NGFS	Network for Greening the Financial System
ORSA	Own risk and solvency assessment
PBAF	Partnership for Biodiversity Accounting Financials
PCAF	Partnership for Carbon Accounting Financials
PSI	Principles for Sustainable Insurance
SBTN	Science Based Targets Network
SEEA EA	System of Environmental-Economic Accounting—Ecosystem Accounting
TCFD	Taskforce on Climate-related Financial Disclosures
TNFD	Taskforce on Nature-related Financial Disclosures
GFI	Green Finance Institute
UN	United Nations
UNEP	United Nations Environment Programme
UNEP FI	United Nations Environment Programme Finance Initiative
UNEP-WCMC	United Nations Environment Programme World Conservation Monitoring Centre
UNESCO	United Nations Educational, Scientific and Cultural Organization
WBCSD	World Business Council for Sustainable Development
WEF	World Economic Forum
WGN	PSI Working Group for Nature
WRI	World Resources Institute



Contents

Acknowledgements	v
Abbreviations and acronyms	vii
Executive summary	x
How to navigate the report	xvi
1. Introduction	1
1.1 Purpose	1
1.2 Context	1
1.3 Scope	3
2. The need for insurance-specific approaches to nature-related assessments	5
2.1 Nature-related issues materializing in insurance underwriting portfolios	5
2.2 Characteristics shaping nature-related assessments in insurance underwriting portfolios	6
2.2.1 Non-life insurance business	7
2.2.2 Life & health insurance business	10
2.3 The missing link: Tailored guidance for insurance underwriting portfolios	11
3. Fundamentals: Nature-related dependencies, impacts, risks and opportunities in insurance underwriting portfolios	13
3.1 Understanding the relationship between nature and insurance underwriting portfolios	13
3.2 Nature-related dependencies in insurance underwriting portfolios	14
3.2.1 Non-life insurance business	14
3.2.2 Life & health insurance business	22
3.3 Nature-related impacts in insurance underwriting portfolios	29
3.3.1 Non-life insurance business	29
3.3.2 Life & health insurance business	44
3.3.3 Considerations for environmental materiality	50
3.4 Nature-related risks in insurance underwriting portfolios	51
3.4.1 Non-life insurance business	51
3.4.2 Life & health insurance business	67
3.5 Nature-related opportunities in insurance underwriting portfolios	77
3.5.1 Non-life insurance business	77
3.5.2 Life & health insurance business	79
3.5.3 Considerations for financial materiality	81
Annex	82

Executive summary

The Nature Uncovered for Insurers Series

This report, *Rooted in Risk: Framing Nature-Related Assessments for Insurers*, is the first part of the “Nature Uncovered for Insurers Series” of the PSI Working Group for Nature (WGN).¹

The series aims to address a critical gap in guidance on nature-related assessments that is tailored for insurance underwriting portfolios. It seeks to contribute to building knowledge and accelerating the use of such assessments within the global insurance industry, spanning non-life and life & health lines of insurance business.

The accelerating pace of nature loss and the adoption of the Kunming-Montreal Global Biodiversity Framework (GBF) has increased expectations for insurers to align with the GBF’s mission and vision—halting and reversing nature loss by 2030 and living in harmony with nature by 2050 (often associated with the concept of “nature-positive”²)—and contributing to a resilient future (as defined in the “PSI Nature Action Guide”).^{3 4} At the same time, risks arising from nature loss are already materializing in insurance underwriting portfolios. For insurers to contribute meaningfully to a nature-positive and resilient future—and to manage their own financial risks—it is important to understand nature-related dependencies, impacts, risks, and opportunities (collectively referred to as DIROs or “nature-related issues”) across their underwriting portfolios and business relationships.

The intention of the report series is to equip insurers with the necessary foundations to undertake their own nature-related assessments—enabling them to derive strategic responses aligned with a nature-positive and resilient future, integrate nature considerations into business processes and decision-making, enhance risk management capabilities, and inform nature-related disclosures.

While this first part of the series sets out a conceptual framework for understanding nature-related issues within insurance underwriting portfolios, the second part will focus on the practical application of nature-related assessments.

Aims and scope of the report

The aim of this report is to support insurers in developing a foundational understanding of nature-related DIROs within their underwriting portfolios. It does so by interpreting and applying established nature-related definitions and concepts for underwriting portfolios.

It contextualizes existing nature-related approaches across both non-life and life & health insurance business models and supports insurers in identifying which parts of their value chain may be exposed to nature-related issues and how these issues may materialize across different lines of business (LoBs).

Recognizing the distinct characteristics of underwriting portfolios, the report underscores the need for insurance-specific guidance. It aims to provide a technical basis to help insurers prepare for and conduct their own nature-related assessments, thereby strengthening their ability to identify priority areas for action and derive substantiated, appropriate and proportionate responses aligned with a nature-positive and resilient future.⁵

The report also seeks to serve as a foundation for the development of future methods and approaches tailored to underwriting portfolios. It considers the distinctive characteristics of non-life and life & health insurance business separately. It outlines how nature-related DIROs are relevant for stakeholders in the insurance value chain, reflective of the insurer’s role as a risk manager and risk carrier—covering downstream customers and upstream service providers. The report excludes insurance intermediaries, investment activities and own operations, except where service providers are owned by the insurer. A high-level illustration of the scope of the report is provided below.

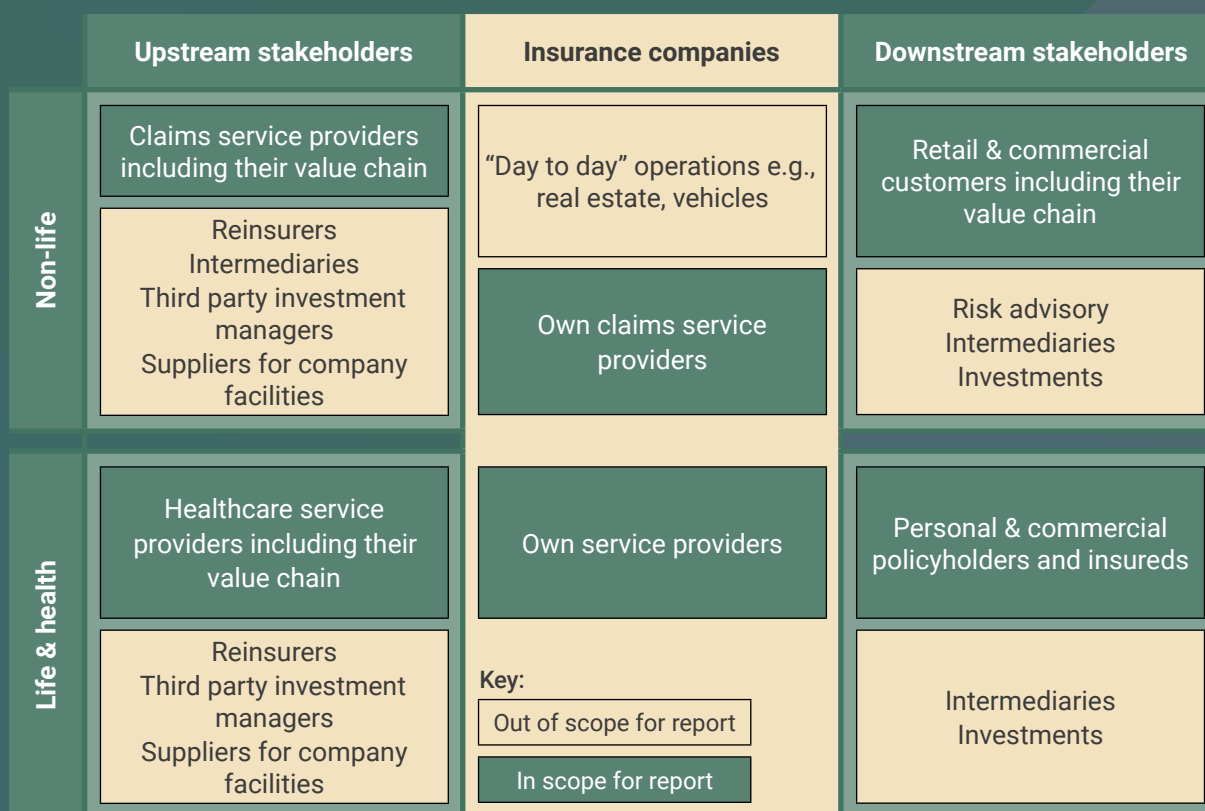


Figure 1: Illustrative view of the insurance value chain in scope (simplified version)

The need for insurance-specific approaches for assessing nature-related DIROs

Nature-related issues are already materializing in insurance underwriting portfolios. While insurers may appear to have more experience with what is usually viewed as acute climate-related physical risks—such as storms, wildfires, and floods—many of these should, in fact, be also considered as nature-related physical risks. Although climate change may be the driver, the resulting loss or damage to physical assets or impact to human life or health often stems from compromised natural systems and the decline of ecosystem services on which businesses and people depend. In other cases, the degradation of ecosystems exacerbates climate-related physical risks, creating compounding effects. As extreme weather events become more frequent and intensify and ecosystems are further degraded, natural systems lose their ability to buffer hazards and absorb carbon dioxide, and insurability can become increasingly constrained, especially in highly exposed and vulnerable areas.⁶

Insurers may be exposed to nature-related risks that are not yet fully reflected in their risk assessment frameworks or models. This can potentially lead to underestimation of the risks they are carrying and limiting their ability to manage increasing nature-related risks—factors that can result in financial risks to an insurer.

Given the global economy's significant reliance on ecosystems and the services they provide, escalating nature loss and the risk of crossing planetary tipping points can potentially lead not only to a loss of business for insurers—for example, in cases when insured companies cease operations and assets become stranded—but also to the weakening of risk diversification mechanisms. These developments could affect the financial stability of insurers and have broader economic and societal implications, with potential feedback loops between the wider financial sector and the real economy.

Economic activities that are both dependent on nature and contribute to nature loss can be enabled by insurance—creating a feedback loop that heightens insurers' own exposure to nature-related risk. It is important for insurers to understand which activities they are enabling, and how they are doing so, in order to derive informed and appropriate actions that contribute to halting and reversing nature loss. At the same time, as businesses become more aware of the need to transition and strengthen their resilience, opportunities are also emerging for insurers to better understand associated transition risks and provide support through risk management and risk transfer solutions. The ability to assess nature-related risks is key to uncovering these opportunities.

Insurers have distinct characteristics compared to other actors in the financial sector. Unlike investors or lenders, insurers do not finance economic activities or hold ownership stakes but assume risk directly in exchange for premiums. This makes the translation of nature-related issues for insurers highly dependent on the nature of insured assets, activities, and risks. Assessing these nature-related issues requires tailored methods that reflect the risk management and risk transfer functions of insurance and the unique nature of the insurance value chain.

Across both non-life and life & health insurance business, nature-related issues can materialize in different ways. For non-life, nature-related risks may relate to property damage, business interruption, liability, or non-payments. For life & health, nature-related risks can affect life expectancy, human health outcomes, or access to natural inputs for medical services—shaping mortality, morbidity and hospitalization rates. These differences underscore the need to reflect segment- and product-level nuances when conducting nature-related assessments. The insurance value chain itself is complex, involving multiple tiers of service providers and intermediaries. Dependencies and impacts may propagate along the value chain—often in indirect or cumulative ways—requiring a more comprehensive approach for nature-related assessments.

While nature-related approaches have progressed across the wider financial sector, guidance tailored to insurance underwriting portfolios remains limited. Existing frameworks are often sector-agnostic or focus primarily on investment and lending portfolios. The absence of dedicated methods for underwriting portfolios creates barriers for insurers seeking to understand how their underwriting portfolios contribute to, or are exposed to, nature-related issues. Without such guidance, insurers may require more time to build the methods, institutional readiness, and operational capacity needed to effectively identify and respond to nature-related DIROs.

To address this gap, the PSI Working Group for Nature (WGN) is advancing tailored guidance to support insurers in implementing nature-related assessments within their underwriting portfolios.

Summary: Nature-related DIROs for insurance underwriting portfolios

Businesses, individuals, economies and societies both depend on and impact nature, giving rise to nature-related risks and opportunities.⁷ Insurers are exposed to these DIROs through the insurance value chain and the actors and their activities involved. This includes the goods and services provided by upstream service providers, as well as the insured assets, processes, liabilities, and insured human health and life within downstream underwriting portfolios.

A. Nature-related DIROs: Non-life insurance business

- Exposure to nature-related issues can occur across the insurance value chain, both directly and indirectly. This report focuses on indirect exposure, arising through upstream and downstream actors such as service providers, customers, and insured assets and activities. Nature-related DIROs may emerge through insured activities, insured risks or loss events, and the associated claims processes.
- The way DIROs manifest varies by line of business, as each line covers different types of assets, activities, liabilities, and contractual obligations, resulting in distinct interactions with nature.
- Nature loss has the potential to give rise to systemic risks—where regional or global tipping points are reached—leading to regime shifts or ecosystem collapse. This can threaten risk pooling and undermine diversification mechanisms, with potential implications not only for the availability and affordability of insurance, but also for the financial stability of individual insurers and the insurance industry as a whole.

Dependencies

- **The non-life insurance value chain depends on ecosystem services** through both upstream (e.g., claims service providers and their suppliers) and downstream (e.g., customers, insured assets and activities)—**indirect nature-related dependencies**.
- Dependencies should be **considered across three dimensions**: (1) reliance of insured assets and activities on ecosystem services to function, (2) reliance of insured risks on ecosystem services to reduce hazards and damages or losses, and (3) reliance of the claims process on ecosystem services for materials and services.
- The assessment of **dependencies may vary by line of business**, particularly between products with a more direct interface with nature (e.g., those covering physical assets or business continuity) and those with a less direct interface (e.g., coverage of liabilities).
- **Understanding dependencies can support**: (1) identification of insurers' exposure to business risks, (2) identification of risk transfer solutions to build resilience, (3) integration of ecosystem condition as physical hazard in risk assessments, and (4) identification of opportunities for physical hazard reduction.

Impacts

- **Non-life insurance enables economic activities** that interact with nature, contributing to nature-related impacts across the value chain both upstream (e.g., claims service providers) and downstream (e.g., insured assets and activities)—**indirect nature-related impacts**.
- **Insurers should assess their full value chain** for actual and potential nature-related impacts—whether caused by the insurer, contributed to, or linked to their products or business relationships.
- **Nature-related impacts typically arise across three dimensions**: (1) insured activities and assets, (2) insured loss events, and (3) the claims process. Nature-related impacts may vary by line of business and type of assets and activities insured.
- The insurance value chain can contribute to drivers of nature change, **positively or negatively** through insured activities and assets, loss events, and the claims process, which can result in indirect negative, avoided negative, remediated negative or positive impact on nature.
- The aim of these considerations is to **improve insurers' understanding of impacts** to inform where they can take substantiated, proportionate and appropriate actions to halt and reverse nature loss.

Risks

- Non-life insurers are exposed to nature-related **physical, transition, and systemic risks (“sources of risk”)** which can materialize in traditional **financial risk categories**.
- For **physical risks**, risk is a function of hazard, exposure, and vulnerability. Disrupted natural systems and changes in ecosystem condition can lead to nature-related hazards, which increase the frequency or severity of insured perils, or give rise to new perils.
- These risks are especially relevant for lines of business covering **physical events**, including property insurance, other lines covering physical assets, business interruption and agriculture insurance.
- If such hazards are insured, ecosystem degradation can increase claims frequency and severity, representing **underwriting risk**. **Strategic risk** may include loss of insurable business.
- **Transition risks** can be prompted by **policy, market, technological, reputational changes**. These may affect businesses and supply chains, or lead to **legal claims and liabilities**, influencing insured perils or creating new ones.
- If such risks are insured, external responses to the nature crisis may increase claims frequency and severity, representing **underwriting risk**. Financial risks may arise **independently of insured risk**, via the insurer's business relationships.
- The **shift towards nature-positive** may introduce new risks and create **product innovation** opportunities for insurers.
- Ultimately, these risks can be transmitted via **micro-, meso-, and macroeconomic channels**, resulting in **financial risks to the insurer**.

Opportunities

- Nature-related opportunities can emerge across the **non-life insurance value chain**—through customers, insured assets and activities, and the claims process—supporting both sustainability and business outcomes.
- Insurers can contribute to a **nature-positive and resilient future** by providing risk transfer for nature restoration and conservation, enabling client transitions, investing in nature-based risk reduction, and green claims innovation.
- These actions can support the **development of new products and services**, access to new markets and customer segments, and improved resource efficiency and sustainability performance.
- Business opportunities will arise as **strengthened financial resilience**, improved reputation through **community resilience**, and the ability to sustain or expand insurable business.

B. Nature-related DIROs: Life & health insurance business

- Exposure to nature-related issues can occur across the insurance value chain, both directly and indirectly. The focus here is on indirect exposure through upstream and downstream actors such as healthcare providers, pharmaceutical suppliers, and insured individuals and workers.
- The way in which nature-related DIROs materialize may depend on the segment. In commercial lines, the connection to the business activity is more relevant, while in personal lines, the focus is on the individual insured. Nature-related risks that affect health outcomes—and the resulting implications for the insurer—will also differ depending on whether the product is linked to mortality and morbidity or to longevity and long-term care.
- Nature loss is affecting public health; however, its impact on insured populations and insurance liabilities is not yet fully understood. As the world approaches planetary tipping points, insurers should assess the potential implications of nature loss on the insurability of health risks.

Dependencies

- **Human health and well-being depend on ecosystem services**, both directly (e.g., climate regulation, disease control, food and water availability) and indirectly through the healthcare system and broader socio-economic determinants—**indirect nature-related dependencies**.
- **Dependencies exist at multiple scales**. While human survival depends on stable Earth systems, many dependencies are regional or local (e.g., reliance on local climate regulation or water availability).
- Life & health insurers should assess **indirect dependencies** via upstream actors (e.g., healthcare systems, pharmaceutical production) and downstream actors (e.g., insured individuals and workers).
- **Understanding how health outcomes depend** on ecosystem services can identify where nature loss may result in impact to morbidity or mortality rates or disrupt healthcare systems. This can inform where it may lead to financial risks for insurers, while also revealing opportunities to address emerging nature-related risks.
- Dependency assessment may differ between **personal lines** (focusing on individuals) and **commercial lines** (focusing on workers associated with specific sectors).

Impacts

- **Indirect nature-related impacts—both positive and negative**—for life & health insurers may arise via upstream actors (e.g., healthcare service providers and their value chain) and downstream actors (e.g., commercial policyholders and insured individuals).
- **Insurers should assess their value chain** for actual and potential nature-related impacts—whether caused by the insurer, contributed to, or linked to their products or business relationships.
- **Downstream nature-related impacts are less established**. The focus is on identifying impacts to guide action, distinguishing between personal lines (through individuals' lifestyles) and commercial lines (corporate policyholders' business activities).
- **Upstream nature-related impacts** are broadly aligned with non-life insurance, with a focus on healthcare providers, pharmaceutical and biotechnology sectors.
- The aim of these considerations is to **improve insurers' understanding of impacts** to inform where they can take substantiated, proportionate and appropriate actions to halt and reverse nature loss.

Risks

- Nature-related risks for life & health insurance are categorized as **physical, transition, and systemic risks**, though these remain underexplored—especially transition risks.
- **Physical risks** from nature degradation may impact health and well-being directly (e.g., heatwaves, air pollution), through ecosystems (e.g., food insecurity, waterborne diseases), or indirectly (e.g., displacement, lack of healthcare). The effect may be immediate or through prolonged exposure.
- **Transition risks** can arise when insureds' health outcomes shift due to changes in healthcare access, nutrition, or living conditions—leading to either improvements or deterioration.
- **Financial risks** may emerge where nature-related risks affect health outcomes, leading to higher frequency, severity or duration—potentially increasing liabilities and resulting in **insurance risks**.
- Financial risk may also emerge from **legal or reputational risks** where insurers are linked to activities in their value chain that are misaligned with actions aimed at halting and reversing nature loss.
- **Systemic risks**—such as risks due to regime shifts or ecosystem collapse—can create far-reaching impacts to health outcomes, with potential long-term effects on insurability. Further research is needed in this area.

Opportunities

- Nature-related opportunities can arise **across the life & health insurance value chain**—including through insured individuals, commercial policyholders, and healthcare service providers—though they remain less explored compared to non-life insurance.
- Insurers can **support nature-positive outcomes** by promoting sustainable healthcare practices, encouraging behavioural change, and addressing nature-related risks through **individual and community-level risk mitigation** and new risk transfer solutions.
- This may result in **new products and services, greater resource efficiency** leading to improved sustainability performance, and new business opportunities in terms of **new markets and customer segments** and the **ability to improve or sustain access to insurance**.
- Additional benefits include strengthened **financial resilience and improved reputation** through support for public health outcomes and community resilience.



How to navigate the report

This report is structured in three parts: it begins by outlining why nature-related assessments are relevant to the insurance industry, including the need for insurance-specific approaches (Chapter 2). It then introduces the concepts of nature-related dependencies, impacts, risks, and opportunities (DIROs), and how they apply to both non-life and life & health insurance underwriting portfolios (Chapter 3). Finally, it provides high-level considerations to assess materiality from both environmental and financial perspectives (Chapters 3.3.3 and 3.4.3).

This report is intended for insurance companies seeking to understand the relevance of nature-related issues to their underwriting portfolios, as well as for organizations that support them in this process. Depending on the reader's background and objectives, different sections of the report may hold varying levels of relevance.

Beginner level: For readers new to insurance or nature-related assessments

For readers or teams less familiar with the insurance business model and operations, Chapter 2.2 offers a useful starting point, introducing insurance-specific aspects particularly relevant to nature-related assessments. More broadly, Chapter 2 provides foundational context on the connection between nature and insurance underwriting portfolios. The glossary in Appendix 4.1 may also be useful for orientation.

Intermediate level: For readers seeking to understand the relevance of DIROs to insurance

For readers and teams preparing or shaping strategic direction and initial nature-related corporate disclosures, Chapter 2 outlines the relevance of nature-related assessments. It also supports the identification of where and how DIROs matter to insurance underwriting portfolios, with each sub-section of Chapter 3 providing a high-level summary of DIROs by business segment.

Advanced level: For readers building capacity on nature and preparing for nature-related assessments

For readers and teams aiming to build capacity on nature and insurance and preparing for nature-related assessments in the context of insurance underwriting portfolios, Chapter 3 provides the detailed conceptual framework. Readers or teams operating across both non-life and life & health lines are encouraged to read Chapter 3 by nature-related issue to understand the nuances by business segment. Those focusing on a single segment may prioritize the relevant sub-chapter by nature-related issue.



1. Introduction

1.1 Purpose

This report is the first part of the *Nature Uncovered for Insurers Series* of the PSI Working Group for Nature (WGN).⁸ The series provides conceptual frameworks and practical considerations for insurers to undertake their own nature-related assessments. It aims to advance and increase the use of nature-related assessments for insurance underwriting portfolios. These efforts are intended to inform insurers' strategic responses to nature loss, enable them to engage with emerging opportunities, support portfolio risk management, embed nature considerations into underwriting and claims processes, and contribute to nature-related corporate disclosures.

This first part aims to build understanding of why underwriting portfolios require dedicated approaches and guidance for nature-related assessments. It introduces conceptual frameworks to interpret nature-related dependencies, impacts, risks and opportunities (DIROs) in the context of both non-life and life & health insurance business. By applying definitions and concepts from established nature-related approaches⁹ to underwriting portfolios, it supports insurers in integrating nature considerations into their business practices and decision-making.

The second part of the series, *Breaking Ground*, explores how the conceptual framework introduced in this report can be applied in practice, offering practical considerations and illustrative examples for insurers conducting their own nature-related assessments.¹⁰

1.2 Context

In May 2024, the PSI established the WGN, building on the PSI's decade-long efforts in addressing nature-related risks and opportunities. Comprising about 50 PSI members, technical partners and key stakeholders from across the globe, the WGN aims to support the development of strategies, provide technical guidance, and enhance insurance-specific approaches to contribute to a nature-positive and resilient future through a multistakeholder platform.¹¹

In December 2024, the WGN published its first output—a global guide for insurers on setting priority actions for nature (hereafter referred to as the “PSI Nature Action Guide”).¹² The guide provides a foundation for insurers to understand their role as enablers of economic activities and as risk managers and risk carriers, responding to risks arising from nature loss.¹³



The *PSI Nature Action Guide* introduced a theory of change that identifies key enablers across insurance underwriting portfolios to address nature-related DIROs. It supports insurers in contributing to nature-positive outcomes and in enhancing the resilience of communities and societies facing nature-related risks.¹⁴

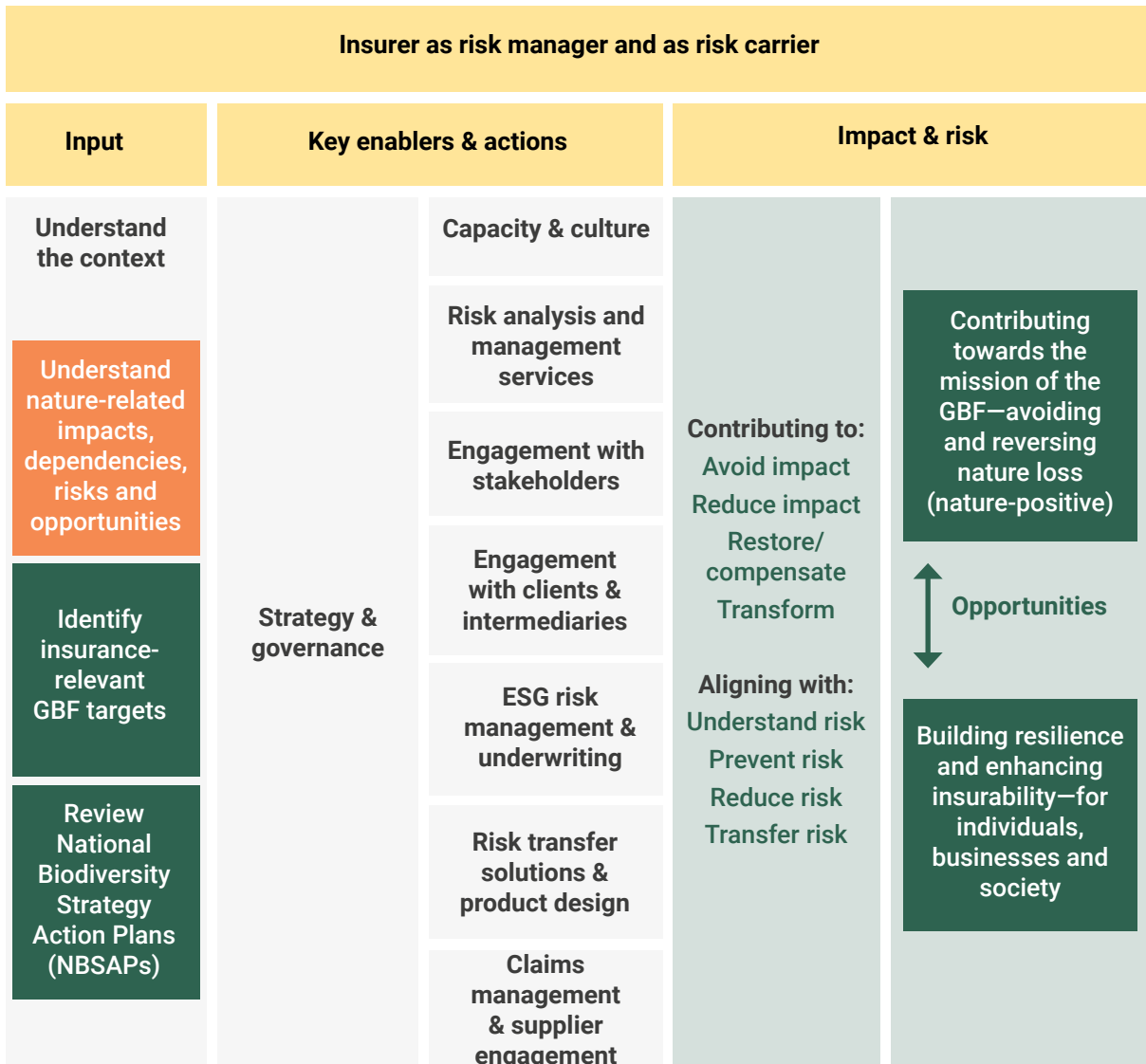


Figure 2: Insurance for nature-positive theory of change (simplified version)¹⁵

Per the *PSI Nature Action Guide*, an important prerequisite for insurers to take effective and meaningful actions is to first understand their exposures to nature-related DIROs within their underwriting portfolios (as highlighted in Figure 2). Conducting such a nature-related assessment enables insurers to identify and prioritize areas requiring action and to develop substantiated, appropriate and proportionate responses to address nature-related issues.¹⁶

While considerable progress has been made in developing nature-related approaches for investment and lending portfolios, nature-related approaches for insurance underwriting portfolios remain limited—particularly in defining DIROs in the context of insurance and in performing nature-related assessments in practice.



To date, insurance companies have largely focused on nature-related issues within their own operations and investment portfolios. In general, the translation of nature-related issues into specific risks and opportunities for underwriting portfolios has not yet been extensively explored or routinely integrated into the risk management, underwriting, and claims processes of insurers.

In this context, the WGN aims to support the advancement of insurance-specific methods and approaches to assess nature-related DIROs.

1.3 Scope

Nature

The report covers nature—the living components of the natural world, including people, and their interaction with each other and their physical environment. It recognizes ecosystems as functional units of nature, and biodiversity¹⁷ as the variability among living organisms that enables ecosystems to be productive, resilient, and adaptable.¹⁸

The report focuses on the assessment of nature-related DIROs and the identification and assessment of financial risks, as outlined in relevant nature-related risk assessment and disclosure frameworks.¹⁹ The report considers both environmental (or impact) materiality (i.e., an organization's impacts on nature) and financial materiality (i.e., how nature-related risks and opportunities affect the organization's financial performance)—a dual perspective commonly referred to as double materiality.

Nature-related approaches and frameworks

This report leverages various nature-related approaches,²⁰ including the CDP disclosure system,²¹ European Sustainability Reporting Standards (ESRS),²² Global Reporting Initiative (GRI) standards,²³ International Sustainability Standards Board (ISSB) standards,²⁴ Natural Capital Protocol (NCP),²⁵ Science Based Targets Network (SBTN) target-setting standard,²⁶ and the Taskforce on Nature-related Financial Disclosures (TNFD) framework.²⁷ It aims to contextualize these nature-related approaches for insurance underwriting portfolios. Refer to Annex 4.2 for an overview of the nature-related approaches and aspects covered in this report. For complementary summary information and comparative analysis of the nature-related approaches in scope, refer to the *Accountability for Nature* report.²⁸

This report emphasizes risk assessment frameworks, guidance and methods to assess nature-related DIROs of these approaches. The report does not cover response-related aspects of these nature-related approaches such as target setting, risk management and mitigation measures, transformative actions, or disclosure recommendations or requirements, except where relevant references are made to the *PSI Nature Action Guide*, which includes examples of priority actions individual organizations can take to respond to identified nature-related issues.²⁹



Additionally, this report incorporates relevant nature-related guidance developed for other financial institutions, such as the Partnership for Biodiversity Accounting Financials (PBAF).³⁰ It also highlights emerging supervisory frameworks that integrate nature-related considerations, such as relevant work of the Network for Greening the Financial System (NGFS)³¹ and the European Insurance and Occupational Pensions Authority (EIOPA).³²

Insurance business segments, value chain components and actors

The report examines the insurance value chain, focusing on underwriting and claims and the emergence of nature-related issues across its components and actors. A simplified overview of the insurance value chain in scope for non-life and life & health insurance business is provided in Figures 3 and 4.

The approaches and methods presented are intended to be from the perspective of insurers, acting in their capacity as risk managers and risk carriers. The report considers the emergence of nature-related issues both upstream (e.g., through claims services providers) and downstream (e.g., through customers and insured assets and activities).

It does not specifically consider implications arising from relationships intermediated by brokers or agents, nor the implications of reinsurance contracts for nature-related issues. Reinsurers are considered only where they act as primary insurers.

This report does not cover insurers' own operations, except in cases where, for example, claims service providers—such as suppliers, repairers—are owned by the insurer. It also does not cover investment portfolios.³³

While other parts of the insurance value chain, such as brokers or agents, may find this report useful, it is not specifically tailored to them.

This report covers both non-life and life & health insurance underwriting portfolios, taking into account the distinct characteristics of each business model.



2. The need for insurance-specific approaches to nature-related assessments

2.1 Nature-related issues materializing in insurance underwriting portfolios

Climate is inherently part of nature and insurers have gained more experience with climate-related physical risks, having long insured perils such as droughts, wildfires, and floods. Climate change drives the increasing severity and frequency of hydrological and atmospheric hazards associated with these perils. However, many of these climate-related physical risks can, in fact, be considered nature-related physical risks. While the driver may be climate change, the resulting risk of loss or damage to people or businesses often stems from compromised natural systems and the loss of ecosystem services on which those people and businesses depend.³⁴

In other cases, climate-related physical risks are further exacerbated by ecosystem degradation—resulting in compounding effects. For example, the combination of drought, extreme wind, and non-endemic forest species or plantations has led to increased wildfire risks in certain regions.³⁵ As extreme weather events intensify and human and economic activities further degrade ecosystems, these natural systems lose their ability to regulate and buffer climate-related hazards, as well as their ability to absorb carbon dioxide, and insurability in highly exposed and vulnerable areas becomes increasingly constrained.

In 2024, global insured losses from natural catastrophes exceeded USD 140 billion, marking the fifth consecutive year of insured losses from them surpassing USD 100 billion. Currently, the global insurance protection gap for natural catastrophes is estimated at around 60%.³⁶ In certain regions, insurance coverage has become unavailable or unaffordable due to climate-related perils such as wildfires and hurricanes exacerbated by degraded ecosystems.³⁷ These developments underscore the critical role of healthy ecosystems in mitigating hazards and maintaining the insurability of assets and activities.³⁸

Insurers may be exposed to nature-related risks that are not yet fully captured in their risk assessment frameworks or models. This can result in underestimation of risks transferred and the inability to manage these risks effectively. For example, flood coverage may be provided without considering the role of upstream deforestation or wetland loss in increasing flood frequency and severity, potentially leading to underestimated loss potential and financial risks for insurers.



This is especially critical as the world approaches planetary tipping points. These are self-reinforcing changes in natural systems that may trigger abrupt, irreversible ecosystem collapse, which in turn could lead to systemic risks. In such scenarios, the effectiveness of traditional risk diversification mechanisms may decline, with far-reaching implications for the financial stability of insurers and the global economy.³⁹

More than half of the global economy is moderately or highly dependent on nature and the ecosystem services it provides⁴⁰—it is also recognized that 100% of today's global economy is indirectly dependent on nature, with this dependency particularly pronounced in emerging markets and developing economies.⁴¹ As a result, nature loss poses significant risks to businesses and the wider economy, including operational disruptions, asset devaluation, stranded assets, and business closures. Addressing the nature crisis will also require business transformation to align with nature-positive outcomes. This may lead to the loss of existing clients for insurers or broader shifts in the types of businesses that are underwritten or need insurance cover. Whether this results in financial risks or new opportunities for insurers depends on their ability to assess nature-related risks for both current and future customers.

Furthermore, it is critical to recognize that nature-related risks often arise from the direct or cumulative impacts of insured activities and assets themselves. This is particularly relevant in sectors such as agriculture, forestry, and fisheries. As such, understanding that today's impacts may give rise to tomorrow's risks is increasingly important. As insurers enable these economic activities by providing risk transfer solutions, they may also be indirectly increasing their own exposure to nature-related risks over time.⁴²

This underscores the need for insurers to understand and assess nature-related issues across their value chain. Their ability to manage nature-related issues effectively will be dependent on the integration of nature-related considerations into business processes and decision-making.

2.2 Characteristics shaping nature-related assessments in insurance underwriting portfolios

The insurance industry holds a unique position within the financial sector, spanning both asset ownership (investment) and underwriting (insurance) activities in the same balance sheet. As underwriters, insurers assess, manage, price, and carry risks for individuals and organizations, providing stability and crisis recovery through risk management and risk transfer solutions.

Unlike investors, insurers do not finance economic activities or hold ownership stakes in their customers' operations. The lack of direct control can determine the degree and manner to which insurers can influence a customer's decision related to reducing and managing nature-related issues. However, insurance enables business activities by



providing essential risk transfer solutions, making its availability crucial for customers to undertake specific business operations. This enables insurers to positively influence customer activities.⁴³

Given that insurers directly manage and carry risk, the identification and assessment of nature-related risks and their transmission channels into insurance underwriting portfolios require distinct and more tailored approaches than those applied to lending or investment portfolios.

Claims payments, while resembling financial flows, are conditional on the occurrence of insured events. The insurance claims process often involves specialized service providers to facilitate settlement, further distinguishing it from investment or lending activities.⁴⁴

Finally, the insurance value chain is inherently more complex, spanning the insured assets and activities, the occurrence of loss events, and the claims management process. This results in a unique structure of relationships between insurers, insured parties, intermediaries and other stakeholders.

2.2.1 Non-life insurance business

Non-life insurance provides financial protection for businesses, households, and governments against risks related to physical assets, business continuity, contractual obligations, and liability. These protections can be summarized as follows:

1. It provides (financial) protection against **damage to, or loss of, physical assets**, covering a wide range of risks, including accidents, theft, and natural disasters. It ensures financial security for businesses, households, and governments by mitigating losses related to property, infrastructure, vehicles, goods in transit, or agricultural resources.
2. It supports **business and project continuity**, ensuring financial resilience in the face of unexpected disruptions. It compensates for lost revenue, increased costs, and financial shortfalls due to operational delays, supply chain failures, or project interruptions.
3. Non-life insurance supports financial security and **contractual fulfilment** by protecting businesses against **non-payment risks** and failures to meet agreed obligations. For example, credit insurance covers financial losses resulting from customer insolvency or payment defaults. Surety insurance provides guarantees that contractors, suppliers, and service providers will fulfil their contractual obligation and comply with relevant regulatory and financial requirements.
4. It safeguards businesses and professionals **against financial and legal liabilities** arising from their operations, services, and interactions with third parties. It covers claims related to bodily injury, property damage, professional errors, environmental harm, and contractual defaults. This protection extends to businesses facing legal action from customers, employees, regulators, or affected communities, ensuring coverage for compensation costs, legal defence and penalties.

This report examines the differences and nuances in assessing nature-related issues across various business segments and lines of business (LoBs). The following LoBs will be considered where relevant:⁴⁵



Table 1: List of non-life business segments and LoBs considered in this report⁴⁶

Segments	Lines of business (LoBs)
Commercial insurance	Property (e.g., fire, multi-peril)
	Liability/casualty (e.g., general liability, product liability, environmental liability)
	Commercial motor
	Marine (liability and hull)
	Aviation (liability and hull)
	Agriculture
	Trade credit
	Surety
	Engineering lines (construction all-risk)
	All other engineering lines
	Other/special lines (e.g., professional indemnity, D&O)
Personal lines	Property
	Motor
	Liability
	Others (e.g., travel assistance)
Public entities	Insurance contracts purchased by public entities

This report places the insurance value chain at its core—serving both as a framing element for scoping and as a basis for applying nature-related definitions and principles. The insurance value chain is interpreted in multiple ways across the market. A common perspective is the process-based view, encompassing product and service development, marketing, distribution and sales, underwriting, policy administration, asset and investment management, and claims management.

However, for the purposes of nature-related assessments at portfolio level, this report applies a stakeholder-based interpretation of the insurance value chain.

A high-level illustration of this view for non-life insurance is provided in Figure 3.

Nature-related considerations and assessments may also be integrated into individual process steps (see part two of the *PSI Nature Uncovered Series, Breaking Ground*, on benefits of applying nature-related assessments).⁴⁷

For the purposes of this report, the full non-life insurance value chain is represented as:

- The insurance value chain includes the insurer’s own operations and any owned entities, as well as upstream and downstream actors.
- Upstream actors include claims service providers, reinsurance companies, placing brokers, and third-party investment managers.
- Downstream actors include insured customers, investments, risk advisory services, and brokers and agents.



- Both upstream and downstream actors can be organized into tiers. Brokers, agents, contractor networks or other intermediaries may serve as connectors between tiers.
- Actors within the insurance value chain may themselves be embedded in broader value chains (tier 3), which can be relevant for nature-related assessments. For example, repair companies may rely on upstream material suppliers and engage downstream recyclers. Similarly, insured businesses may depend on upstream raw material sourcing or transportation and downstream distribution or disposal. Nature-related DIROs may arise across these extended value chains—potentially exposing insurers indirectly through insureds or business relationships.

The value chain view presented below is illustrative. Each insurer should define and map their own value chain for assessment purposes. The classification of actors as upstream or downstream—and their placement within tiers—may differ across organizations and evolve over time with industry developments. Scoping decisions should be guided by where nature-related impacts or risks are likely to arise (see part two of the *PSI Nature Uncovered Series, Breaking Ground*).⁴⁸

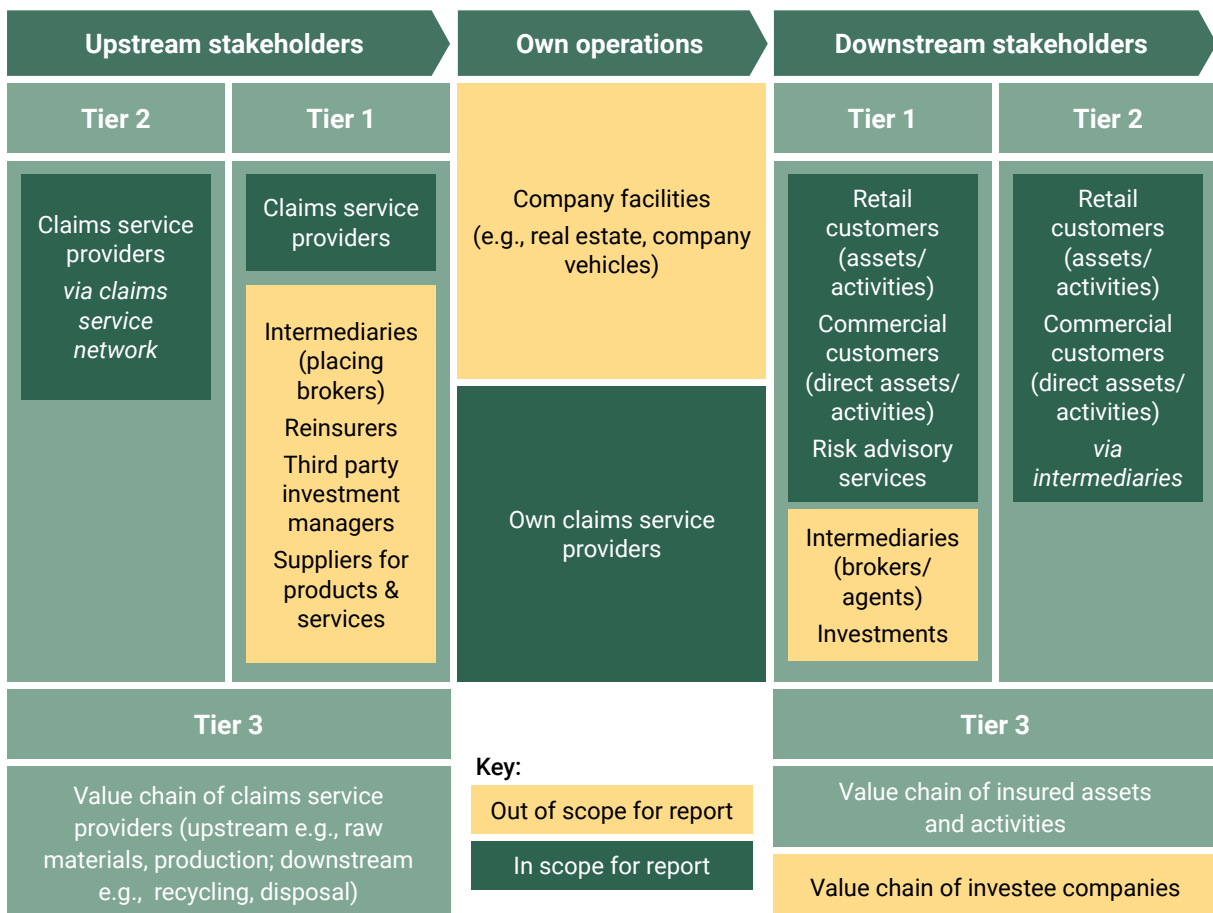


Figure 3: High-level illustration non-life insurance value chain



2.2.2 Life & health insurance business

Life & health insurance provides financial security and resilience to individuals, households, and businesses and helps them understand, prevent, and reduce risks related to health, disability, and mortality. It provides access to medical care, supports income replacement in case of illness or injury, and provides long-term financial stability for dependents. These protections can be summarized as follows:

1. It protects individuals and households by covering preventative care, accidents, illness, critical illness, disability, diseases, and mental health conditions.
2. For workers, it offers protection against workplace injuries and occupational diseases, ensuring compensation for lost wages and medical expenses.
3. Additionally, life insurance and annuities provide financial security for individuals and employees, ensuring retirement income stability and offering death benefits to dependents.

This report examines the differences and nuances in assessing nature-related issues across various business segments and lines of business. The following lines of business will be considered where relevant:⁴⁹

Table 2: List of life & health business segments and LoBs considered in this report⁵⁰

Segments	Lines of business (LoBs)
Commercial insurance	Other/special lines (e.g., workers compensation)
	Corporate life and pensions
Personal lines	Life & health

The below provides a high-level illustration of the insurance value chain for the life & health insurance business. The same assumptions apply as outlined for non-life insurance (see Chapter 2.2.1).

Notably for life & health insurance business:

- Upstream refers to healthcare service providers such as physicians, pharmacies, hospitals, laboratories, and other healthcare facilities, as well as reinsurance companies and third-party investment managers. Tier 3 value chain actors may also be particularly relevant in this context, as service providers can depend on natural resources and biodiversity for research and development and pharmaceutical production.
- Downstream relates to policyholders and insured individuals, investment activities, and intermediaries such as brokers and aggregators.

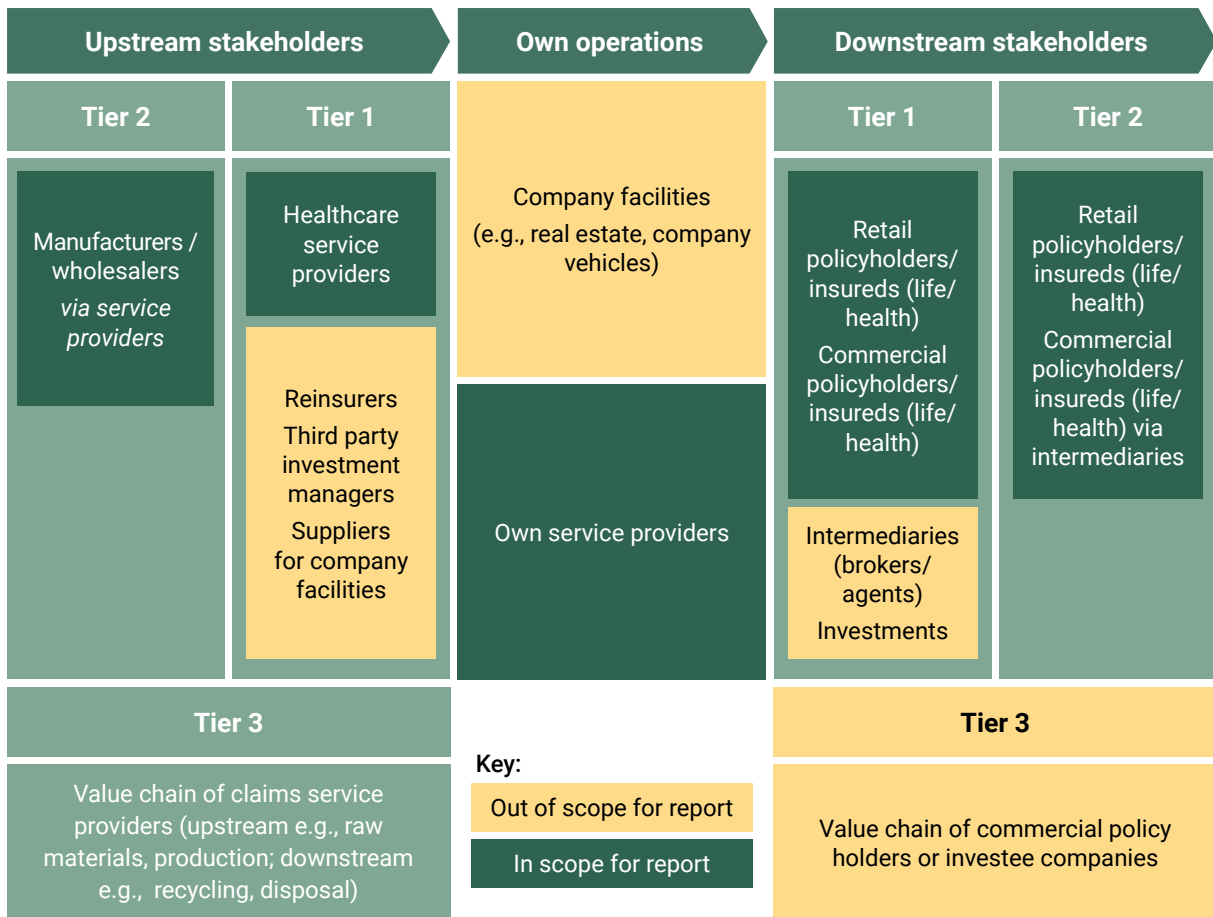


Figure 4: High-level illustration of life & health insurance value chain

2.3 The missing link: Tailored guidance for insurance underwriting portfolios

Existing nature-related approaches primarily offer sector-agnostic guidance, with some sector-specific resources developed for financial institutions—particularly in the context of investment and lending. However, insurance-specific guidance remains notably limited. Among current initiatives, only a few provide financial sector-specific guidance, and fewer reference insurance underwriting portfolios. To date, only one initiative is actively developing dedicated guidance for insurance underwriting portfolios. This may be one factor contributing to the relatively slower uptake of nature-related disclosures across insurance underwriting portfolios globally, particularly when compared to other segments of the financial sector.

Given that almost every aspect of the global economy and human well-being is underpinned by nature—and that insurers enable economic activities by covering a wide range of risks—insurers are uniquely exposed to nature-related issues. The ability to undertake nature-related assessments is therefore critical to identify areas for impactful action and to manage nature-related risks to both customers and their own business.



In the absence of insurance-specific methods and approaches, insurers might be constrained in their ability to gain an understanding of how activities related to their underwriting portfolios specifically contribute to or are exposed to nature-related issues. This gap may also affect compliance where there are mandatory disclosure requirements and could limit insurers' ability to adopt or align voluntarily with disclosure frameworks and standards.

Along with the *PSI Nature Action Guide* published in 2024, this report is another important step to closing the gap in insurance-specific guidance by providing insurers with key considerations and practical examples for their own nature-related assessments within their underwriting portfolios.

Table 3: Overview financial sector and insurance underwriting-specific guidance

	Financial sector-specific guidance	Insurance underwriting-specific guidance	Plans for insurance underwriting-specific guidance
NCP	Yes—Natural Capital Protocol Financial Sector Supplement ⁵¹	Partially—FS Supplement refers to insurance underwriting ⁵²	Currently no plans for specific guidance
PBAF	Yes—focus on lending and investment ⁵³	Not available	Currently no plans for specific guidance
SBTN	No—focus on companies and cities ⁵⁴	Not available	Currently no plans for specific guidance
TNFD	Yes—but focus on disclosure recommendations for financial institutions ⁵⁵	No—but includes metrics specific to insurance underwriting business ⁵⁶	Currently no plans for specific guidance
ESRS	No—but mandatory reporting for financial institutions in scope ⁵⁷	No—but acknowledges role played by insurance and reinsurance companies	Currently no plans for specific guidance ⁵⁸
GRI	Partially—exposure draft published ⁵⁹	Partially—exposure draft published ⁶⁰	Final GRI Sector Standards for banking, capital markets, and insurance are expected to be published in Q2 2026 ⁶¹
CDP	Yes—reporting guidance for financial services sector companies ⁶²	Partially—no specific insurance underwriting guidance but in scope for the questionnaires ⁶³	Currently no plans for specific guidance
ISSB	Yes—focus on risk management, opportunities, disclosure recommendations and materiality ⁶⁴	Partially—dedicated guidance for the insurance sector on climate-related risks ⁶⁵	Currently no plans for specific guidance



3. Fundamentals: Nature-related dependencies, impacts, risks and opportunities in insurance underwriting portfolios

3.1 Understanding the relationship between nature and insurance underwriting portfolios

Businesses, individuals, economies and societies both depend on and impact nature, giving rise to nature-related risks and opportunities.⁶⁶ Insurers are exposed to these dependencies, impacts, risks and opportunities (DIROs) through their insurance value chain and the actors and their activities involved. This includes the goods and services provided by upstream claims service providers, as well as the insured assets, processes, liabilities, and insured human health and life within downstream underwriting portfolios.

The following sections outline how nature-related DIROs associated with actors in the insurance value chain may translate to insurers. They set out principles for identifying and understanding nature-related issues in insurance underwriting portfolios, drawing primarily on definitions, concepts, and guidance from the TNFD,⁶⁷ Natural Capital Protocol,⁶⁸ ESRS,⁶⁹ GRI,⁷⁰ PBAF,⁷¹ the NGFS⁷² and EIOPA.⁷³ For further details and comparison of these approaches refer to the *Accountability for Nature* report.⁷⁴

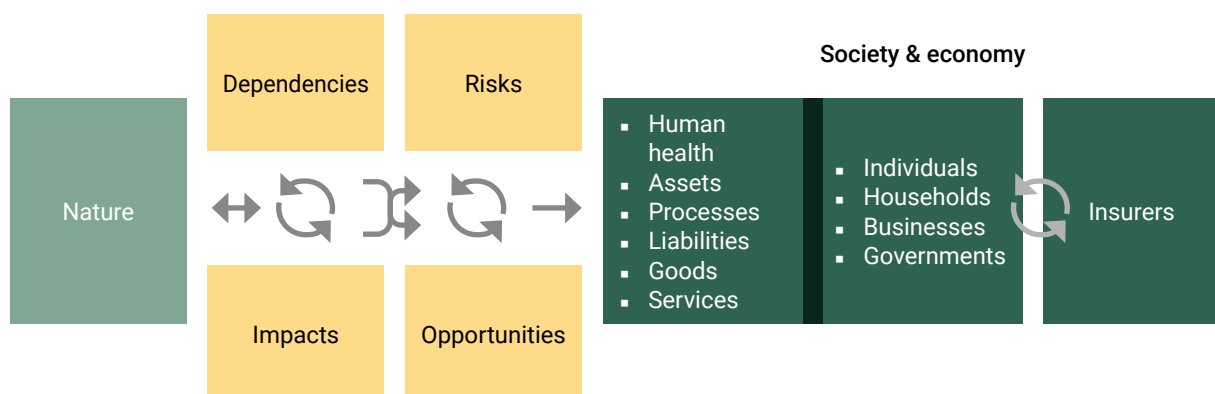


Figure 5: Nature’s interface with insurers through their exposure to individuals, households, businesses and governments and the claims process (simplified)



3.2 Nature-related dependencies in insurance underwriting portfolios

3.2.1 Non-life insurance business

High-level summary of nature-related dependencies for non-life insurance business

- **Nature-related dependencies in insurance underwriting business** refer to the reliance of insured (insurable) assets, activities and insured risks on ecosystem services, which support their function and continuity or hazard reduction to physical assets. In non-life insurance, regulating and maintenance services—such as flood or storm mitigation—are especially relevant due to their role in reducing physical hazards linked to insured natural perils.
- **Dependencies can arise across the insurance value chain**, both upstream (e.g., suppliers, repairers) and downstream (e.g., customers, insured assets and activities). These are considered indirect nature-related dependencies. Direct dependencies may also exist, such as through the insurer’s own operations or own claims service providers.
- **Dependencies should be considered across three dimensions:** a) insured (insurable) assets and activities (businesses and their activities’ dependency on ecosystem services to continue to operate and function), b) insured (insurable) risks (risks influenced by ecosystem services that reduce hazard intensity or prevent damage/loss to physical assets), and c) the claims process (reliance on ecosystem services to contribute to required materials and services).
- **The assessment of dependencies may vary by line of business**, particularly between products with a more direct interface with nature (e.g., those covering physical assets or business continuity) and those with a less direct interface (e.g., third-party liabilities or contractual obligations).⁷⁵
- **Understanding dependencies can support** the a) identification of insurers’ exposure to business risks, b) identification of risk transfer solutions to build resilience, c) integration of ecosystem condition as a physical hazard in risk assessments, and d) identification of opportunities for physical hazard reduction.
- **Understanding both actual and potential dependencies** can be helpful, especially under future scenarios such as climate-related physical risks or the net-zero transition, which may increase reliance on natural resources or ecosystem services (e.g., in the bioeconomy).



The concept of nature-related dependencies is relatively new to the non-life insurance industry. However, business activities and assets insured against damage or loss, and business interruption, often depend on ecosystem services to prevent or reduce such damages, losses and resulting disruptions. More broadly, insured activities and assets rely on ecosystem services to enable economic activities and support the functioning of business operations—conditions that underpin the availability of assets and activities for insurance coverage by the insurance industry.

These ecosystem services can be categorized into provisioning, regulating and maintenance, and cultural services. For non-life insurance business, regulating and maintenance services—such as storm or flood mitigation and water flow regulation—can be particularly relevant, as they can reduce or exacerbate (depending on the state of the ecosystem) the physical hazards of insured natural perils such as floods or storms.

For insurers, nature-related dependencies arise through their value chain—both upstream and downstream—which can be considered indirect nature-related dependencies. Direct nature-related dependencies of non-life insurers can emerge through their own operations, such as their real estate, as well as their own claims service providers.

Understanding these dependencies is especially important for identifying and assessing nature-related physical risks. These physical risks—whether acute (e.g., natural disasters) or chronic (e.g., long-term degradation of natural systems)—stem from changes in the state of nature, which may reduce or eliminate the ecosystem services that businesses, households, or individuals rely on. Also, in the context of transition risks, understanding a business's dependencies on ecosystems can be relevant, as regulations or policies could limit the availability or access to these ecosystem services, impacting or disrupting insureds' business activities and operations.

For example, residential and commercial buildings as well as agricultural farms benefit from flood mitigation provided by wetlands. Wetlands act as natural buffers by absorbing excess rainfall and surface water, before gradually releasing it. This process slows water flow, reduces peak flood levels, and prevents rapid runoff, lowering potential flood damages. If wetlands are degraded (e.g., through land development, agricultural expansion, or pollution) their ability to store and regulate water diminishes. This can result in more severe flooding following an extreme rainfall event, which leads to increased property damage, reduced agricultural productivity and revenue, and increased insured losses. Understanding the dependency pathway enables insurers to assess how changes in the state of nature may translate into nature-related physical risks and potential financial risks to insurers.

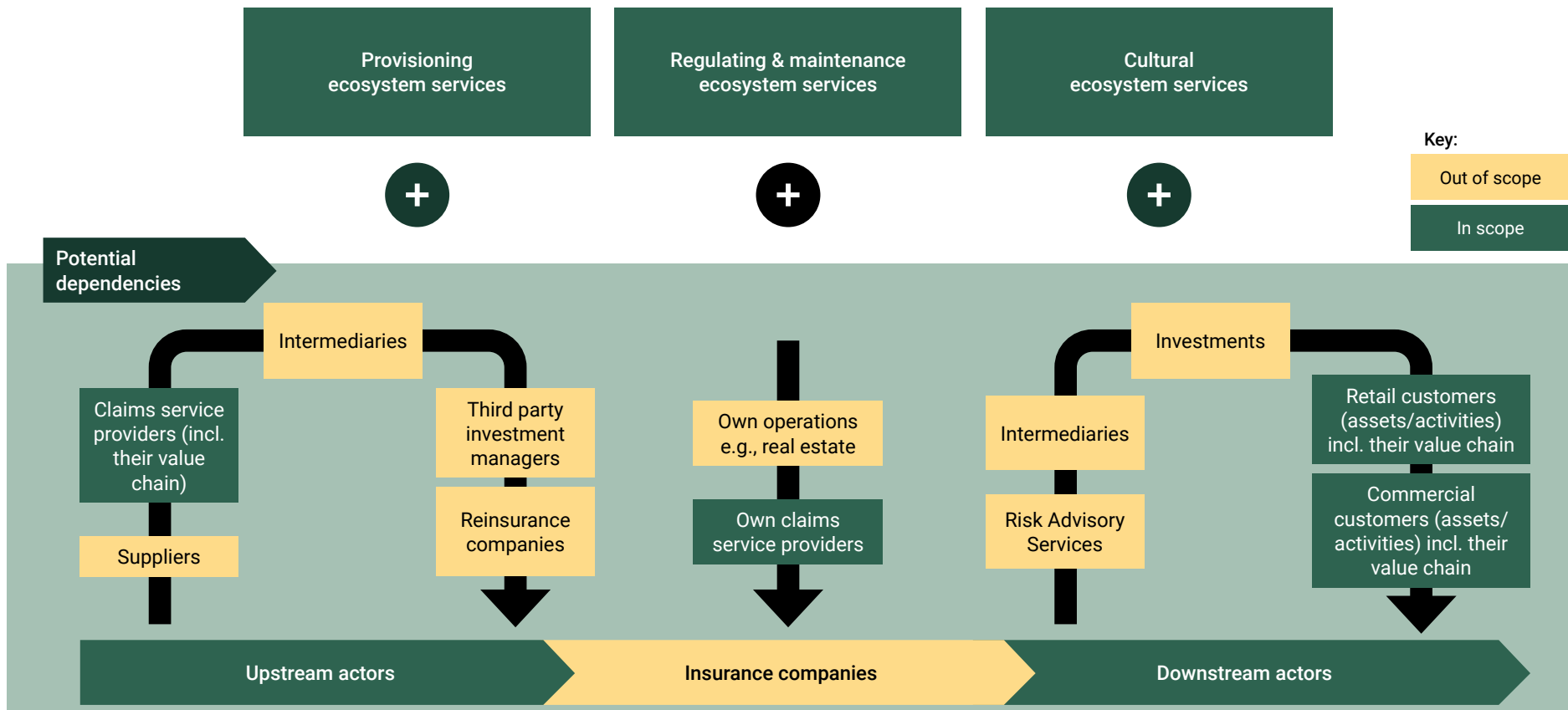


Figure 6: Non-life insurance value chain in scope for nature-related dependencies



Understanding dependencies on ecosystem services of the assets and activities that insurers (intend to) cover can also help identify opportunities for physical hazard reduction—both for current and potential customers—and thus positively contribute to insurability (e.g., identifying sectors or locations reliant on ecosystem services for hazard regulation).

Nature-related dependencies should be considered in relation to insured assets and activities, insured risks, and the claims process. In corporate finance, dependencies are typically identified based on the sectors financed and the production processes reliant on ecosystem services. In insurance underwriting portfolios, however, exposure is not necessarily tied to sectors, but rather to specific insured assets, activities, and risks. This may require a distinct approach to assessing nature-related dependencies.

The following table provides key considerations for defining and understanding nature-related dependencies specifically in the context of the non-life insurance value chain.^{76,77}

Key considerations in the table below are structured along the following aspects:

- Where in the insurance value chain nature-related dependencies can emerge.
- The scope of nature-related dependencies considering the dependency pathway and spatial boundaries.
- Application of terminologies such as actual and potential dependencies in the insurance context.

Table 4: Considerations for nature-related dependencies in non-life insurance business

Area of consideration	Key considerations
Indirect dependencies through the value chain: Actor perspective	<p>This report focuses on indirect nature-related dependencies, which emerge through the insurer’s value chain. This includes upstream actors—such as suppliers and repairers—who may rely on ecosystem services to deliver claims services, and downstream actors—such as customers and the insured (insurable) assets and activities—which may depend on ecosystem services to function and operate effectively. The upstream and downstream insurance value chain can be structured by tiers (see Figure 3). Actors within an insurer’s upstream and downstream value chain (tier 1 and tier 2) may themselves have additional value chain actors (tier 3).</p> <p>Insurers should assess their full insurance value chain for actual and potential nature-related dependencies. Nature-related risk assessments may benefit from examining upstream and downstream dependencies linked to insured assets and activities (tier 3), as disruptions in the supply chain could lead to cascading effects, ultimately affecting insured business operations and insured risks.</p>

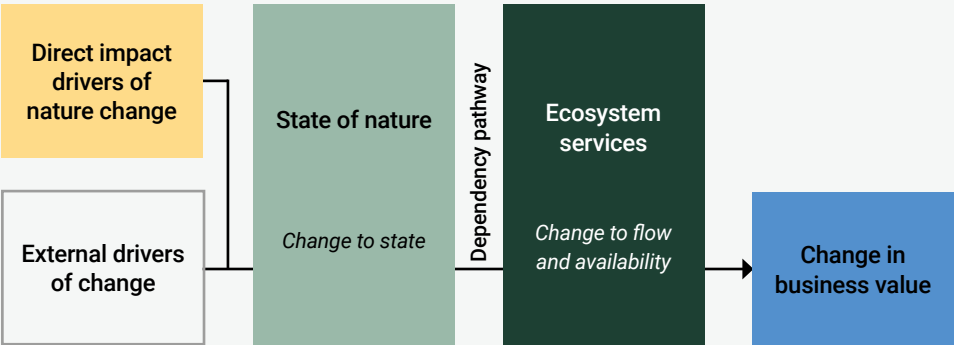


Area of consideration	Key considerations
Indirect dependencies through the value chain: Process perspective	<p>Indirect dependencies are relevant across three dimensions in order to inform the identification of nature-related risks and opportunities:</p> <ol style="list-style-type: none">1. Insured (insurable) assets and activities2. Insured (insurable) risks3. Claims process <p>1. Insured (insurable) assets and activities:</p> <ul style="list-style-type: none">▪ Insured (or insurable) assets and activities rely on ecosystem services to remain operational and maintain functionality. <div data-bbox="432 600 1390 853" style="border: 1px solid #ccc; padding: 5px;"><p>For example, an insurer may underwrite the cultivated fields of a commercial farm. While the insured crop fields depend on ecosystem services such as regular rainfall, natural pollination, and fertile soil for successful harvests, the farm’s operations may rely on additional services—such as water purification for processing facilities, shade and cooling from vegetation for livestock areas, or pest control provided by surrounding habitats. These broader dependencies are important for the overall functioning and resilience of the insurer’s customer.</p></div> <ul style="list-style-type: none">▪ In assessing nature-related dependencies, upstream and downstream actors of the insured asset or activity are also relevant to consider. <div data-bbox="432 954 1390 1106" style="border: 1px solid #ccc; padding: 5px;"><p>For example, an agricultural operation may depend on upstream inputs such as organic fertilizers or seed supply chains, which are themselves reliant on ecosystem services. Disruptions in these systems—such as declining soil fertility or altered water cycles—could indirectly affect the insured business.</p></div> <ul style="list-style-type: none">▪ Understanding dependencies of current and future customers more broadly can help identify exposure to business risks for insurers.<ul style="list-style-type: none">▫ Insurers, as enablers and intermediaries of economic activity, are dependent on the functioning of their customers—whether individuals or commercial entities. As ecosystem degradation increases, the viability of business operations across sectors may be affected by loss of ecosystem services, such as water regulation or climate stability. These impacts may manifest in changes to operating models, input availability, or even business relocation or closure.▫ Such dependencies may extend beyond the insured assets or activities itself, and even beyond first-tier suppliers or service providers. In these cases, dependencies not captured under existing insurance coverage may still pose broader business risks by influencing the availability of insurable assets, affecting risk profiles, or reducing policyholders’ ability to pay premiums.▪ For existing or potential customers understanding the nature-related dependencies of insured (insurable) assets and activities or their broader business activities can help insurers identify opportunities to develop new or enhanced risk transfer solutions. These insights may support the design of insurance products that strengthen customer resilience to emerging nature-related risks.



Area of consideration	Key considerations
	<p>For example, insuring a manufacturing facility against human perils such as accidents or fires while recognizing its dependence on ecosystem services for continued operation—such as water availability for cooling, clean air for ventilation systems, or stable climate conditions for temperature-sensitive processes—may prompt the insurer to explore additional insurance solutions that reflect those dependencies. This could include cover for disruptions linked to ecosystem degradation (e.g., reduced water flow or air quality).</p> <p>2. Insured (insurable) risks:</p> <ul style="list-style-type: none">▪ Dependencies can be considered in relation to the insured (insurable) risk itself—particularly where the frequency or severity of the risk is influenced by ecosystem condition. <p>Where insurance coverage includes protection from floods or storms, the dependency assessment can focus on the ecosystem services that help mitigate these hazards. For example, physical assets (e.g., commercial or residential property, cropland) insured against floods depend on regulating ecosystem services that reduce hazard frequency and severity. Coastal wetlands (e.g., mangroves, salt marshes, seagrass meadows, coral reefs) help regulate storm surges, flooding, saline intrusion, and erosion. Inland ecosystems, such as riparian zones, floodplains, and wetlands (including peatlands), play a role in regulating riverine flooding, erosion, groundwater recharge, water retention, and water quality.</p> <p>Insured business activities covered against business interruption may depend on ecosystem services that are essential for continuity of operations. For example, a manufacturing business insured against business interruption may rely on consistent freshwater supply or stable climatic conditions. In this context, ecosystem degradation (e.g., loss of upstream wetlands or reduced water quality) could represent a source of risk, and when insured, can lead to increased frequency or severity of losses. Assessing such dependencies may involve analyzing the broader value chain, particularly upstream.</p> <ul style="list-style-type: none">▪ Understanding dependencies in relation to insured (insurable) risks can help identify where the loss of ecosystem services may act as a physical hazard—potentially increasing the severity and frequency of claims. This can inform risk assessments.▪ Understanding dependencies in relation to insured (insurable) risks can support the identification of opportunities for reducing potential physical hazards—for example, recognizing that restoration, conservation of ecosystems, and nature-based solutions can help reduce such hazards.



Area of consideration	Key considerations
	<p>3. Claims process:</p> <ul style="list-style-type: none"> In addition, insurers should also consider the claims process and its relevant dependencies. <p>For example, construction companies handling post-disaster repairs rely on timber and other forestry products, which depend on healthy forests for sustainable supply. If wildfires or pests degrade forest ecosystems, shortages in raw materials can delay reconstruction and prolong claims settlements. Similarly, extreme weather events damaging transport infrastructure can disrupt the supply chain for building materials, further slowing the claims process.</p> <p>In summary, all lines of business (LoBs) and insurance products are relevant when assessing broader nature-related dependencies of (potential) customers. Such dependencies on ecosystem services can affect business continuity and viability, ultimately influencing the availability of insurable assets and activities. For products that cover physical events linked to tangible assets or business interruption, dependencies on ecosystem services are particularly relevant, as the degradation of these ecosystems and their services may directly increase the severity or frequency of insured risks. Dependencies within the claims process are most pronounced in insurance products involving physical repair or replacement. In contrast, products that involve only financial compensation—such as for liabilities or credit defaults—may exhibit a lower degree of dependency on ecosystem services.</p>
<p>Scope: Dependency pathway</p>	<p>Nature-related dependencies refer to the environmental assets and ecosystem services that individuals, households, or organizations rely on. To fully understand these dependencies, it is important to consider the dependency pathway.⁷⁸</p>  <p>To date, assessments by insurers have largely focused on identifying the type of ecosystem services relied upon and the scale or extent of that reliance (although mostly qualitatively), with limited examination of the full dependency pathway. The dependency pathway is particularly relevant as it helps assess:</p> <ul style="list-style-type: none"> the relationship between insured assets and activities, insured risks, and specific environmental assets; the state and condition of these environmental assets (e.g., their extent and function); the measurement of ecosystem services and their contribution to people and businesses (i.e., their role in supporting economic activity/business operations and mitigating hazards to physical assets).



Area of consideration	Key considerations
	<p>For insurance underwriting portfolios, considering the dependency pathway can be especially useful for understanding how ecosystems and nature-based solutions can contribute to reducing physical hazards from natural perils, thereby potentially reducing damages or losses.</p> <p>A dependency pathway assessment can be a valuable tool for identifying and evaluating potential dependency-based nature-related risks and opportunities by considering external factors, impact drivers, and changes in the state of nature under different scenarios.⁷⁹</p>
Scope: Spatial boundaries	<p>In addition to considering the value chain and dependency pathways, it is also relevant to define the spatial boundaries of nature-related dependencies.</p> <p>The dependencies of insured activities and assets are linked to ecosystem services provided by specific environmental assets. An ecosystem service might be localized, but ecosystem services may also be influenced by environmental assets that are not present at the location of the insured asset or activity.</p> <div data-bbox="432 801 1385 1128" style="border: 1px solid #ccc; padding: 10px;"><p>For example, in a dependency assessment focused on a business dependent on groundwater, the analysis might concentrate on the plant-level spatial boundary, as the business depends on local water availability to maintain operations. However, this may limit the assessment, as upstream ecosystems—such as a wetland that helps maintain regular water flow to the site of interest—may influence the availability of water and thus affect the dependency. Similarly, in the case of agricultural sites or farms, nearby ecological features—such as a patch of pollinator habitat on an adjacent property— may support crop production, and if removed, could reduce the benefits provided by pollinators.</p></div>
Terminology: Actual and potential dependencies	<p>The distinction between actual and potential dependencies is not yet well defined in the nature-related approaches covered in this report. Similarly, insurers have so far made limited differentiation between actual and potential dependencies in their nature-related assessments and disclosures.</p> <p>In this context, actual dependencies may refer to existing and established relationships between an organization and the environmental assets and ecosystem services essential for its operations and value chain. These may include current benefits derived from ecosystem services, such as risk attenuation, within a respective reporting period.</p> <p>Potential (future) dependencies, on the other hand, may refer to future or emerging dependencies that may result from changes in business models, supply chains, or environmental conditions. Scenario analysis can help identify potential dependencies.</p> <div data-bbox="432 1597 1385 1704" style="border: 1px solid #ccc; padding: 10px;"><p>For example, transition scenarios may reveal increased reliance on specific raw materials or nature-based solutions, while climate change and sea-level rise may drive greater dependence on ecosystems for flood and storm mitigation.</p></div> <div data-bbox="432 1715 1385 1928" style="border: 1px solid #ccc; padding: 10px;"><p>For example, companies transitioning to net zero may shift their business models in ways that increase reliance on specific natural resources. This is particularly important in sectors such as the bioeconomy, which depends on biomass production, genetic material, and regulating services such as climate stability, freshwater availability, and soil quality, all critical for the growth of renewable biological resources.</p></div> <p>Potential (future) dependencies could also be relevant for nature-related risk assessments.</p>



3.2.2 Life & health insurance business

High-level summary of nature-related dependencies for life & health insurance business

- **Human health and well-being depend on ecosystem services**—both directly (e.g., climate regulation, disease control) and indirectly through the healthcare system and broader socio-economic stability.
- Life & health insurers face **indirect dependencies** both upstream (e.g., healthcare systems, pharmaceutical production) and downstream (insured individuals and workers).
- **Understanding the dependencies of health outcomes** on nature helps identify where ecosystem degradation may increase or trigger health risks or disrupt healthcare systems, and potentially create financial risks for insurers, while also revealing opportunities to address emerging nature-related risks.
- The **assessment of nature-related dependencies** can differ between personal lines (i.e., focus on individuals) and commercial lines (i.e., focus on workers linked to specific sectors and activities).
- **Dependencies exist at multiple scales.** While human survival depends on stable Earth systems, many dependencies are regional or local—for example, reliance on local climate regulation or regulation of water availability.



Human health is defined as a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity. Human well-being extends beyond physical health, encompassing psychological, social, and security aspects of wellness.⁸⁰

Nature plays a fundamental role in the well-being of individuals and society by providing ecosystem services—including provisioning, maintaining and regulating, and cultural services—that generate direct and indirect benefits, such as favourable climate, clean water, farmed and wild food, pollution breakdown, reduced hazards, and recreation.⁸¹

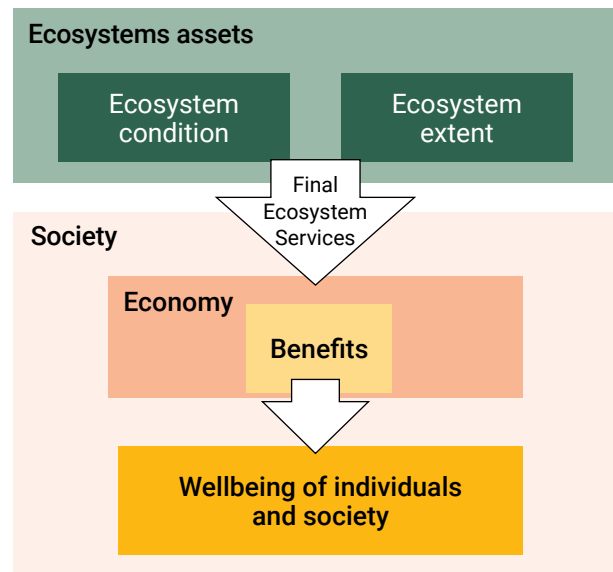


Figure 7: Ecosystem services and human well-being⁸²

Human health and well-being are directly and indirectly dependent on ecosystem services. First-order dependencies include climate regulation and disease regulation, where ecosystems directly mitigate health risks. Second-order dependencies arise through water and food supply, as well as access to nature for recreation, indirectly shaping physical and mental well-being. Additionally, human health is dependent on healthcare systems, which themselves rely on nature for resources such as for pharmaceuticals and medical supplies.⁸³

In addition to the availability and quality of ecosystem services, other factors influence health and well-being, including socio-demographic characteristics, socio-economic conditions, healthcare access, governance, and cultural or behavioural factors.⁸⁴ These determinants in turn can be impacted by biodiversity and ecosystem loss, which can lead to displacements, or economic instability as well as have direct consequences for healthcare systems.

Finally, it is important to consider that these dependencies exist at multiple scales. While human survival depends on stable Earth systems, many dependencies are regional or local (e.g., reliance on local climate regulation or regulation of water availability) with direct implications for community health outcomes.

Figure 8 provides a high-level overview of the dependency, and impact pathway of human health and well-being, and biodiversity and ecosystems. It illustrates how human health and well-being depend directly on ecosystem services, as well as how the healthcare system itself is dependent on them—and how these actors also act as drivers of nature change (see Chapter 3.3.2).

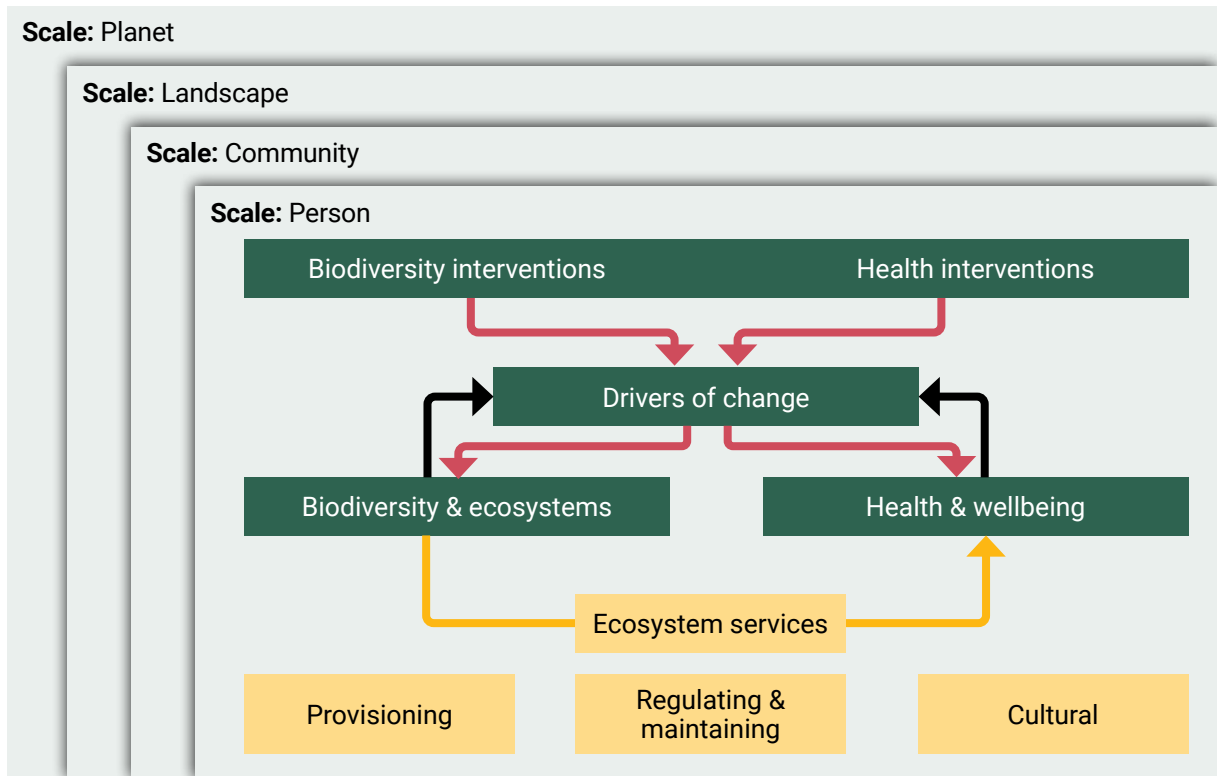


Figure 8: Dependency pathway biodiversity and ecosystem services and human health and well-being⁸⁵

This report explores how nature-related dependencies manifest within the life & health insurance value chain. For insurers, these include downstream dependencies—such as those linked to insured individuals and workers (particularly in commercial lines)—where health outcomes and insured risks, including injuries, diseases, illnesses, and mental health conditions, can be influenced by nature. Upstream dependencies relate to health-care service providers and their value chains. These are considered indirect dependencies for life & health insurers.

The following table provides key considerations for defining and understanding nature-related dependencies specifically in the context of the life & health insurance value chain.^{86 87}

Key considerations in the table below are structured along the following aspects:

- Where in the insurance value chain nature-related dependencies can emerge.
- The scope of nature-related dependencies considering dependency pathway and spatial boundaries.
- Application of terminologies such as actual and potential dependencies in the insurance context.



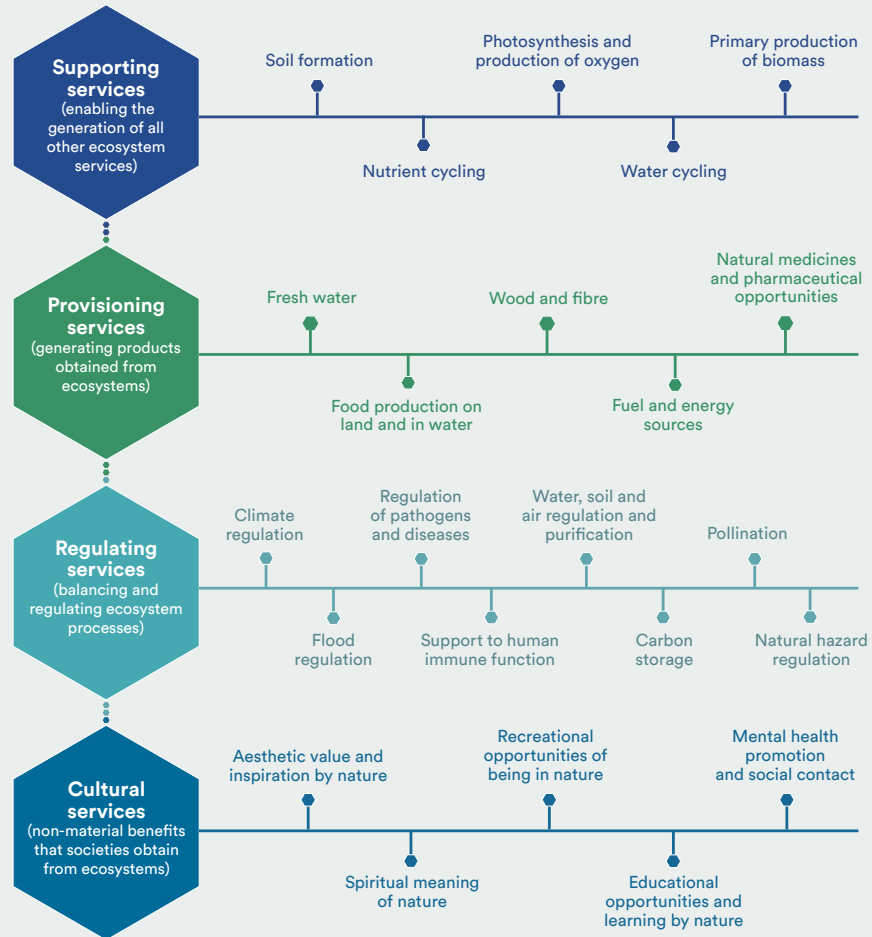
Table 5: Considerations for nature-related dependencies in life & health insurance

Area of considerations	Key considerations
Indirect dependencies through the value chain	<p>This report focuses on the indirect nature-related dependencies of life & health insurers—specifically, the dependencies of healthcare service providers and their value chain (upstream), as well as the dependencies of insured individuals and workers in relation to insured health risks (downstream).</p> <p>The upstream and downstream insurance value chain can be structured in tiers (see Figure 4). Insurers should assess their full insurance value chain for actual and potential nature-related dependencies.</p> <p>Actors in the upstream value chain—such as manufacturers and suppliers of pharmaceuticals (tier 3)—may have significant dependencies on nature, especially related to the availability of genetic resources and raw material for pharmaceutical development and production.</p> <p>Understanding these dependencies is important for assessing nature-related risks and opportunities (see details in Chapter 3.4.2).</p> <p>Dependencies—Upstream value chain:</p> <div data-bbox="432 853 1390 1144" style="border: 1px solid black; padding: 5px;"><p>For service providers, such as hospitals, laboratories, and healthcare facilities, dependencies include access to sufficient water for cleaning, sterilization, and equipment use. Relevant ecosystem services can also be water purification services and solid waste remediation. Service providers rely on natural water flow regulation and flood mitigation to manage stormwater and reduce flood risk. Furthermore, healthcare facilities benefit from visual amenity and cultural ecosystem services—such as access to green spaces—which contribute to patient recovery and well-being.⁸⁸</p></div> <div data-bbox="432 1178 1390 1435" style="border: 1px solid black; padding: 5px;"><p>For the pharmaceutical industry nature-related dependencies include the provision of genetic material for drug discovery and biomass for pharmaceutical production. Pharmaceutical manufacturing also depends on stable water supply and quality, soil quality regulation for the cultivation of medicinal plants, and climate regulation to maintain stable production and supply chains. Additionally, healthy ecosystems support research and educational activities essential to pharmaceutical innovation.⁸⁹</p></div>



Area of considerations	Key considerations
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Dependencies—Downstream value chain:
 Human health and well-being depend on a wide range of ecosystem services. This can present challenges when translating dependencies into a nature-related physical risk assessment. Emerging literature suggests thematic groupings of ecosystem services to better align with human health outcomes (see Table 11).⁹⁰



Personal lines: Insurance for critical illnesses such as cancer, cardiovascular or respiratory diseases are connected to ecosystem services that help mitigate these health risks. For example, forests, wetlands, and other green and blue spaces contribute to air and water filtration, reducing exposure to pollutants, a key factor in cardiovascular and respiratory diseases.⁹¹ Degradation of these ecosystems may increase health risks, affecting morbidity rates, but may also present opportunities for insurers to engage on risk reduction measures.



Area of considerations	Key considerations								
	<p>Commercial lines: In workers' compensation insurance, dependency assessments should also relate to the sector in which the insured workers operate, as many industries rely on ecosystem services to maintain safe and healthy working conditions. For example, aquaculture depends on clean water and healthy marine ecosystems; their degradation increases risks of disease outbreaks affecting both fish stocks and workers. Similarly, manual labour often depends on stable climatic conditions, with extreme heat and weather events elevating health risks. Workers in agriculture and animal handling are also more exposed to zoonotic diseases due to frequent interaction with livestock and wildlife.⁹²</p>								
<p>Scope: Dependency pathway</p>	<p>Considering the dependency pathway is relevant for risk assessment in the context of life & health insurance business. Examining impact drivers alongside the state of nature, ecosystem services, and human health outcomes at regional or local levels can provide important insights for risk identification. These elements can also serve as input for scenario development and forward-looking risk assessments.</p> <p>The example below illustrates how degraded freshwater systems can affect human health in Europe.⁹³ Further examples of dependency pathways linked to health risks are provided in Chapter 3.4.2.</p> <table border="1" data-bbox="432 929 1390 1458"> <thead> <tr> <th data-bbox="432 929 667 1003">Impact drivers</th> <th data-bbox="667 929 906 1003">State of nature</th> <th data-bbox="906 929 1150 1003">Ecosystem services impacted</th> <th data-bbox="1150 929 1390 1003">Health impacted</th> </tr> </thead> <tbody> <tr> <td data-bbox="432 1003 667 1458"> <ul style="list-style-type: none"> Water pollution from wastewater, industrial discharges, and agricultural runoff. Agricultural water increases water stress. Climate change increases water temperatures and alters precipitation patterns. </td> <td data-bbox="667 1003 906 1458"> <ul style="list-style-type: none"> Over two-thirds of European wetlands are degraded or lost, reducing capacity for water storage, filtration, and flood protection. Freshwater biodiversity is highly threatened. Many regions face reduced water quality and availability. </td> <td data-bbox="906 1003 1150 1458"> <ul style="list-style-type: none"> Wetland degradation and biodiversity loss reduces water purification, pollution filtration and water quality. Weakened wetland capacity limits flood regulation, raising flood risk. Degraded freshwater systems restricts groundwater recharge and sustainable water supply. </td> <td data-bbox="1150 1003 1390 1458"> <ul style="list-style-type: none"> Contaminated water supplies increase the risk of waterborne diseases, including those linked to antimicrobial resistance. Around 20% of infectious disease outbreaks in Europe are linked to poor water supply and contamination. </td> </tr> </tbody> </table>	Impact drivers	State of nature	Ecosystem services impacted	Health impacted	<ul style="list-style-type: none"> Water pollution from wastewater, industrial discharges, and agricultural runoff. Agricultural water increases water stress. Climate change increases water temperatures and alters precipitation patterns. 	<ul style="list-style-type: none"> Over two-thirds of European wetlands are degraded or lost, reducing capacity for water storage, filtration, and flood protection. Freshwater biodiversity is highly threatened. Many regions face reduced water quality and availability. 	<ul style="list-style-type: none"> Wetland degradation and biodiversity loss reduces water purification, pollution filtration and water quality. Weakened wetland capacity limits flood regulation, raising flood risk. Degraded freshwater systems restricts groundwater recharge and sustainable water supply. 	<ul style="list-style-type: none"> Contaminated water supplies increase the risk of waterborne diseases, including those linked to antimicrobial resistance. Around 20% of infectious disease outbreaks in Europe are linked to poor water supply and contamination.
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<p>Scope: Spatial boundaries</p>	<p>It is not feasible to determine the exact dependency of each policyholder on ecosystem services based on their specific location. However, dependencies exist at multiple scales:</p> <ul style="list-style-type: none"> At the global level, critical environmental assets such as the Amazon rainforest and coral reef systems play a fundamental role in maintaining planetary health. At regional, landscape, or community levels, dependencies vary based on local ecosystem services. Regional differences in reliance on ecosystem services influence key factors such as local health, food security, climate regulation, and protection from extreme weather events. 								



Area of considerations	Key considerations
Terminology: Actual and potential dependencies	<p>The distinction between actual and potential dependencies in life & health insurance business remains underexplored. However, potential future dependencies could emerge through:</p> <ul style="list-style-type: none">▪ The pharmaceutical and healthcare sectors rely heavily on biodiversity and genetic materials for drug discovery and development; notably, over 70% of clinically used antibiotics are derived from soil bacteria.⁹⁴ With the rise of antimicrobial resistance and the emergence of new diseases, future dependency on biodiversity and genetic diversity for drug research and development may become even more pronounced.⁹⁵▪ Increasing dependency on green and blue spaces, especially as climate change amplifies environmental stressors.⁹⁶



3.3 Nature-related impacts in insurance underwriting portfolios

3.3.1 Non-life insurance business

High-level summary of nature-related impacts for non-life insurance business

- **Non-life insurance enables economic activities** which interact with nature and can contribute to nature-related impacts across the insurance value chain, including insured assets and activities (downstream) and through their claims service providers (upstream).
- **Nature-related impacts should be considered across the full insurance value chain.** Impacts may arise from activities the insurer causes, contributes to, or that are directly linked to its products, or services or entities in its value chain. These should be assessed regardless of the insurer's level of control, as the insurer can exert positive influence and engagement.
- **Nature-related impacts for insurers are primarily indirect** and emerge across three dimensions: (1) insured activities and assets, (2) insured loss events, and (3) the claims process. Nature-related impacts along these dimensions may vary by line of business and type of assets and activities insured.
- The insurance value chain can contribute to drivers of nature change—**positively or negatively**—through insured activities, loss events, and the claims process, ultimately leading to indirect negative impact, avoided negative impact, remediated negative impact, or positive impact on nature.
- The aim of these considerations is to **improve insurers' understanding of impacts** to inform where they can take substantiated, proportionate and appropriate actions in halting and reversing nature loss.



Without insurance, activities such as construction, business entrepreneurship, or transport on land and sea would not take place at the same scale. Non-life insurance enables these activities by providing financial protection against various risks. Such protection is particularly relevant for projects and companies requiring large-scale investments. Insurance is therefore a critical function for the effective operation of the economic system.

The insurance value chain enables economic activities, many of which interact with nature and may contribute to nature-related impacts, both positive and negative, and at varying scales. This occurs through the provision of risk transfer solutions for assets and activities (downstream), as well as through upstream actors, such as claims service providers, that enables the functioning of insurance business operations.

As the insurance value chain facilitates these upstream and downstream activities, the activities' impacts on nature can be considered indirect impacts of the insurer.⁹⁷ In contrast, nature-related impacts resulting from the insurer's own facilities and owned service providers are considered direct impacts of the insurer.⁹⁸

Nature-related impacts associated with insurers arise through the contributions of their value chain to the five direct drivers of nature change: climate change; land, freshwater, and ocean use change; resource exploitation and regeneration; pollution and pollution removal; and the introduction or removal of invasive alien species.⁹⁹ These contributions can be either positive or negative.

While insurers have already begun assessing how their value chain contributes to climate change—through insurance-associated greenhouse gas (GHG) emissions or climate change mitigation through their decarbonization efforts—they need to broaden their assessments to encompass the other direct drivers of nature change, which are inherently location-specific.¹⁰⁰ This is summarized in Figure 9 below.

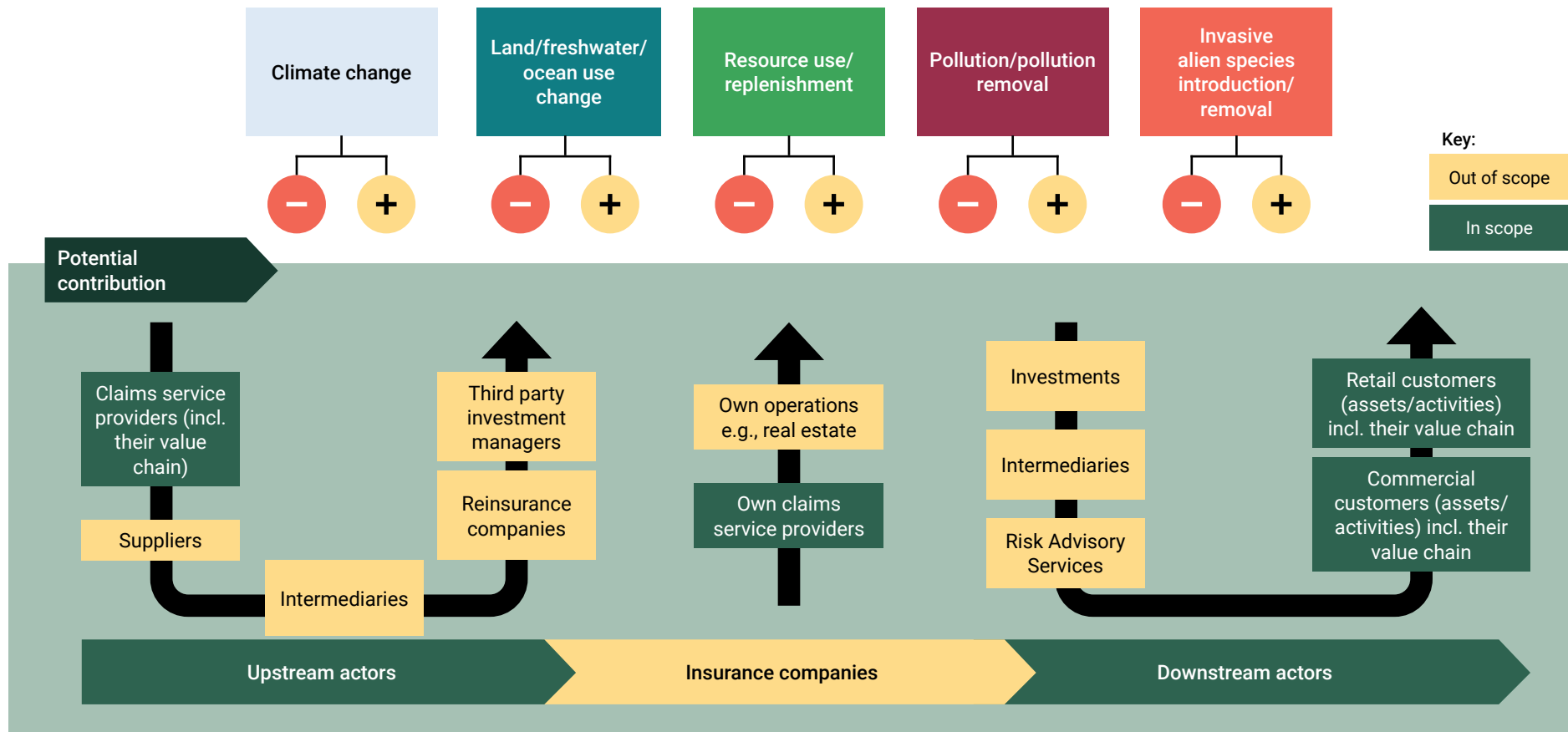


Figure 9: Non-life insurance value chain in scope for nature-related impacts (simplified version, adapted from the GHG protocol)¹⁰¹



The consideration of lines of business and insurance products is relevant in the context of conducting nature-related assessments, as well as for determining the scope and scale of indirect nature-related impacts by insurers. Some non-life insurance products have a more direct and significant interface with nature—such as environmental pollution liability insurance or insurance for natural assets—while others, such as credit insurance or cyber insurance, may have a limited interface with nature. The scope and scale of nature-related impacts may depend on what is insured (i.e., insured assets and activities,¹⁰² such as the operation of assets or construction projects, and the insured risk such as potential losses and damages to own assets or arising liabilities from damages to third-party assets or the environment), how these are insured (i.e., if the product disincentivizes or incentivizes certain behaviour with negative or positive contributions to nature, for example, incentives for repair over replacement in the claims process), and where insured assets and activities are located and taking place (i.e., in or near ecologically-sensitive locations).

The following table provides key considerations for defining and understanding nature-related impacts specifically in the context of the non-life insurance value chain. It focuses on the indirect nature-related impacts associated with insurance underwriting portfolios.^{103 104}

Key considerations in the table below are structured along the following aspects:

- Where in the insurance value chain nature-related impacts may arise.
- The scope of nature-related impacts, considering the impact pathway and spatial boundaries.
- The use of terminology such as actual and potential, and positive and negative impacts, in the insurance context.
- The potential determinants of impact scale and associated data inputs.
- Considerations for attribution and materiality.

Table 6: Considerations for nature-related impacts in non-life insurance business

Areas of consideration	Key considerations
Indirect impacts through the value chain: Actor perspective	<p>Indirect nature-related impacts for insurers can be considered in terms of their value chain and business relationships:</p> <ul style="list-style-type: none"> ■ Claims service providers, including their value chain (upstream). ■ Retail and commercial clients—their insured assets and activities—including their value chain (downstream). <p>The upstream and downstream insurance value chain can be structured by tiers (see Figure 3). Actors within an insurer’s upstream and downstream value chain (tier 1 and tier 2) may themselves have additional value chain actors (tier 3).</p> <p>For upstream activities, these may include repairers, suppliers, and other actors involved in the claims service process, such as those responsible for material sourcing, production, recycling, waste management, and disposal.</p> <p>For downstream activities, these may include retail and commercial customers and their insured assets and activities. These, in turn, may have their own upstream and downstream value chain actors depending on where they sit within the broader value chain—such as raw material extraction, suppliers, production or manufacturing, construction, transport, decommissioning, and waste management.</p>



Areas of consideration	Key considerations
	<p>Insurers should assess their full insurance value chain for actual and potential nature-related impacts—including those they cause or contribute to, as well as those arising through business relationships, such as entities directly linked to their products or services, or entities within their value chain beyond the first tier—and where potentially moderate or high impacts may arise.^{105,106,107}</p> <p>The degree of control over these actors should not determine the scope of the assessment or the identification of materiality as insurers may still exert positive influence and engagement.</p> <p>It is relevant to consider whether the insured asset or activity is causing, contributing to, or facilitating impacts on nature through the associated entities in its value chain.</p> <div data-bbox="432 656 1390 808" style="border: 1px solid #ccc; padding: 5px;"> <p>For example, in construction all-risk insurance, upstream material suppliers (tier 3) may generate significant nature-related impacts through their sourcing practices, while downstream actors involved in construction waste disposal (tier 3) may also contribute to nature-related impacts.</p> </div>
<p>Indirect impacts through the value chain: Process perspective</p>	<p>Nature-related impacts are not only determined by the actors and their activities or assets involved, but also through the insurance process itself, which may vary depending on the insurance product and its design—such as the type of loss events insured or product coverage and services. As such, three dimensions can be considered when assessing nature-related impacts:</p> <ol style="list-style-type: none"> 1. Insured activities and assets 2. Insured loss events 3. Claims process <p>1. Insurance enables business activities and asset ownership or operation</p> <p>Insurance can enable and have a direct business relationship through their products and services with activities that have a negative impact on nature. But insurance can also positively influence customers to avoid and reduce nature-related impacts and to contribute to a positive impact on nature (e.g., sustainability-linked insurance products with nature-related key performance indicators (KPIs)). The nature-related impacts associated with insured assets and activities (e.g., agriculture, manufacturing, transportation, construction, real estate, vehicles) can therefore be regarded as indirect nature-related impacts of insurers.</p> <div data-bbox="432 1462 1390 1682" style="border: 1px solid #ccc; padding: 5px;"> <p>Notable consideration: The insured is not necessarily the recipient of the insurance pay-out. In third-party liability insurance, for example, indemnification may be paid directly to a third party affected by the insured’s actions. In this context, the nature-related impacts under consideration typically relate to the insured—specifically, the entity that owns or operates the relevant assets or activities that can cause the negative impact on nature.</p> </div>



Areas of consideration	Key considerations
	<p>2. Insurance provides coverage for a range of potential loss events including physical damage to or loss of assets due to accidents or natural hazards, as well as financial liabilities arising from harm to third parties or the environment. Some loss events may themselves give rise to nature-related impacts (e.g., wildfires resulting in hazardous waste and water pollution, industrial accidents leading to the release of hazardous substances). In certain cases, these impacts are explicitly covered under the insurance policy, such as in environmental pollution liability insurance or insurance products linked to natural assets. Nature-related impacts from such loss events may therefore form a relevant part of the assessment.¹⁰⁸ While the assessment will naturally begin with impacts explicitly covered by the insurance product, it can also consider broader negative impact on nature associated with insured loss events.</p> <div data-bbox="432 719 1386 976" style="border: 1px solid black; padding: 5px;"><p>For example, where environmental impacts are not directly insured—such as downstream pollution caused by fire—insurers may still have an opportunity to engage with customers and public entities on impact mitigation measures,¹⁰⁹ or to explore and expand insurance solutions that respond to these nature-related impacts (e.g., insurance products for public entities that cover beach clean-up following storms or wildfires). It is therefore relevant to consider the loss event in a nature-related assessment to help identify such opportunities.</p></div> <p>3. Claims process:</p> <p>Following a loss event, additional nature-related impacts may arise through the claims process and should be considered as part of a nature-related impact assessment:</p> <ul style="list-style-type: none">▪ Immediate responses, such as pollution incidents requiring crisis management and emergency response.▪ Claims handling activities, where compensation results in asset replacement, repairs, disposal, or environmental remediation, including clean-up and restoration efforts. <p>In summary, across all lines of business, insurers have a direct business relationship with insured assets and activities through the products and services they provide. Most insured assets and activities can potentially impact nature, with the scale of impact depending on the type of activity and asset insured, as well as its value chain. The relevance of nature-related impacts also depends on whether the insured loss event involves a physical interface with nature—more likely in the case of insured physical events. Impacts may also arise through the claims process, particularly where claims involve physical repair or replacement rather than monetary compensation alone.</p> <p>See examples of how these dimensions may apply across different business lines in Figure 11.</p>



Areas of consideration	Key considerations
<p>Scope: Impact pathway</p>	<p>Impact refers to changes in the state of nature and the flow of ecosystem services.¹¹⁰ For insurers, impacts can be assessed along the impact pathway across three key dimensions: insured activities and assets, the insured loss event, and the claims process.</p> <p>The impact pathway (illustrated below) captures the relationship between direct impact drivers and external factors that influence changes in the state of nature and ecosystem services, and how this can impact affected stakeholders including rightsholders.¹¹¹ This concept is widely adopted in nature-related approaches and is equally relevant for insurers conducting nature-related assessments.</p> <div data-bbox="427 622 1390 967" data-label="Diagram"> </div> <div data-bbox="432 987 1385 1205" data-label="Text"> <p>For example, an agricultural customer extracts water from a local freshwater river to irrigate crops. The water-use acts as a direct impact driver, which—when combined with an external factor such as drought—leads to a reduction in river flow (a change in the state of nature). This, in turn, reduces the availability and quality of freshwater (a change in ecosystem services), potentially resulting in health issues for local communities (impacts on affected stakeholders).¹¹²</p> </div> <ol style="list-style-type: none"> <li data-bbox="427 1234 1394 1435">1. For determining the impact, the five direct drivers of nature change should be considered: (1) land, freshwater, and ocean use change; (2) pollution/pollution removal; (3) resource use/replenishment; (4) invasive species introduction/removal; and (5) climate change (GHG emissions).^{113,114} Unlike GHG emissions, which are global in nature, the other drivers are spatially explicit, making it important to assess them through the impact pathway. <li data-bbox="427 1451 1394 1585">2. Considering all elements of the impact pathway for the assessment, including impact drivers and the state of nature, is currently more feasible in some cases than others. The ability to assess impacts is often determined by the type of insured asset or activity.¹¹⁵ <div data-bbox="432 1608 1385 2033" data-label="Text"> <p>For example, mobile assets—such as ships, planes, rail, or vehicles¹¹⁶—may carry direct impact drivers with them, including disturbance or pollution of water, air, or soil. The mobility of these assets makes it difficult to pinpoint where nature-related impacts from their operation may occur. While route or tracking data can help identify whether these assets pass through ecologically-sensitive areas, it is not always clear where actual or potential impacts may arise. In case of a loss event, the geographic location of damage or casualties may also be unpredictable. In such cases, insurers may need to rely on estimates or historical data (e.g., known areas with higher frequencies of accidents or spill events).</p> <p>Although the nature-related impact of these mobile assets might not only arise through their own operations, but through their value chain, such as through upstream suppliers and manufacturers of the assets.</p> </div>



Areas of consideration	Key considerations
	<p>Assessing the full impact pathway on ecosystems is particularly important where affected stakeholders depend on related ecosystem services—both upstream and downstream—such as access to, availability of, and quality of water for local communities. These considerations are especially significant for third-party liability products, including environmental pollution liability insurance, where such extended nature-related impacts may also translate into financial risks for insurers.</p> <p>The extent to which insurers consider the full impact pathway will also depend on the purpose and depth of the analysis.</p> <div data-bbox="432 577 1386 913" style="border: 1px solid #ccc; padding: 10px;"><p>For example, in due diligence and underwriting for large projects, more detailed assessment should be required. The construction of a major port for maritime transport could significantly affect fisheries, with implications for local communities that rely on marine resources.</p><p>In contrast, during initial portfolio-level analysis, the scope of analysis may be shaped by prioritization and data availability. In such cases, the aim may not be to fully quantify or disclose the full impact pathway, but rather to identify opportunities for client and stakeholder engagement, and to inform impact and risk mitigation measures.</p></div> <p>External drivers, including third-party activities, may also contribute to impacts on environmental assets within a landscape or marine/freshwater area. For insurers, this presents a twofold consideration:</p> <ul style="list-style-type: none">▪ First, the potential for cumulative impacts could accelerate environmental degradation and trigger cascading effects.▪ Second, the role of insurers influencing and engaging with third parties when responding to such impacts. <p>The consideration of the state of nature and ecosystem services in the impact assessment is connected to its geospatial scope, as outlined below.</p>
Scope: Spatial boundaries	<p>Identifying nature-related impacts—defined as changes in the state of nature and ecosystem services—requires a spatial perspective.</p> <p>The spatial boundaries of an assessment can depend on its purpose and level of analysis, which may vary between entity- or project-level and portfolio-level assessments.¹¹⁷</p> <p>The TNFD framework suggests that companies—particularly financial institutions engaged in project finance (a principle equally relevant for underwriting large projects)—consider areas of influence that extend beyond the immediate site boundary. Nature-related impacts often reach beyond the business location itself; for example, water pollution from industrial activity can cause cascading downstream impacts. Accordingly, project- and entity-level assessments may consider multiple spatial scales, such as:¹¹⁸</p> <ul style="list-style-type: none">▪ the specific geolocation of activities▪ the area of influence surrounding those locations▪ outside the area of influence where impacts may occur



Areas of consideration	Key considerations
	<p>At the project or entity level, impacts on the state of nature and ecosystem services may extend beyond the immediate vicinity of an activity.</p> <div data-bbox="432 360 1390 551" style="border: 1px solid #ccc; padding: 5px;"> <p>For example, through ecological linkages, wildlife migration, or effects on nearby communities. This landscape-level perspective is particularly relevant for insurers underwriting large assets and infrastructure projects (e.g., engineering insurance lines), as well as for third-party liability insurance, where spatially distributed nature-related impacts can also create financial risks for insurers.</p> </div> <p>At the portfolio level, different spatial boundaries can be considered depending on the nature of the impact drivers.¹¹⁹</p> <div data-bbox="432 663 1390 860" style="border: 1px solid #ccc; padding: 5px;"> <p>Examples may include:</p> <ul style="list-style-type: none"> ▪ proximate impacts and dependencies (e.g., land use within the portfolio) ▪ catchment or regional impacts (e.g., water consumption and discharges) ▪ national-level impacts (e.g., contribution to total waste generation) ▪ global impacts (e.g., GHG emissions) </div> <p>For practical examples of how spatial considerations can be applied in the TNFD LEAP assessment, see the second part of <i>PSI Nature Uncovered for Insurers</i> series, <i>Breaking Ground</i>.</p>
<p>Positive and negative impact</p>	<p>Nature-related impacts are defined as changes in the state of nature—the condition and extent of ecosystems and species population size and extinction risk, and changes to these¹²⁰—and the flow of ecosystem services—and can be either negative or positive:^{121 122}</p> <ul style="list-style-type: none"> ▪ Negative impacts result from negative drivers of nature change such as pollution or deforestation. ▪ Positive impacts may result from positive drivers of nature change such as rewilding, conservation, or restoration. Other positive drivers of nature change, such as emissions reduction, pollution removal or recycling, are avoiding or reducing the negative impacts on nature. And to be classified as a positive impact, these actions must result in a measurable net gain in the state of nature.¹²³ <p>In line with the mitigation hierarchy, avoiding or reducing negative impacts is not considered the same as having a positive impact on nature. For this reason, frameworks such as PBAF also include “avoided impact” as a distinct category.^{124 125}</p> <p>Insurers may contribute to negative or positive drivers of nature change through their value chain and business relationships, ultimately leading to indirect negative impact, avoided negative impact, remediated negative impact, or positive impact on nature.¹²⁶ In the context of insurance underwriting portfolios, nature-related impacts may arise across three dimensions: insured activities and assets, insured loss events, and the claims process.</p>



Areas of consideration	Key considerations
	<p>1. Insured activities and assets:</p> <p>a. Insured activities and assets may contribute to negative drivers of nature change and lead to a negative impact on nature.</p> <p>For example, insurance provided for large-scale farming operations may enable practices that result in deforestation, habitat loss, nitrogen pollution in river systems, and groundwater contamination from pesticide use. These activities contribute to negative impacts on nature.</p> <p>b. Insured activities and assets may contribute to positive drivers of nature change and lead to a positive impact on nature.</p> <p>For example, insurance that de-risks and further facilitates investments in restoration or conservation and can therefore be associated with positive impacts, where these result in a measurable improvement in the state of nature.</p> <p>c. Insured activities and assets may contribute to positive drivers of nature change leading to avoided or reduced negative impact (compared to a business-as-usual scenario).</p> <p>For example, insuring recycling facilities can support the redirection of waste from landfill to recycling, helping reduce pollution and avoid further negative impact. This does not qualify as a positive impact unless it results in a measurable net gain in the state of nature.¹²⁷</p> <p>For example, a manufacturing facility may be insured through a sustainability-linked insurance product that incorporates nature-related key performance indicators, such as targets for reducing water consumption or chemical use.</p> <p>Notable considerations:</p> <p>Surety for restoration: While the activity enabled is the remediation of prior environmental harm by the principal, the insurer's role in facilitating the restoration through a surety bond does not constitute a positive impact on nature—especially where the underlying activity that caused the harm was also underwritten by the insurer.</p> <p>Insurance for decommissioning: Depending on the coverage, insuring the decommissioning of high-impact assets can contribute to avoiding or reducing negative impacts. If restoration activities are included, similar considerations to those mentioned above apply.</p> <p>2. Insured loss events:</p> <p>Insured loss events are generally assumed to cause negative impacts on nature (e.g., through disturbance, pollution, or destruction of ecosystems). However, in limited cases, an insured event may disrupt or discontinue an activity that is itself harmful to nature, potentially leading to avoided negative impacts.</p>



Areas of consideration	Key considerations
	<p>3. Claims process:</p> <p>The claims process can lead to a range of nature-related impacts:</p> <ul style="list-style-type: none"> a. replacing damaged assets and inventory may involve additional resource extraction or pollution leading to negative impact on nature. However, adopting sustainable claims handling practices—such as prioritizing repair and reuse—can help avoid or reduce negative impacts. b. emergency measures (e.g., containing pollutants, limiting spread of hazardous materials) can help avoid or reduce further negative impacts. c. insurance may finance remediation measures following environmental damage or natural disasters impacting biodiversity and ecosystems. <div style="background-color: #fff9c4; padding: 10px; border: 1px solid #ccc;"> <p>Notable considerations:</p> <p>Restoration following a natural hazard: If the insurance product is designed to restore ecosystems following a natural hazard (e.g., insurance for coral reefs or mangroves insured against natural perils such as hurricanes or storms), the claims process may lead to remediation of the negative impact through the natural hazard and can result in a positive impact on nature—but only if this results in a measurable net gain in the state of nature.</p> <p>Restoration following negative impact caused by the insured activity: Where insurance covers the activities and assets that cause or contribute to environmental harm—such as insurance for mining operations or environmental pollution liability insurance for accidental pollution events—remediation financed through the insurance should not be classified as a positive impact on nature.</p> </div>
<p>Terminology: Actual or potential impact</p>	<p>Nature-related approaches differentiate between actual and potential (future) impacts, as well as short-, medium-, and long-term timeframes—often used for disclosure purposes.^{128,129} In the context of this report, this distinction is also relevant to inform actions aligned with the impact mitigation hierarchy.¹³⁰</p> <p>Actual impacts refer to observed changes in the state of nature that have already occurred as a result of business activities. The Global Reporting Initiative (GRI) similarly defines actual impacts as those occurring within the reporting period.¹³¹ These are measurable changes (e.g., a decline in water quality from nutrient runoff or a reduction in habitat area due to land conversion). If a change has occurred, it should be classified as actual impact, even if based on estimated or proxy data.¹³²</p> <p>Potential impacts are those that could occur but have not yet taken place or are anticipated based on impact drivers.^{133,134}</p> <p>For insurers, both actual and potential impacts can arise through insured activities and assets, insured loss events, and claims processes.</p> <p>Actual impacts in the case of insurance can include impacts from insured activities (e.g., insurance for large-scale farming that led to nutrient runoff during operations); from loss events that have taken place (e.g., an insured pipeline rupture causing freshwater contamination); and from claims processed (e.g., post-flood building repairs resulting in additional material use and waste).</p> <div style="background-color: #fff9c4; padding: 10px; border: 1px solid #ccc;"> <p>These impacts are not always directly measured, particularly when they occur within the value chain of insured activities. In such cases, loss records or claims data from the underwriting portfolio during the reporting period may serve as proxies for estimating actual impacts.</p> </div>



Areas of consideration	Key considerations
	<p>Potential (future) impacts in the case of insurance may arise from insured activities that are ongoing or planned—such as construction projects, and from future loss events and related claims (considering the likelihood and severity of such events). Timeframes for defining short-, medium-, and long-term impacts vary across frameworks. The European Sustainability Reporting Standards (ESRS) consider short term as the one-year reporting period—a timeframe particularly relevant for insurers, given that most non-life insurance contracts are issued for a one-year duration.¹³⁵</p>
<p>Scale of impact and data input</p>	<p>To assess the scope and potential scale of impact, insurers can apply a set of key criteria across the three dimensions:</p> <ol style="list-style-type: none"> 1. Insured activities and assets <ul style="list-style-type: none"> ▪ The type of activity or asset insured influences impact considerations (e.g., construction or expansion, day-to-day operations, decommissioning of assets). For instance, insuring the construction of a manufacturing facility will raise different nature-related impact considerations than insuring its operation (see Figure 11). ▪ How the activity is insured also matters—for example, if the insurance product includes features that encourage impact reduction or avoidance, such as incentives or sustainability-linked KPIs. ▪ Location is a key factor—for example, constructing a facility on reclaimed coastal land has different implications for determining nature-related impacts than retrofitting an existing building in an urban area. 2. Insured loss events <ul style="list-style-type: none"> ▪ Impact considerations may vary depending on the nature of the loss event covered: a) physical damage to insured assets or third-party property, b) environmental liabilities for damages to nature, and c) loss events without interface with nature (e.g., professional indemnity insurance). <div style="border: 1px solid #ccc; padding: 5px; margin: 10px 0;"> <p>The location of a loss event shapes which environmental assets are affected and the nature of the resulting impact. For example, an oil spill in a rainforest may require consideration of terrestrial ecosystems, biodiversity, and local communities, whereas a spill in the ocean would involve marine ecosystems, water quality, and potentially fisheries.</p> </div> 3. Claims process <ul style="list-style-type: none"> ▪ Impacts may differ based on the nature of the claim: a) physical repairs or replacements, b) emergency response and clean-up, c) restoration or remediation activities, and d) monetary reimbursement. ▪ Additional considerations include the source of materials used in claims fulfillment (e.g., resource-intensive replacement parts) and whether claims processes are designed to encourage lower-impact responses or build back greener. <p>Relevant data inputs</p> <p>Assessing nature-related impacts will require a combination of qualitative and quantitative inputs, which may include:</p> <ul style="list-style-type: none"> ▪ Geolocation of the insured activity or asset, especially if located in or near ecologically-sensitive areas. ▪ Information on impact drivers (e.g., land use, pollution, resource use), and where possible, data on actual changes in the state of nature.



Areas of consideration	Key considerations
	<ul style="list-style-type: none">▪ Governance indicators of the insured activity or asset, such as due diligence practices, monitoring processes, adherence to sustainability standards or certifications. <p>Note: Nature-related impact assessments may inform future due diligence processes for both customers and third parties.</p> <p>While data limitations are recognized, particularly for impacts through the value chain, they should not preclude consideration of nature-related impacts. Proxy indicators, estimates, or modelled data may be necessary in the absence of primary information. In some lines of business or product types—such as infrastructure or large-scale agricultural insurance—greater data granularity may be needed earlier in the assessment process. In other cases, information on the state of nature may be particularly relevant (e.g., for insurance products supporting ecological restoration).</p> <p>Part 2 of the <i>PSI Nature Uncovered for Insurers</i> series, <i>Breaking Ground</i>, offers suggestions for how data use and granularity can be progressively enhanced over time.¹³⁶</p>
Attribution¹³⁷	<p>It is important to recognize that insurance is often not the sole enabling factor allowing activities to take place and assets to be operated or owned. Insurers frequently collaborate on larger projects, with reinsurers providing additional risk transfer capacity.</p> <p>As outlined in the <i>Global GHG Accounting & Reporting Standard Part C—Insurance-Associated Emissions</i>, the recognition and attribution principle is applied when accounting for GHG emissions to insurers.¹³⁸ However, further defining these principles in the context of nature-related impacts is beyond the scope of this report.</p>

Below is an illustrative, aggregated overview of the different ways nature-related impacts can emerge across the value chain of non-life insurers. It brings together key considerations for impact assessments, including relevant actors and activities in the value chain, as well as potential impact pathways and spatial dimensions.

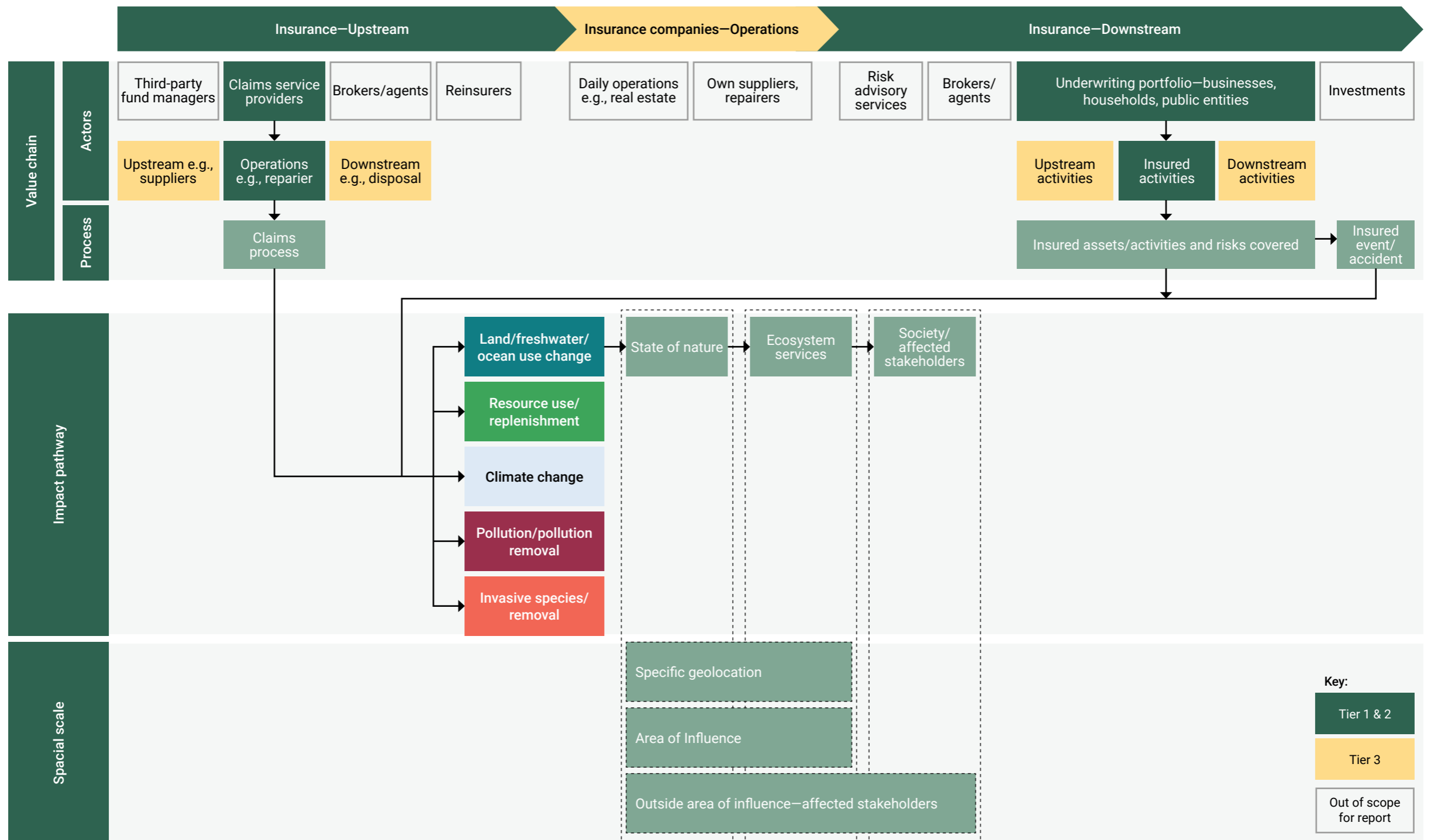


Figure 10: Non-life insurance value chain, impact pathway and spatial dimension in scope for nature-related impacts

Figure 11 provides examples and suggestions for assessing nature-related impacts according to an insurer's line of business.¹³⁹

Example enabled asset or activity	Example insured risk	Example insurance products	Potential examples of nature-related impacts		
			Insured asset/activity	Insured event/accident	Claims process
Insurance enables the operations of an asset or activity	Insuring the risk of damage to or loss of physical assets	Commercial property insurance for a manufacturing facility (e.g., fire, flood)	Based on sector/industry activity Insurance enables manufacturing process and resulting contribution to impact drivers, such as water use, GHG emissions, water and soil pollutants or solid waste	At the time of the loss event e.g., fire/ destruction of facility leading to additional water and soil pollutants and disaster-related waste	As part of the claims process additional resources used for rebuild and/or replacement
		Business interruption insurance for manufacturing (e.g., machinery)			
	Insuring liabilities in relation to accidental environmental harm ("insuring the impact on nature")	Environmental pollution liability insurance for a manufacturing facility		Accidental discharges of toxic materials and contamination of soils and waterways surrounding the facility	Through claims and services (e.g., crisis management, clean up support) limiting and/or remediating negative impacts of loss event
Insurance enables the expansion of an activity or construction of an asset	Insuring the risk of damage to or loss of physical assets	Engineering line (All-risk insurance) for a new infrastructure project	Construction of facility can occur on reclaimed land from freshwater or marine systems or can lead to habitat clearance. Construction can cause disturbances e.g., noise, light and GHG emissions	At the time of the loss event additional water pollutants, soil pollutants, disaster-related waste	As part of the claims process additional resources used for rebuild and /or replacements
Insurance for removal of damaging assets and restoration	Financial and environmental liabilities	Surety bond for restoration (e.g., mining) or insurance for decommissioning (oil storage facility)	Enables the removal of the asset e.g., avoiding potential future pollutants (soil, water), or larger spills Enables the restoration e.g., soil rehabilitation, revegetation	Accidental discharges of toxic materials and contamination of soils and waterways, or coastal areas	Through claims and services (e.g., crisis management, clean up support) limiting and/or remediating negative impacts of loss event

Figure 11: Illustrative examples for considerations of assessment of nature-related impacts by lines of business



3.3.2 Life & health insurance business

High-level summary of nature-related impacts for life & health insurance business

- Nature-related impacts—**both positive and negative**—for life & health insurers can arise from their own operations and their value chain, with **indirect impacts** potentially arising through both upstream (e.g., healthcare service providers and their value chain) and downstream (e.g., commercial policyholders and insured individuals).
- **Insurers should assess their full insurance value chain** for actual and potential nature-related impacts. Impacts may arise from activities the insurer causes, contributes to, or that are directly linked to its products, or services or entities in its value chain.
- **Nature-related impacts of downstream actors remain less established**, this is also the case in the context of insured GHG emissions for life & health insurance business. The focus is therefore on identifying nature-related impacts to inform actions to contribute to nature-positive, with a distinction made between **personal lines**, where insured individuals are the focus, and **commercial lines**, which relate to corporate policyholders and their business activities.
- Considerations of **nature-related impacts of upstream actors are largely similar to those for non-life insurance**, with particular attention to healthcare providers, pharmaceutical, and biotechnology sectors—especially in relation to the sourcing and use of genetic materials and biological resources, and the fair and equitable sharing of benefits arising from the use of digital sequencing information.
- The aim of these considerations is to **improve insurers' understanding of impacts** to inform where they can take proportionate and appropriate actions to halt and reverse nature loss.



The impact of life & health insurance underwriting portfolios on nature is a relatively new concept and has not yet been explored in the context of insured emissions or life & health insurers' decarbonization efforts.¹⁴⁰

This report examines nature-related impacts along the life & health insurance value chain. Multiple actors within this value chain interact with nature. Upstream actors in the health-care system and their value chains potentially contribute—both positively and negatively—to impacts on nature through their business activities. Additionally, interactions with nature occur downstream through insured individuals, as well as corporate policyholders covering their employees through life & health insurance.

Generally, the potential nature-related impacts of upstream and downstream actors connected to the insurer can be considered indirect nature-related impacts. In contrast, nature-related impacts arising from the insurer's own facilities and owned service providers are considered direct nature-related impacts of the insurer.

Across life & health insurance business lines, there is generally limited differentiation in how nature-related impact assessments are approached. However, specific considerations apply in the case of commercial lines, including workers' compensation insurance. In this context, nature-related impacts may be assessed from the perspective of the corporate policyholder. In contrast, nature-related risks should be considered more directly from the perspective of the covered workers, as nature degradation can exacerbate occupational hazards—potentially increasing the frequency and severity of claims (refer to Chapter 3.4.2).

Since nature-related impacts associated with insured individuals remain largely unexplored, and the basis for attributing these impacts to insurers is currently unclear, this report primarily focuses on identifying opportunities to respond to nature-related impacts. As outlined in the *PSI Nature Action Guide*, lifestyle choices, environmental impact, and human health and well-being are closely interconnected.¹⁴¹

This is summarized in Figure 12 below.

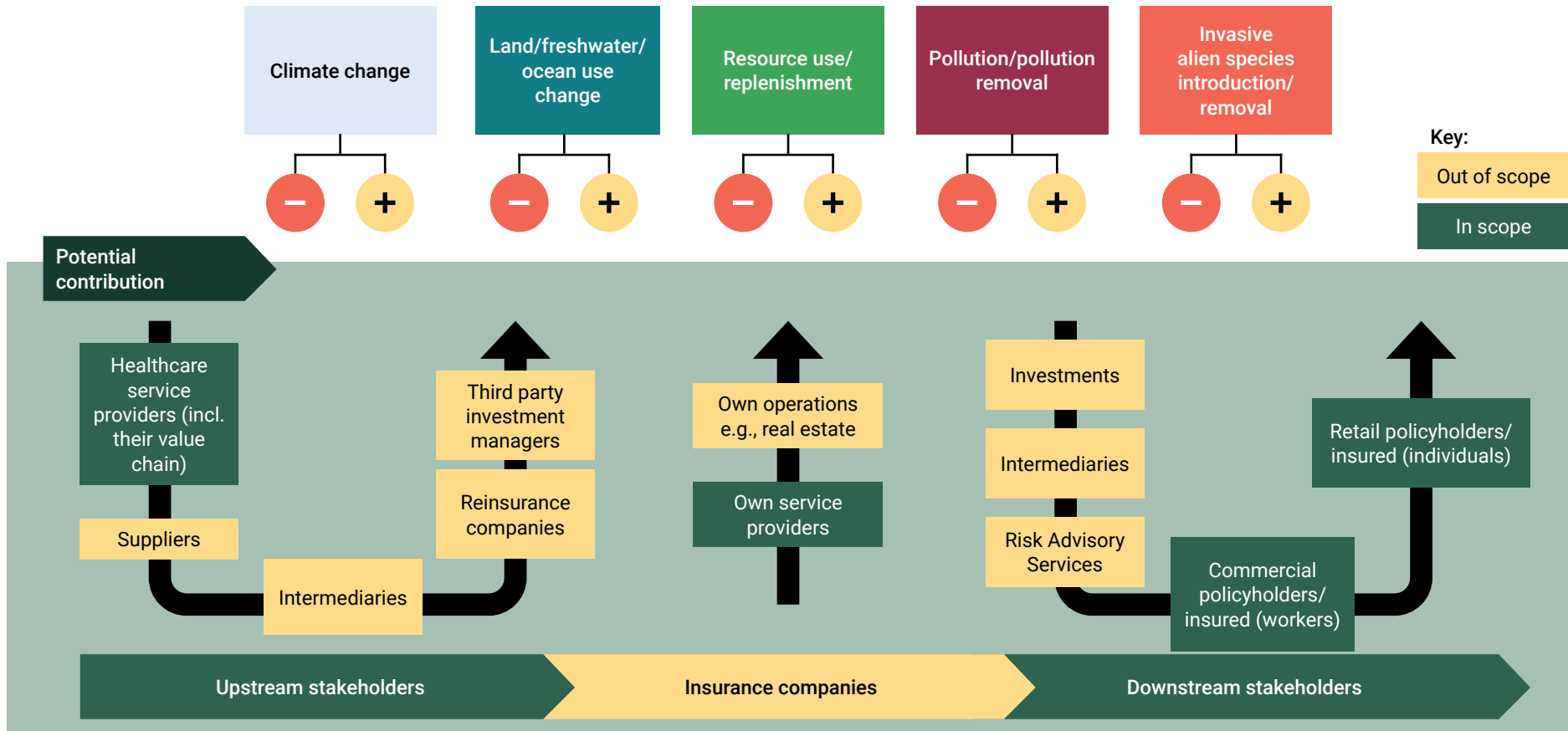


Figure 12: Life & health insurance value chain in scope for nature-related impacts (simplified version)



The following table provides key considerations for defining and understanding nature-related impacts specifically in the context of the life & health insurance value chain. It focuses on the indirect nature-related impacts associated with insurance underwriting portfolios.^{142 143}

Key considerations in the table below are structured along the following aspects:

- Where in the insurance value chain nature-related impacts may arise.
- The scope of nature-related impacts, considering the impact pathway and spatial boundaries.
- The use of terminology such as actual and potential, and positive and negative impacts, in the insurance context.
- The potential determinants of impact scale and associated data inputs.
- Considerations for attribution and materiality.

Table 7: Considerations for nature-related impacts in life & health insurance business

Area of consideration	Key considerations
Indirect impacts through the value chain: Actor perspective	<p>Indirect nature-related impacts for insurers can be considered in terms of:</p> <ol style="list-style-type: none"> 1. Healthcare service providers including their value chain (upstream) 2. Insured individuals, commercial policyholders and workers (downstream) <p>The upstream and downstream insurance value chain can be structured in tiers (see Figure 4). Insurers should assess their full insurance value chain for actual and potential nature-related impacts—including those they cause or contribute to, as well as those arising through business relationships, such as entities directly linked to their products or services, or entities within their value chain beyond the first tier—^{144,145} and where potentially moderate or high impacts may arise.¹⁴⁶</p> <p>Actors in the upstream value chain, such as manufacturers and suppliers of pharmaceuticals (tier 3), may potentially have significant impacts on nature, particularly through the sourcing and use of genetic material and biological resources.</p> <p>The degree of control over these actors should not determine the scope of the assessment or the identification of materiality as insurers can still exert positive influence.</p> <div style="border: 1px solid #ccc; padding: 5px; margin: 10px 0;"> <p>For example, the healthcare system’s strong reliance on natural resources and biodiversity for pharmaceutical production highlights the relevance of life & health insurers in contributing to the safeguarding of these biological resources.</p> </div> <ol style="list-style-type: none"> 1. Healthcare service providers and their value chain—The healthcare system on which individuals and public health depend on for healthcare and treatment, includes a range of actors including service providers, facilities, manufacturers and suppliers of medical equipment and pharmaceuticals.



Area of consideration	Key considerations
	<p>Nature-related impacts can include, for example: ^{147 148}</p> <ul style="list-style-type: none">■ Generation of significant volumes of hazardous and non-hazardous waste and pollution, including medical plastics, chemicals, and pharmaceutical residues which may be released into water and soils.■ Contribution to antimicrobial resistance (AMR) due to overuse of antimicrobial agents in healthcare.■ Extensive land-use from cultivation of biological resources and extraction of biomass for the production pharmaceuticals and high consumption of raw materials, water and energy for production of medical supplies, equipment, and the operation of healthcare facilities.■ Another consideration related to the extraction of biological resources for pharmaceutical development is the issue of access and benefit-sharing, particularly where genetic resources and associated traditional knowledge are used in research and product development. <p>2. Insured individuals and commercial policyholders—The indirect nature-related impacts associated with downstream activities of life & health insurance are not yet well-defined.</p> <p>a. Personal lines: Such impacts may stem from the lifestyle choices of insured individuals that contribute to nature-related impact drivers and are linked to health outcomes (e.g., diets, transportation modes). Although attribution of these indirect impacts to life & health insurers is not currently addressed by existing accounting or reporting frameworks, insurers may nonetheless consider assessing them to identify opportunities for positive influence (e.g., through product design features that incentivize healthier and more sustainable behaviours).¹⁴⁹</p> <p>b. Commercial lines: Workers compensation insurance presents a distinct case. As it is mandatory in many jurisdictions, it functions similarly to non-life insurance, with coverage often being a prerequisite for business operations and creating a direct business relationship between the insurer and the corporate policyholder through its products and services.¹⁵⁰ Consequently, the associated business activities may be relevant for nature-related impact assessments. In the context of nature-related risks, the focus may shift to the insured workers, particularly how the nature of the business activity and its geographic location influence workers' exposure to nature-related hazards (see further details in Chapter 3.4.2).</p> <p>The extent to which these indirect impacts are considered in portfolio-level analysis—and are reflected in an insurer's responses and disclosures—should be guided by their approach to scoping and materiality.</p>



Area of consideration	Key considerations
Scope: Impact pathway	<p>For upstream activities, the considerations of the impact pathway align with those outlined for non-life insurance business and other upstream actors (see Table 6).</p> <p>Considering the full impact pathway, including affected stakeholders, is important for pharmaceutical development and production, where the sourcing and use of genetic material and traditional knowledge without fair compensation, or the overharvesting of medicinal plants, may reduce the availability of these resources for traditional practitioners and adversely affect Indigenous Peoples and Local Communities.</p> <p>For downstream activities, assessing impact pathways—including effects on the state of nature and ecosystem services—is generally of lower relevance, except in cases where insurance may enable business activities, such as through workers compensation insurance (see Table 6).</p>
Scope: Spatial boundaries	<p>For upstream activities, spatial boundary considerations align with those applied in the non-life insurance business and other upstream actors (see Table 6).</p> <p>For downstream activities, spatial boundaries are generally of limited relevance, unless insurance enables business activities in specific locations, such as in the case of workers' compensation insurance (see Table 6).</p>
Terminology: Positive and negative impact	<p>Similar considerations apply as in the non-life insurance context (see Table 6). However, this section focuses on upstream and downstream actors, without disaggregating insured activities, loss events, and the claims process.</p> <p>Actors across the value chain may contribute to the direct drivers of nature change—either positively (e.g., through waste reduction) or negatively (e.g., through waste generation). It is important to note that waste reduction typically represents an avoided impact rather than a positive impact on nature.</p> <p>For upstream activities within the healthcare system, sustainable sourcing practices and improved waste management may help reduce negative impact drivers relative to business-as-usual scenarios, thereby constituting avoided impacts.</p> <p>In the case of upstream actors—such as biotechnology or pharmaceutical companies—contributions to equitable benefit-sharing (e.g., through mechanisms such as the Cali Fund) can help remediate negative impacts and support positive outcomes for nature.¹⁵¹</p> <p>For downstream activities, considerations related to commercial policyholders largely mirror those for non-life insurance (see Table 6).</p> <p>In personal lines, insurers may consider incentivizing policyholders to reduce their environmental footprint or engage in behaviours that lead to avoided impacts.</p> <p>Additionally, insurers may promote or support investments in nature-based solutions (e.g., green or blue spaces) to help reduce health risks and generate positive outcomes for nature.</p> <p>Depending on the insurer's role and level of influence, their contribution to upstream or downstream value chain activities may result in indirect negative, avoided, remediated or positive impacts on nature.</p>
Terminology: Actual or potential impact	<p>The same considerations outlined for the non-life insurance business also apply (see Table 6).</p>



Area of consideration	Key considerations
Scale of impact and data input	<p>For upstream activities, the considerations largely mirror those outlined for non-life insurance (see Table 6).</p> <p>For downstream activities, assessing the scale of nature-related impacts within life & health underwriting portfolios—particularly in relation to individuals—remains limited.</p> <p>Data inputs are critical to understanding nature-related impacts across the life & health insurance value chain. For upstream actors and commercial policyholders, data needs are generally aligned with those identified for non-life insurance (see Table 6). In contrast, for insured individuals, data considerations differ and may relate to their environmental footprints which are not currently captured by insurers but could become relevant in the future where correlations to health risks emerge (e.g., dietary patterns).</p> <p>Insurers may strengthen consideration of upstream impacts by integrating nature-related criteria into third-party onboarding and due diligence procedures.</p> <p>Importantly, data constraints should not prevent the assessment of value chain impacts. Where primary data is unavailable, insurers may consider using proxies, estimates, or modelled data to inform their analysis.</p>
Attribution	<p>Attribution of insured emissions within life & health insurance underwriting portfolios remains unexplored and is likewise not addressed for nature-related impacts in this report.¹⁵²</p>

3.3.3 Considerations for environmental materiality

Table 8: Considerations for environmental materiality

Environmental materiality	<p>Environmental materiality is defined from the perspective of what is material for disclosure, although it is also applied in the context of target setting (e.g., by SBTN).¹⁵³ Through the TNFD LEAP approach, insurers are able to scope and prioritize their nature-related impact assessment. This includes consideration of their full insurance value chain to the extent where they have actual or potential impacts—whether caused or contributed to directly, or via their business relationships, such as through entities directly linked to their products or services, or through entities within their value chain beyond the first tier^{154 155}—and where potentially moderate or high impacts may arise.¹⁵⁶</p> <p>The sphere of control or influence should not determine the scope of the assessment or inform the determination of materiality. Activities enabled by insurers or where direct business relationship through products and services—even in the absence of direct control—may be considered indirect impacts.</p> <p>Following the assessment, insurers should determine where actual or potential impacts may be material. Further detail on approaches to determining material topics, in line with disclosure materiality definitions, is provided in the second part of the <i>PSI Nature Uncovered for Insurers</i> series, <i>Breaking Ground</i>.¹⁵⁷</p> <p>Determining what is material in the context of disclosure may be only a sub-section from what the organization identifies as a priority for response (refer to the <i>PSI Nature Action Guide</i>).¹⁵⁸ In some cases, actions may want to be taken even where the above criteria are not met—such as where an insurer can exert positive influence. A clear understanding of the different types of involvement is essential, as the expected response will depend on the nature of the involvement, the severity of the impact and the organization’s ability to influence outcomes.^{159 160}</p>
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3.4 Nature-related risks in insurance underwriting portfolios

3.4.1 Non-life insurance business

High-level summary of nature-related risks for non-life insurance business

- Non-life insurers are exposed to nature-related **physical, transition, and systemic risks** through their value chain. These risks are considered sources of risk and can materialize in the **traditional financial risk categories** of insurers.
- For **nature-related physical risks**, risk is a function of hazard, exposure, and vulnerability. Disrupted natural systems or changes in ecosystem condition can lead to nature-related hazards that result in damage to, or loss of, physical assets or activities. These hazards may act as underlying physical condition influencing the frequency and severity of an insured peril or may give rise to a new insurable peril or impact the insurer directly.
- These risks are **particularly relevant for insurance products and lines of business that cover physical events**—such as property insurance and other asset-protecting insurance, business interruption insurance, agriculture insurance, and insurance for non-payment and other contractual obligations.
- Where nature-related hazards are insured, the degradation of nature can lead to increased claims frequency and severity. This may represent an **underwriting risk** where such risks are not adequately reflected in underwriting processes, risk models, reserving or capital modelling. They may also lead to business risks—e.g., where insured assets or activities become stranded, or customers go out of business, resulting in lost business and premium loss.
- For **nature-related transition risks**, sources of risk include policy or regulatory changes, market shifts or technology developments. Sources of risk can materialize in impacts to businesses and supply chains or can result in legal claims and liabilities to organizations and individuals. These sources can influence the frequency and severity of an insured peril or give rise to a new insurable peril or impact the insurer directly.
- Where nature-related transition risks are insured, responses to the nature crisis may lead to increased claims frequency and severity. This may represent an **underwriting risk** where such risks are not adequately reflected in underwriting processes, risk models, reserving or capital modelling. **Financial risks** to the insurer may also arise independently of the insured risk, through its business relationships across the value chain.
- The **transition towards nature-positive-aligned** practices and business models may give rise to new risks—many of which may be insurable and present opportunities for product innovation.
- **Systemic risks** can arise when regional or global tipping points are reached, threatening risk pooling, diversification, and the financial stability of insurers and the broader industry, and impact availability and affordability of insurance.



The Network for Greening the Financial System (NGFS) outlines a conceptual framework tailored for financial institutions to assess nature-related financial risks. It differentiates between sources of risk—specifically, nature-related physical risks and transition risks—and the risks materializing in the tradition financial risk categories of financial institutions (e.g., credit, market, and underwriting risk).¹⁶¹

Managing risks—including understanding, preventing, reducing, carrying and sharing risks—is the core business of an insurer. Understanding and assessing risks is central to the insurer’s role in underwriting. It is therefore essential to clarify what nature-related risks and resulting financial risks mean in the context of insurance.

Sources of risk

a. Nature-related physical risks

According to the TNFD, nature-related physical risks are risks to an organization that stem from the degradation of nature, such as through climate events or changes in ecosystem conditions like soil quality and species composition, and the consequential loss of ecosystem services that economic activities depend upon. Nature-related physical risks arise from changes in the biotic (living) and abiotic (non-living) conditions that support healthy, functioning ecosystems. These risks can be chronic (e.g., gradual soil degradation) or acute (e.g., abrupt changes due to spills or extreme weather events).¹⁶²

The insurance industry applies specific terminology when assessing risks: perils, hazards, and risk.

Perils are typically understood as the cause or trigger of a potential loss event and represent the events explicitly covered in insurance policies. Perils may be either natural (e.g., droughts, earthquakes, storms) or human-induced/accidental (e.g., fire, theft, industrial accidents, cyber-attacks, or liability from human error or negligence).

Hazards refer to the potential occurrence of natural or human-induced physical events that may cause harm to people or damage to or loss of property, infrastructure, service provision or environmental resources. In the context of nature-related physical risks, hazards can arise from both acute shocks and chronic or gradual changes in ecosystem conditions—such as declining soil fertility or change in water quality (e.g., algae bloom due to excess nutrients).¹⁶³ These are referred to as **nature-related hazards or shocks**.

However, the conceptual framing for **risk**—defined as the potential financial loss to the (potential) insured—is determined by:

- Physical hazard: The physical condition or process influencing the likelihood and severity of a peril (e.g., for the peril “flood”, physical hazards may include increased river runoff, degraded upstream wetlands, or loss of forest cover).
- Exposure: The insured assets, activities, or infrastructure located in areas where they are exposed to the hazard (e.g., agricultural land, housing developments, industrial facilities in flood-prone areas).



- Vulnerability: The susceptibility of the exposed asset to damage or disruption, influenced by physical robustness, design, or adaptive capacity (e.g., lack of storm drainage, dependency on a single supply chain input).

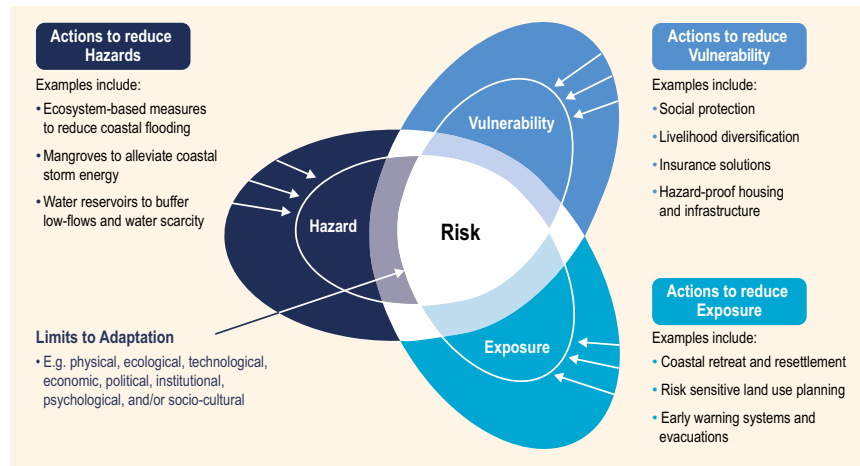


Figure 13: IPCC conceptual framework for risk¹⁶⁴

This framing follows the Intergovernmental Panel on Climate Change (IPCC) conceptual framework of risk used for physical climate risk assessments and is considered adaptable for nature-related hazards such as degraded water quality or diseases. This concept is also important, as it illustrates that addressing any of the three risk factors—such as through adaptation measures—can reduce overall risk.¹⁶⁵

In this report, nature-related risks are understood in line with the NGFS definition of “**source of risk**.” In insurance practice, the disruption of natural systems and changes in ecosystem conditions can result in **corresponding nature-related hazards**—the potential occurrence of nature-related physical events that may lead to **new insurable perils** and/or may act as the underlying physical condition influencing the frequency and severity of an **insured peril**. This can impact business activities or assets dependent on the ecosystems and their services. **Risk**, as used here, refers to the potential financial loss to the (potential) insured as a function of physical hazard, exposure, and vulnerability in the underwriting portfolio, and can be understood as (insurable or) insured risk.

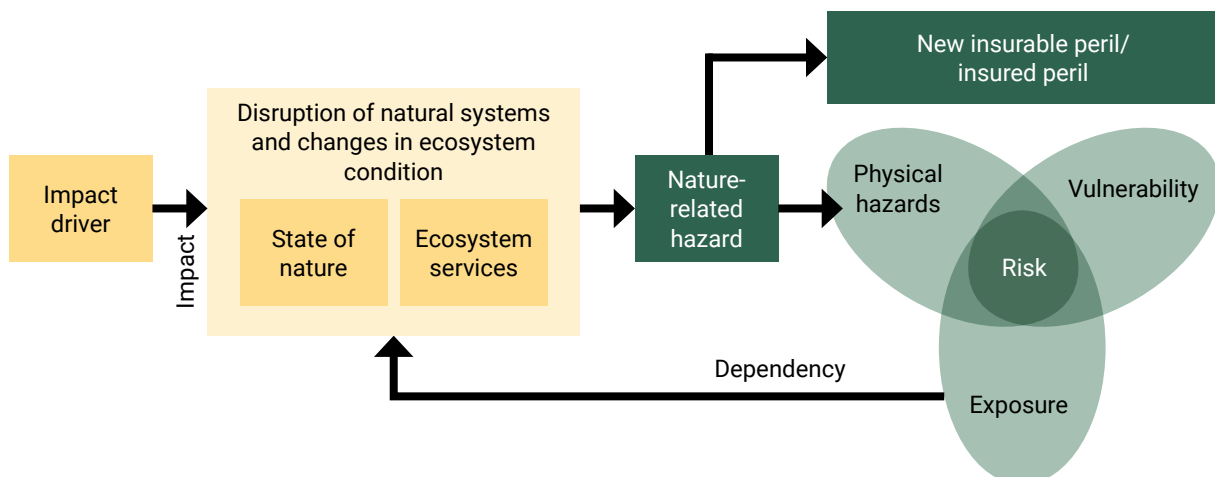


Figure 14: From impacts and dependencies to nature-related hazards and risks in the insurance context



For example, a nature-related hazard such as decline in water availability and quality could give rise to a new insurable peril such as water supply shock, with implications for business continuity, operational disruption, or agricultural productivity.

Conversely, degradation of coastal ecosystems—**for example**, through development or wetland drainage—reduces their capacity to regulate water flows and provide natural flood protection. This may constitute a physical hazard in relation to insured perils such as hurricanes, storms, or flooding.

To identify nature-related physical risks, insurers can apply a dependency-based approach—understanding how the activities and assets of (potential) customers or the specific insured activities and assets depend on ecosystem services, and how the loss or degradation of those services can give rise to nature-related hazards. This involves leveraging the dependency pathway to follow connections between impact drivers, changes in ecosystem condition, and the ecosystem services that support insured activities. Through this approach, insurers can determine which insured (insurable) assets or activities are exposed to nature-related hazards.

For example, algae bloom caused by excessive nutrient runoff (eutrophication) from agriculture or wastewater (impact drivers)—can reduce both the quality and availability of freshwater (ecosystem condition). This impacts the ecosystem service of water provision, which is essential for agricultural production, particularly in irrigation-dependent systems. When water becomes contaminated or scarce, crops may be directly exposed to physical hazards such as plant disease from pathogens in the water or suffer increased vulnerability to drought. These conditions can damage crops as physical assets, disrupt irrigation infrastructure, and undermine farm productivity.

The section above focuses on translating sources of risk into identifiable nature-related risks (i.e., potential financial losses for the insured). This is not only relevant for integration into product development and review and underwriting processes, but also for understanding portfolio-level exposures. Integrating nature-related hazard considerations into portfolio and client-level risk assessments will be important for insurers to manage and mitigate associated risks.



Notable consideration—Nuances for lines of business:

Nature-related hazards are particularly relevant for lines of business and insurance products that cover physical events. Nature-related hazards may contribute to or trigger a physical event that drives the frequency or severity of the peril or constitute a new (insurable) peril within the following lines of business:

- **Property insurance and other asset-protecting insurance:** Nature-related hazards may lead to damages to or loss of property, infrastructure, or other physical assets.
- **Business interruption insurance:** Where nature-related hazards cause asset damage, loss of service provision and environmental resources that limits the insured's ability to operate. This may include upstream or downstream supply chain disruption.
- **Agriculture insurance:** Nature-related hazards can result in asset damage, productivity losses, and disruption to agricultural operations.
- **Insurance for non-payment and other contractual obligations:** Nature-related hazards may impair a party's ability to deliver goods or services, cause delays, or trigger non-performance or non-payment risks.

The focus above is on hazards that impact physical and human capital, though as the NGFS highlights, these may form part of a chain of effects across different types of capital. Hazards (human- or nature-induced) may impact natural capital, which in turn gives rise to nature-related hazards that affect physical or human capital, ultimately posing risks to financial capital. This chain is key in determining financial risks (see Figure 15).¹⁶⁶

Hazards more broadly include both human- and nature-induced events that impact environmental resources or natural capital and are therefore relevant in the context of physical risk. The following are special considerations across lines of business or products:

- **Third party liability (e.g., environmental pollution liability insurance):** Relevant where human-induced physical events—such as industrial accidents or chemical spills—damage environmental resources and give rise to legal and financial liability.
- **Insurance for natural assets:** Natural assets themselves may be insured and face various physical hazards, most commonly those associated with climatic events, such as hurricanes, storms, or floods.

Ultimately, as ecosystems are further degraded and critical ecosystem services are lost, the materialization of nature-related hazards has the potential to increase claims frequency and severity of insured perils, representing an **underwriting risk** for insurers. Figure 15 and Table 9 and Table 10 illustrate how nature-related physical risks can lead to financial risks for insurers.



For example, in agricultural insurance, drought is often the insured peril. Degradation in water quality—such as nutrient-driven algal blooms—can disrupt water availability for farms, potentially increasing the frequency and severity of droughts. This may lead to higher claims frequency and severity under drought-related policies, representing an underwriting risk to the insurer, particularly where such nature-related hazards have not been adequately considered in underwriting processes or provisioning assumptions. See more examples in Table 9.

b. Nature-related transition risks

The above has primarily addressed physical events resulting in damage to or loss of assets, service provision or environmental resources, particularly those linked to nature-related hazards. In contrast, assessing transition risks requires a different lens.

Nature-related transition risks are risks to an organization that result from a misalignment of economic actors with actions aimed at protecting, restoring and/or reducing negative impacts on nature. These risks can be prompted by policy or regulatory changes, market (consumer preferences or investor sentiment) or technology developments—all of which can be considered as sources of risk.¹⁶⁷

Such sources of risks can materialize as disruptions to supply chains, restrictions on natural resource use or business activities in ecologically-sensitive regions or locations, the need to adapt to alternative inputs (potentially increasing costs or reducing productivity), interruptions in business operations, or reputational damage that affects market access.

Policy or regulatory changes may introduce new compliance requirements and can result in liabilities for organizations and individuals. More broadly, legal claims may arise from business activities linked to the negative externalities of nature loss, which may give rise to financial liabilities.

In the insurance context, the **source of transition risk** refers to the underlying cause of potential loss—such as regulatory or policy changes. These sources can influence the frequency or severity of an insured peril (e.g., reporting errors, non-compliance with regulations, breaches of fiduciary duty, or legal actions) or give rise to a new insurable peril. **Risk**, in this context, refers to the potential financial loss to the (insurable or) insured business or activity—which is the nature-related transition risk.



Notable consideration—Transition insurance (“insuring transition risks”)¹⁶⁸

A relevant nuance for the insurance industry is that the transition towards nature-positive-aligned practices and business models may give rise to new risks, many of which may be insurable and present opportunities for product innovation.

For example, shifts in market demand, technology, or policy can drive the emergence of new business models or technologies. These may carry both traditional risks—such as fire or accidental damage—and more complex or less understood risks that require new risk assessments and underwriting approaches. This could apply across property, liability, or engineering lines of insurance.

Similarly, there may be risks associated with transitioning from conventional to more sustainable practices—for instance, in agriculture or manufacturing. Examples include shifts to regenerative farming or circular production models, where changes in inputs or operational methods may temporarily affect productivity or reliability. In these cases, insurance solutions could be developed to cover risks associated with these transitions.

Ultimately, as various actors respond to the nature crisis, the materialization of nature-related transition risks, where such risks are insured, can lead to increased claims frequency and severity—representing an **underwriting risk** for the insurer. Figure 15 and Table 9 and Table 10 illustrate how nature-related transition risks can lead to financial risks for insurers.

For example, regulatory change restricts access to natural resources. The source of risk in this case is new regulation, and the potential event is a restriction on resource access that disrupts supply chains. This disruption can reduce productivity and result in lost revenue for affected businesses (potential financial loss). Such risk may materialize in business interruption insurance. If the disruption is covered under the insurance policy, rising regulatory requirements may increase the frequency and severity of related claims, which can represent an underwriting risk to insurers. See more examples in Table 9.

c. Nature-related systemic risks

Nature-related systemic risks are risks to an organization that arise from the breakdown of the entire system, rather than the failure of individual parts. There are two categories of nature-related systemic risk: **Ecosystem stability risk:** Risk of the destabilization of a critical natural system, so it can no longer provide ecosystem services in the same manner as before. For example, tipping points are reached, and regime shifts and/or ecosystem collapses occur that generate forms of physical and/or transition risk. **Financial stability risk:** Risk that a materialization and compounding of physical and/or transition risk leads to the destabilization of an entire financial system.¹⁶⁹



Systemic risks are particularly relevant to the insurance industry as they can undermine the effectiveness of risk pooling and constrain risk diversification within underwriting portfolios. This, in turn, can pose risks to insurers' financial stability, as explored further in the next section on financial risks.

Financial risks

Nature-related risks are considered in this context as sources of risk. These risks can materialize and be transmitted into the insurance business through various channels, ultimately translating into financial risks.

1. Nature-related risks can affect business operations directly (**first-order effects**), but can also propagate along supply chains, across borders, and through trade—leading to **second-order effects** that impact insured businesses and activities indirectly through their value chain.
2. Nature-related risks can materialize through direct (**micro-economic**) **impacts** on businesses, households, individuals, and governments, as well as through broader **macroeconomic impacts**. (Note the earlier section focused on the direct impacts to physical assets and economic activities, which in that context is relevant to underwriting risk).
3. It is important to recognize that such economic impacts—whether micro- or macro-economic—can translate into **risks for the insurance industry** through multiple transmission channels. These include (1) impacts to assets and activities covered under insurance policies that are sensitive to nature-related physical or transition risks (as described above); (2) broader effects on the activities and asset base of the (potential) policyholders or clients of the insurer—particularly where the materialization of systemic risks can have wider implications; and (3) impacts on the insurer's own operations and business activities.
4. The translation of these nature-related risks into financial risks for insurers occurs through **their traditional financial risk categories**.

Identifying and assessing nature-related risks and their potential impact on an insurer's financial position will be essential for informing financial risk management and developing appropriate mitigation measures.

Figure 15 illustrates how nature-related risks can translate into financial risks for insurers.

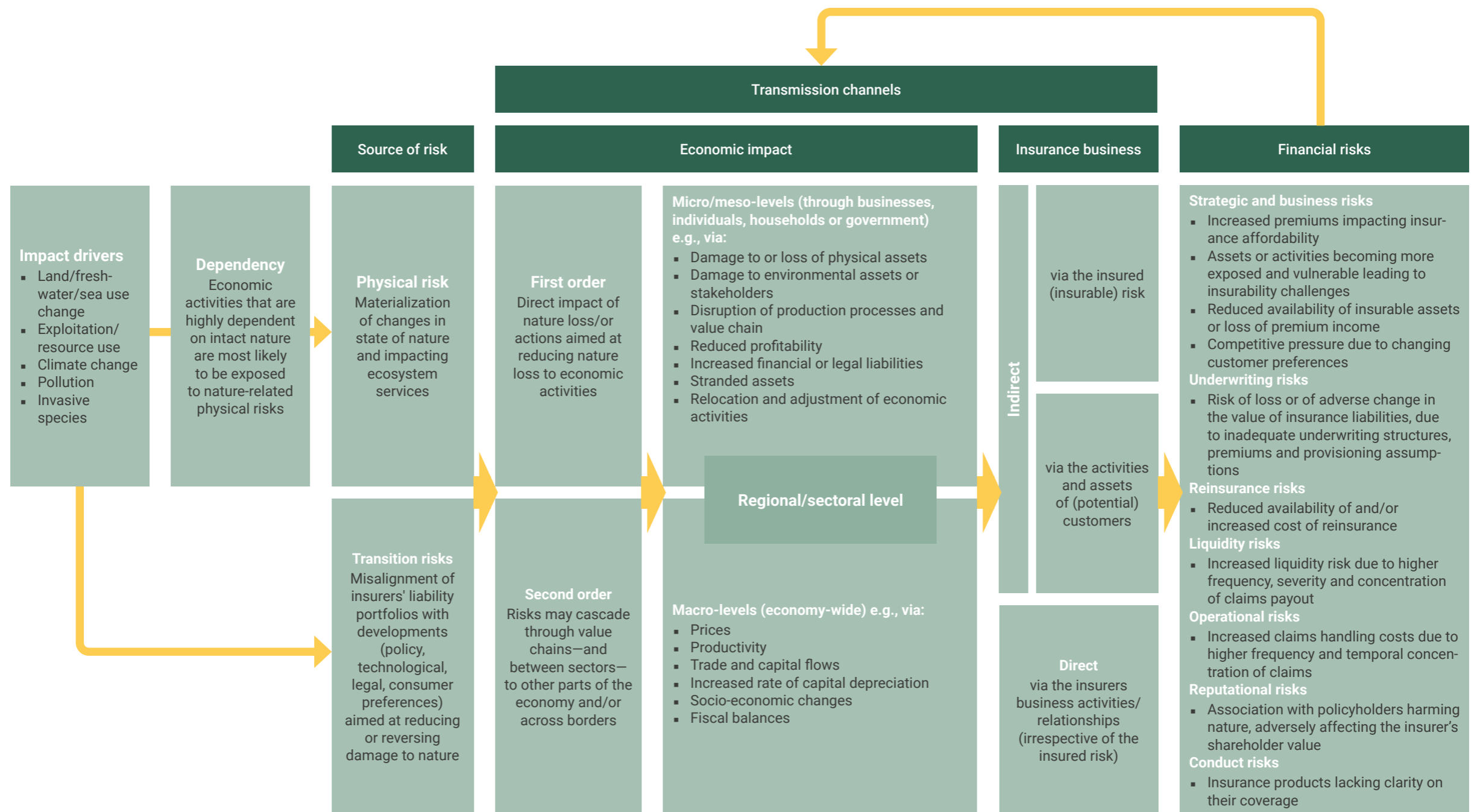


Figure 15: Transmission channels nature-related risks to insurance industry and financial risks (draft)



a. Economic transmission channels

Nature-related risks can lead to microeconomic impacts, which may materialize across entire regions and/or sectors. When these impacts reach a certain scale, they can escalate into macroeconomic effects, capturing not only direct impacts on individual entities but also broader systemic implications.¹⁷⁰ These transmission channels are interconnected and can give rise to feedback loops.¹⁷¹

For insurers, these transmission channels can be relevant in the following ways:¹⁷²

Microeconomic impact	Nature-related risks can impact businesses, individuals, households, or governments through direct asset damage or loss, business process disruptions, productivity loss, increased financial or legal liabilities, stranded assets, or the need for relocation or operational adjustments.
Sectoral/regional concentration	Nature-related risks are often concentrated in specific regions and sectors in the short term. The sectoral and geographic layers are important for understanding the dynamics between micro- and macroeconomic effects. ¹⁷³ For insurers, this is particularly relevant, as risk concentration in sectors or regions can threaten the effectiveness of risk pooling. This may signal the onset of systemic dimensions.
Macroeconomic impact	At a systemic level, nature-related risks can affect macroeconomic variables such as inflation, productivity, investment patterns, fiscal balances, and capital flows. These broader effects may in turn influence the insurance industry—either directly, or through feedback loops where changes in macroeconomic conditions affect households and businesses. The macroeconomic impacts of nature-related risks—and their transmission into financial risks for insurers—remain unexplored.

Notable considerations: Systemic dimensions relevant for insurance underwriting portfolios

Nature-related hazards can be categorized as acute (short-term, specific events that change the state of nature), chronic (gradual changes to the state of nature),¹⁷⁴ and “regime shifts” occurring after gradual changes reach tipping points. Chronic and cumulative impacts—such as climate change and deforestation—can reach tipping points and trigger regime shifts or ecosystem collapse, causing abrupt and irreversible changes, leading to rapidly evolving events.^{175,176}

Nature degradation is region-specific, influenced by local ecological and socio-economic factors, but ecosystem interconnections mean degradation can trigger collapse of other ecosystems (compounding risks).¹⁷⁷ Local tipping points, such as North American pine forest decline and the collapse of the Great Barrier Reef in Australia, have regional implications for sectors like agriculture and fisheries. Global tipping points—including mass coral reef die-off, Amazon rainforest dieback, permafrost thaw, and ice-sheet melting—may disrupt Earth systems and climate globally.¹⁷⁸



Ecosystem disruption can lead to **regional and sectoral concentration** of nature-related risks. Regional concentration occurs where economic activities depend on a limited set of ecosystem services, making areas especially vulnerable to degradation or collapse. This is already evident in wildfire-related insurance losses in California, Alberta, and south-eastern Australia.¹⁷⁹ Sectoral concentration arises when similar ecological dependencies or pressures affect production across dispersed geographies. For instance, agriculture, cocoa, and coffee rely on climate stability, soil fertility, and pollination, and are increasingly exposed to the same pressures—such as drought, pollination loss, or crop disease.¹⁸⁰

Where sectoral or geographic concentration is reflected in the insurer's portfolio, it may **threaten the effectiveness of risk pooling**. It can also impact insurability, as risk concentration increases the presence of correlated and non-independent risks, while the non-linear nature of many nature-related risks introduces greater uncertainty and limits the reliability of risk assessment and modelling.¹⁸¹

Systemic risk also includes the potential for cascading effects across borders—for example, where disruptions to ecosystem services in one region affect economic activities in another through interconnected supply chains and trade.¹⁸²

Risk diversification becomes increasingly constrained as similar nature-related impacts emerge across multiple locations and propagate across borders. This can potentially lead to higher insured losses. These dynamics can present challenges to both the **affordability and availability** of insurance, particularly where insurability is reduced. The collapse of systemically important ecosystems, as shared above, can make risk diversification impossible.¹⁸³

Systemic risks can lead to wider macroeconomic effects, such as impacts on prices. For example, where inflationary pressures, in turn, contribute to rising claims costs (claims inflation), which may affect the affordability of insurance.¹⁸⁴ An indicator of how macroeconomic effects can impact insurance business has already been experienced in the context of the cost-of-living crisis, where some consumers consequently had to reduce or forgo insurance coverage, affecting the accessibility of insurance products.¹⁸⁵

These disruptions can create feedback loops that extend into other financial sectors, such as the mortgage market, where properties in high-risk areas become uninsurable or underinsured, affecting property values and financial stability. Ultimately, challenges in risk diversification can escalate into financial stability risks for the insurance industry.¹⁸⁶

b. Transmission into the insurance business

Financial risks for insurers can arise both indirectly—through insured risks and the activities and assets of (potential) customers—and directly, through the insurer's own business conduct and relationships, independent of the insured risk.¹⁸⁷

Table 9: Transmission of nature-related risks into the insurance industry

Transmission to the insurance business	Nature-related physical risks	Nature-related transition risks
<p>via the insured (insurable) risk</p>	<p>Certain lines of business and insurance products may implicitly or explicitly cover nature-related physical risks—implicitly where nature loss contributes to or drives the physical hazard of an insured peril, and explicitly where the nature-related hazard itself is the insured peril. As economic activities continue to degrade ecosystems and their services, this may lead to an increase in the frequency and severity of claims within the respective lines of business or insurance products.</p> <p>Lines of business likely to be affected may include those covering physical events from natural perils—such as damage to, or loss of, physical assets, business interruption or project continuity, productivity losses, and potentially non-payment risk. These lines of business might face underwriting risks driven by nature loss.</p> <p>Property insurance or other asset protection insurance. For example:</p> <ul style="list-style-type: none"> Property: Often relevant in the context of the compounding impact of climate events and the degradation of regulating and maintaining ecosystem services, such as flood and storm mitigation. Insured natural perils may be exacerbated by nature loss and climate change. For example, deforestation or land degradation increasing the risk of floods and landslides, or coastal ecosystem degradation amplifying the intensity and impact of storms and hurricanes.¹⁸⁸ Marine, Aviation, Transport: Similar to the above, climate events and nature degradation can impact physical assets. This also includes operational disruptions. For example, nature-related erosion reducing waterway navigability, causing sinkholes or infrastructure damage, and ultimately leading to loss of revenue due to interrupted transport routes (see below).¹⁸⁹ 	<p>Certain lines of business and insurance products may implicitly or explicitly cover nature-related transition risks. As regulatory, legal, market or stakeholder responses to nature loss intensify, this can increase the frequency and severity of claims within affected lines of business, posing underwriting risks for insurers.</p> <p>Lines of business likely to be affected by transition risks may include business interruption, engineering, liability, credit, and surety insurance. These lines of business may face underwriting risks from responses to nature loss.</p> <p>Business interruption and engineering insurance may be impacted where regulation, policy, or other transition drivers disrupt business operations or project continuity. For example, stricter environmental policies may prevent the continuation of previously approved development projects. Resulting claims may relate to project delays, extended construction timelines, renegotiation of contracts, or idle equipment. These effects could materialize in claims under start-up delay or project suspension cover, particularly in construction insurance. If covered, such developments may increase the frequency and severity of claims, representing an underwriting risk to the insurer.</p> <p>Liability insurance products may also be affected, as transition risks can lead to increased claims frequency and severity under policies covering liabilities linked to nature-related impacts. Directors’ & Officers’ (D&O) liability insurance and environmental pollution liability insurance may be particularly exposed as awareness grows and regulatory environments tighten. For instance, liabilities may arise from business operations located in or affecting ecologically-sensitive areas, or from harm to stakeholders dependent on ecosystem services.</p>

Transmission to the insurance business	Nature-related physical risks	Nature-related transition risks
	<p>Insurance for business interruption, where nature-related hazards can disrupt operations and business continuity on-site or through supply chain impacts.</p> <ul style="list-style-type: none"> For example, soil degradation can contribute to water scarcity and drought, which in turn may disrupt hydropower generation—causing power shortages—or reduce the availability of raw materials needed e.g., for cosmetic and pharmaceutical production. These disruptions can lead to business interruption and, consequently, an increase in the frequency and severity of claims under business interruption insurance.¹⁹⁰ For this line of business it is particularly relevant to understand dependencies from a sector or production process perspective, including dependencies within the supply chain. <p>Agricultural lines where nature-related hazards can impact physical assets, business operations or productivity of agricultural production.</p> <ul style="list-style-type: none"> For example, land conversion, pollution, and climate change can disrupt ecosystems’ ability to regulate pests and pathogens, leading to crop pest or pathogen outbreak. The loss of natural predators or imbalance in habitat conditions (e.g., decline in biodiversity or soil microbiomes) can lead to outbreaks affecting crop yields. This poses a nature-related hazard to agricultural output and food supply chains and may result in increasing claims frequency and severity in agricultural insurance. <p>Insurance for non-payment and other contractual obligation, where nature-related physical risks can increase the risk of default, non-payment, or contract non-fulfilment.</p> <ul style="list-style-type: none"> For example, customers of insured businesses may be affected by nature-related hazards, leading to increased claims under credit insurance, surety insurance or other contractual performance guarantees. 	<p>Heightened scrutiny around environmental practices—including concern over plastic pollution or PFAS contamination¹⁹¹—may further expose companies to claims. Where such risks are not excluded, insurers may face higher claims frequency and severity, representing underwriting risks.</p> <p>Similarly, credit and surety insurance may be exposed to increased risks of bankruptcy, non-payment, project delays, or non-delivery due to transition risks affecting customers or principals. If these risks are covered, claims frequency and severity may rise, representing underwriting risks for insurers.</p>

Transmission to the insurance business	Nature-related physical risks	Nature-related transition risks
<p>via the activities and assets of (potential) customers</p>	<p>When nature-related risks materialize, they can affect the operations and viability of (potential) customers—even where such impacts are not explicitly covered as insured risks—potentially resulting in strategic or business risks for insurers. These may include the loss of insurable business due to stranded assets or customer exits, including cases where businesses cease operations.</p> <p>Insurers may also lose business where risk concentration in specific regions or sectors threatens risk pooling and leads to insurability challenges, or where escalating insured losses impact insurance affordability. Nature-related physical risks could lead to a decline in insurance premiums, representing business or strategic risks for insurers, particularly where insurance premiums are linked to revenue or turnover.</p> <p>At a broader scale, if nature-related risks become systemic, they may generate wider macroeconomic effects—disrupting insured activities and potentially affecting the insurer’s overall business model and operating environment. Macroeconomic effects can in turn contribute to claims inflation, which can impact insurance affordability.</p>	<p>Broader shifts in consumer demand and market developments can further create strategic and business risks for insurers. Where expectations for sustainable products rise and new technologies emerge, failure to adapt insurance products and coverage to these developments may lead to challenges to competitiveness.</p> <p>Where insured assets or activities take steps to adjust their business models or processes as part of a transition to nature-positive—whether driven by regulatory requirements or shifts in market and consumer demand—this can alter their underlying risk profile. Such changes may create a misalignment between the actual risk and existing underwriting structures, potentially resulting in underwriting risk.¹⁹²</p> <p>Furthermore, businesses or assets unable to adapt to these shifts may face relocation, assets can become stranded, or going out of business, reducing available insurable assets and posing a business risk for insurers.</p> <p>Nature-related transition risks could lead to a decline in insurance premiums, representing business or strategic risks for insurers, particularly where premiums are linked to revenue or turnover.</p>

Transmission to the insurance business	Nature-related physical risks	Nature-related transition risks
<p>via insurers' business activities/relationships (irrespective of the insured risk)</p>	<p>Physical risk to property held for own use (e.g., company offices, data centres) may arise where these are located in landscapes or seascapes exposed to nature-related hazards. For example, properties can face increasing flood risk due to soil erosion linked to deforestation¹⁹³ or be affected by reduced water availability needed for cooling in data centres.</p> <p>Disruption of claims supply chains may arise where nature-related hazards affect the availability of raw materials or natural resources, or interrupt manufacturing and repair processes essential for claims fulfilment, leading to delays and increased costs.</p> <p>Insurers could suffer direct conduct risk if insurance products are unclear about coverage of losses caused by nature-related risks. Restrictions in cover will have negative consequences on the value of insurance products for consumers.¹⁹⁴</p>	<p>Exposure to nature-related transition risks can arise through an insurer's business relationships—including entities in its value chain and through the products and services associated with its customers.</p> <p>Insurers may be exposed to reputational and legal risks through their business relationships—including entities in their value chain (e.g., suppliers, contractors) or insured customers and their products or services. Such risks may arise when these parties operate in or near ecologically-sensitive areas or are involved in activities that contribute to nature degradation or harm biodiversity, regardless of the insured risk.</p> <p>This may also include legal risks stemming from failures to disclose, assess, or conduct due diligence on nature-related impacts in accordance with applicable regulatory requirements.</p>



c. Translation to financial risk categories for insurers

Financial risks may take various forms and should be assessed in line with the insurer's risk taxonomy. The following is a non-exhaustive list of potential traditional financial risk categories through which nature-related risks can materialize.

Table 10: Translation of nature-related risks into financial risks categories for insurers

Traditional risk categories	Description
Strategic and business risk	<ul style="list-style-type: none">▪ Increased premiums impacting insurance affordability▪ Assets or activities becoming more exposed and vulnerable leading to insurability challenges▪ Reduced availability of insurable assets or loss of premium income▪ Competitive pressure due to changing customer preferences
Underwriting risk	<ul style="list-style-type: none">▪ Risk of loss or of adverse change in the value of insurance liabilities, due to inadequate underwriting structures, premiums and provisioning assumptions
Reinsurance risk	<ul style="list-style-type: none">▪ Reduced availability of and/or increased cost of reinsurance
Liquidity risk	<ul style="list-style-type: none">▪ Increased liquidity risk due to higher frequency, severity and concentration of claims payouts
Operational risk	<ul style="list-style-type: none">▪ Increased claims handling costs due to higher frequency and temporal concentration of claims
Reputational risk	<ul style="list-style-type: none">▪ Association with policyholders harming nature, adversely affecting the insurer's shareholder value
Conduct risk	<ul style="list-style-type: none">▪ Insurance products lacking clarity on their coverage



3.4.2 Life & health insurance business

High-level summary of nature-related risks for life & health insurance business

- Nature-related risks in life & health insurance can be categorized as physical, transition, and systemic risks, but remain underexplored—particularly transition risks.
- **Nature-related physical risks**, stemming from the degradation of ecosystems and ecosystem services critical to human health and well-being, can affect health outcomes¹⁹⁵ in multiple ways: directly (e.g., heatwaves, air pollution), through ecosystem-mediated effects (e.g., food insecurity, vector-borne and waterborne diseases), or indirectly (e.g., displacement, reduced access to care). Nature-related risks may be acute, leading to immediate health effects, or chronic, affecting health outcomes through prolonged exposure.
- **Such risks may materialize across both commercial and personal lines of business.** In commercial lines, exposure may relate to nature-related hazards associated with the sector or activities of the policyholder. In personal lines, individual exposure is more likely to be shaped by location, socio-economic status, and lifestyle-related factors.
- **Transition risks** may emerge where insureds' health outcomes are influenced by broader social, economic, or technological shifts—for example, through changing access to healthcare, nutrition, or living conditions—which may result in either improved or deteriorated health.
- **Financial risks for insurers may arise when nature-related physical risks impact health outcomes in the insured population**, contributing to increased claims frequency, severity, or duration, and in turn affecting insurance liabilities, giving rise to insurance risks. Risk assessments should distinguish between mortality- and morbidity-linked products, and longevity- or long-term care-linked products, as nature-related risks may affect claims frequency, severity and duration in different ways across these product types.
- **Financial risks for insurers may also emerge from legal or reputational risks**, particularly where insurers are associated with business relationships that are environmentally harmful or misaligned with a transition to a nature-positive future.
- **Systemic risks**—such as regime shifts or ecosystem collapse—may trigger severe and compounding impacts on public health, with potential implications on the affordability and availability of insurance in the long term. Further research is needed in this area.



Nature-related risks in the life & health insurance business can be categorized as physical, transition, and systemic risks. However, literature specifically addressing these risks—particularly transition risks—remains limited, underscoring the need for further exploration. This section focuses on nature-related physical risks.

This report explores how the degradation of nature and ecosystem services critical to human health and well-being can give rise to physical risks that could negatively affect health outcomes and, in turn, lead to increased financial risks for insurers. It presents an initial examination of these risks, referencing relevant life & health insurance business lines where applicable.

Nature-related physical risks can be understood as sources of risk that materialize through effects on individual or public health outcomes. These risks are transmitted via a range of pathways, which may interact and mutually reinforce one another:¹⁹⁶

- **Direct health effects:** These stem from natural hazards such as floods, heatwaves, and air pollution. Health effects—such as fatalities, injuries, or disease—arise from direct drivers of nature loss, notably pollution and climate change (which may also be classified as climate- or pollution-related risks). These impacts can be intensified by ecosystem degradation (e.g., the loss of forests that buffer against heat or filter air pollution).
- **Ecosystem-mediated health effects** (or secondary effects): Arising when natural systems are compromised due to climatic events (e.g., extreme weather such as droughts) or disturbances to ecosystem equilibria, such as changes in soil quality or marine ecology. These disruptions affect ecosystem services on which human health and well-being depends, potentially leading to reduced food yields, limited access to clean water, or altered patterns of infectious diseases—resulting in health outcomes such as malnutrition, illness, or hospitalization.
- **Indirect, deferred, and displaced health effects:** These relate to broader social determinants of health and well-being, such as loss of livelihoods, population displacement, and socio-economic instability. Health outcomes may also be indirectly affected by disruptions to healthcare systems—such as hospitals and medical supply and infrastructure—which themselves may be impacted by climate-driven extreme weather events or declining availability of nature-based medical resources.

Nature-related physical risks as they translate into health outcomes can be further classified by:¹⁹⁷

- **Acute risks:** Immediate health effects, such as injuries and fatalities caused by floods, heatwaves, or zoonotic disease outbreaks.
- **Chronic risks:** Longer-term health effects, including hospitalizations or the onset of diseases resulting from prolonged exposure to pollution, malnutrition, or increased physical and mental stress.



Identification of “source of risk”—nature-related physical risks

To identify nature-related physical risks, it can be helpful to follow the dependency pathway—specifically changes in impact drivers, the state of nature, and the resulting effects on ecosystem services. This approach can support the development of nature-related scenarios and help assess how shifts in impact drivers or external factors may affect ecosystem services and related health outcomes.

- Dependencies can be assessed in relation to insured health outcomes, directly informing the identification of potential financial risks for insurers. Health outcomes covered by insurance, such as injuries, diseases, and chronic conditions, can be affected by ecosystem service loss and increase insurance claims (e.g., an increase in vector-borne diseases due to biodiversity decline).
- Dependencies in the upstream value chain can affect the availability of preventative care and healthcare services. For instance, disruptions in pharmaceutical supply chains may lead to shortages of essential medications, affecting health outcomes on a broader scale.
- At the same time, identifying dependencies of human health and well-being can highlight opportunities for insurers to develop products that enhance resilience against emerging nature-related risks. For example, physical and mental health and well-being becomes increasingly dependent on access to green and blue spaces. Insurers could explore coverage models that promote access to nature (see Chapter 3.5.2).

Nature-related physical risks can be explored along several thematic areas.¹⁹⁸ These can inform risk registers for nature-related physical risks. In this context, the dependency pathway offers a structured approach to identifying potential health outcomes.¹⁹⁹ A non-exhaustive list of examples based on these sources is provided below.

When assessing nature-related physical risks, insurers should distinguish between personal and commercial lines of business. For personal lines, the thematic areas of nature-related risks outlined above are relevant for evaluating potential health outcomes, with location and lifestyle factors playing a particularly significant role. In commercial lines—especially in the context of workers compensation insurance—assessments should also consider how nature-related risks may arise and translate into health outcomes based on the sector and business activities of the corporate policyholder.

Table 11: Emerging health risks (excerpt only)—based on dependency pathway²⁰⁰

Sources of risks	Impact drivers	State of nature	Ecosystem services	Health outcomes
Air quality/air pollution	Industrial emissions, vehicular pollution, deforestation	Degradation of forests, loss of vegetation, increased particulate matter, reduced air quality	Reduced air purification from forests, wetlands, and vegetation, increased urban pollution retention	Increased respiratory diseases, cardiovascular conditions, cancer risk, immune disorders, occupational health risks
Heat stress	Extreme heat events, deforestation, urban heat islands	Disruption of carbon and water cycles, altered soil productivity, ecosystem stress, species migration shifts	Loss of local climate regulation, reduced shading and cooling from forests and vegetation, impaired water retention	Heatstroke, dehydration, cardiovascular stress, kidney failure, exacerbated mental health issues
Natural hazards	Degradation of coastal ecosystems, extreme weather events (floods, wildfires, storms)	Loss of mangroves, wetlands, and forests as natural barriers, increased soil erosion	Reduced flood and storm protection, increased fire risk, disruption of coastal and terrestrial buffers	Injuries, displacement, mental health distress, increased waterborne and respiratory diseases
Deterioration of water supply and quality	Pollution (industrial, agricultural, microbial contamination), over-extraction, climate change	Groundwater depletion, loss of wetlands, increased salinity, declining freshwater sources	Reduced water purification capacity, groundwater recharge disruption	Waterborne illnesses (e.g., cholera, diarrhoea), malnutrition, kidney diseases, reduced sanitation, antimicrobial resistance
Food insecurity and malnutrition	Climate change, land-use change, intensive agriculture, pesticide overuse, habitat destruction	Loss of agricultural biodiversity, soil erosion, desertification, decline in pollinator populations	Reduced soil fertility, decreased crop yields, loss of pollination services	Malnutrition, stunted growth, weakened immune systems, micronutrient deficiencies
Infectious diseases	Climate change, deforestation, invasive species	Altered habitats for vectors, loss of biodiversity, ecological imbalances	Loss of natural disease regulators, pest control	Higher incidence of vector-borne diseases (e.g., malaria, dengue), emergence of zoonotic diseases

Sources of risks	Impact drivers	State of nature	Ecosystem services	Health outcomes
Non-communicable diseases	Pollution, poor diet, lifestyle changes, urbanization	Reduced air and water quality, loss of dietary diversity	Impaired nutrient cycling, limited provision of clean water and nutritious food	Increased prevalence of diabetes, obesity, cardiovascular diseases, respiratory ailments
Limited access to nature	Urbanization, deforestation, degradation of green and blue spaces	Reduced availability and quality of natural recreational areas, decreased air quality	Loss of psychological and physiological benefits derived from nature	Elevated stress levels, decreased physical activity, deterioration of mental health
Loss of medicinal resources	Habitat destruction, overharvesting, climate change impact	Extinction of medicinal plant species, habitat loss	Depletion of genetic resources vital for pharmaceuticals and traditional medicine	Scarcity of essential medicines, reduced healthcare resilience, increased healthcare costs



Transmission of nature-related physical risks into insurance risks (implications for life & health insurers)

Nature-related physical risks affecting health outcomes can influence morbidity and mortality rates. The question is whether nature-related physical risks can affect life & health insurance liabilities. If such risks materialize within the insured population, they may lead to higher claims frequency, severity, or duration—increasing liabilities and giving rise to insurance risks. At the same time, they may also slow improvements in life expectancy, thereby reducing longevity risks.

Insurance risks should be assessed differently across product types. For mortality- and morbidity-linked products (e.g., life insurance, health insurance, critical illness), an increase in nature-related physical risks could lead to more frequent medical consultations, hospitalizations, or critical health events—resulting in higher and more frequent claims. In contrast, for longevity-linked products (e.g., annuities or long-term care), changes in health span or life expectancy could alter liability projections in different ways—potentially shortening payment durations or increasing the cost and duration of care.

Similar to climate-related risks, it is increasingly evident that nature-related risks can affect public health. However, it remains unclear to what extent these risks are occurring within the insured population or are currently translating into impacts on insurance liabilities. Existing data limitations make it difficult to establish this link, and industry perceptions reflect that further evidence is needed.²⁰¹

The scale of impact of nature-related risks on health outcomes will depend on various factors, including geographic location, socio-economic vulnerability, health system capacity, and insurance coverage. Nature loss and climate change tend to disproportionately affect low-income countries and uninsured populations. The extent to which these risks give rise to insurance risks will be influenced by the characteristics and vulnerabilities of the insured population. This remains an area requiring further research.

Impacts on health outcomes from ecosystem degradation—such as those outlined in Table 11—can be mapped to life & health insurance lines of business. This can help insurers identify where they may be exposed to nature-related risks and where to prioritize further risk assessment across product lines.



It is also important to recognize that cascading and compounding interactions between natural and human systems can amplify nature-related risks and their impacts on health outcomes.

Systemic risks stemming from the destabilization of critical natural systems—such as ecological regime shifts or ecosystem collapse—could have wide-ranging implications not only for human health, but also for the social determinants of health. These risks require further exploration and integration into insurers' risk assessment frameworks.

Some initial insights can be drawn from climate-related risks. On balance, climate change has so far not been perceived to have significantly impacted life & health insurance liabilities, in part because insured populations tend to be less exposed, and no short-term consequences for insurability or affordability appear to have yet materialized, particularly in developed countries. However, this could shift over time if climate-related events increase in frequency and severity.²⁰²

Similar considerations may apply to nature-related risks. While impacts on life & health insurance liabilities and insurability may not yet be observed or expected in the short term, they could have implications for insurability and, consequently, affordability and availability in the longer term—particularly as ecosystem degradation intensifies and tipping points are approached. As with climate risks, the insurability of nature-related risks is influenced by factors such as predictability, the ability to model and diversify risk, and the scope for loss prevention.

A key distinction, however, lies in the dynamics of change. While climate-related risks often evolve along more gradual trajectories, the degradation of ecosystems—including the crossing of planetary tipping points—may result in abrupt and non-linear changes. These can trigger sudden disruptions to health systems and insurance portfolios, affecting the insurability and affordability of coverage, especially in relation to specific health conditions or geographies.

Zoonotic diseases—including pandemics—can be considered systemic risks. The implications for life & health insurers during the COVID-19 pandemic were relatively limited. This was due in part to the structure of many insurance products, the short duration of pandemic-related claims relative to coverage terms, and the role of government intervention in absorbing much of the financial impact. Nonetheless, this area warrants further attention, particularly in light of emerging and compounding risks, such as the potential convergence of zoonotic disease outbreaks and antimicrobial resistance (AMR).²⁰³



Notable considerations: Nature-related transition risks, while less explored in life & health insurance business, can have implications on life & health insurers.

Indirect via insured health risks:

- The relevance of climate-related transition risks to health outcomes has already been recognized. These risks include the health impacts associated with societal and economic shifts during adaptation to climate change, which can either improve or deteriorate health outcomes. Transition-related developments—such as changes in technology—may affect longevity risks through their influence on public health.²⁰⁴ Similar developments should be explored in relation to actions to mitigate nature loss.

Directly, through insurers' business activities:²⁰⁵

- Reputational and litigation risks: Such risks may arise from business relationships with upstream actors—such as pharmaceutical companies or healthcare providers—whose operations contribute to environmental harm or fail to uphold the rights of affected stakeholders, including through the lack of equitable benefit-sharing. More broadly, litigation risks may emerge from health-related legal claims linked to the negative externalities of nature loss.
- Business risks: Regulatory, economic, or societal changes linked to the shift towards a nature-positive economy may lead some businesses to relocate, restructure, or cease operations. This could reduce demand for certain insurance products—such as workers compensation insurance—and introduce business risks for insurers.

The following section provides illustrative examples of physical, transition, and systemic risks in the context of life & health insurance business, outlining their potential implications for insurance risks such as mortality, morbidity, longevity, expenses, lapse risks, strategic risks, and reputational risks.

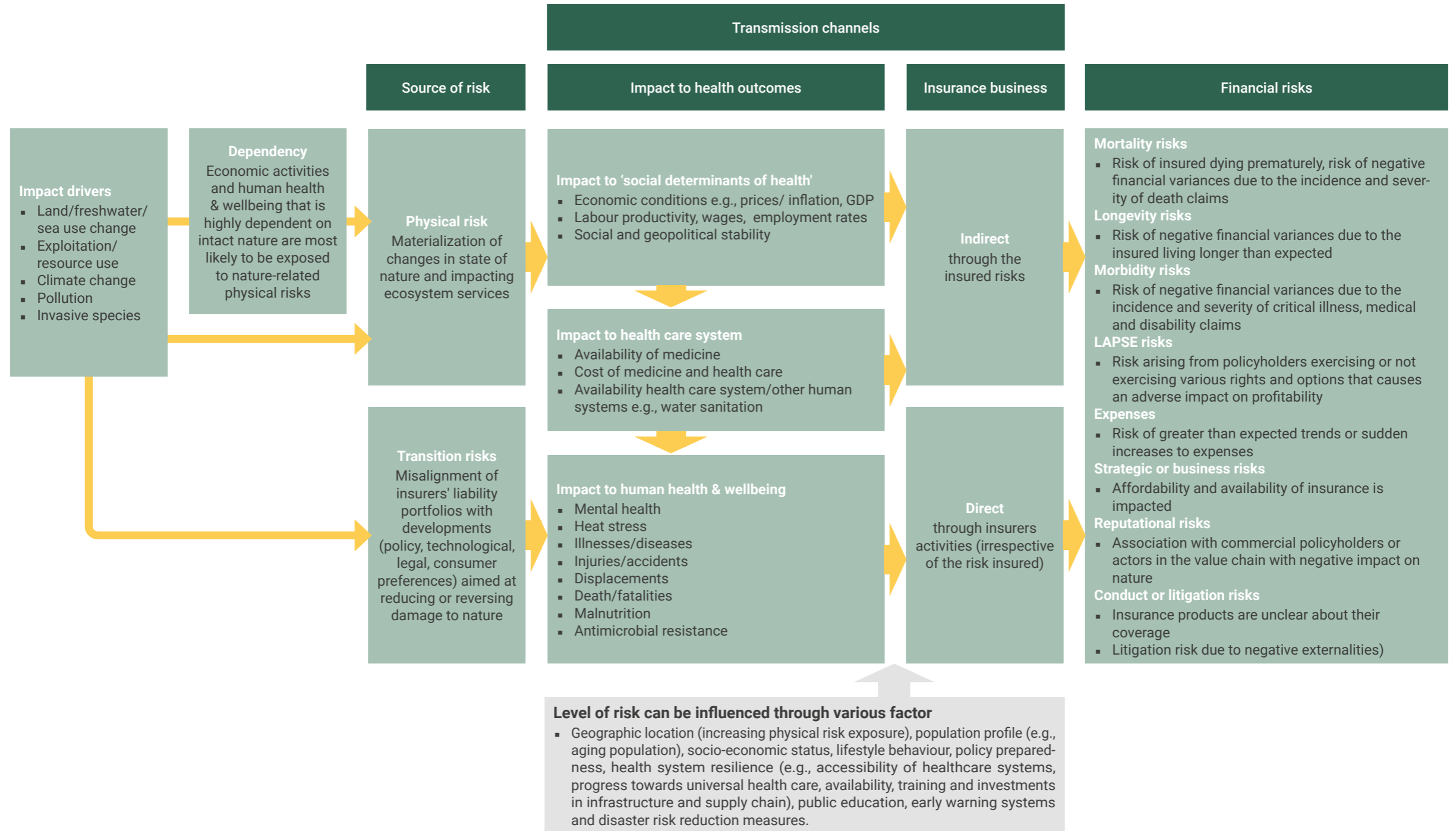


Figure 16: Transmission channel nature-related risks for life & health insurance (draft)

Illustrative examples of nature-related risks for life & health insurance business with potential systemic dimension	1	Compounding risks	Climate and nature-related shocks	<p>Compounding effects of climate change and ecosystem collapse may have significant ramifications not just for health, but also on the social determinants of health through social unrest, displacement and economic hardship.</p> <p>Consequently, health risk protection could be compromised, and the shocks felt by insurers may grow in intensity (strategic risk).</p>
	2	Cascading risks	Zoonotic diseases/pandemics and AMR	<p>Increasing potential of zoonotic diseases and pandemics through climate change and loss of biodiversity (compounding risks) translating across the economy and into health care system (availability, costs) leading to increased expenses and impacting human health, potentially increasing mortality and morbidity risks.</p>
Illustrative examples of nature-related physical and transition risks for life & health insurance business	A	Physical risk—acute	Health emergencies and illnesses	<p>Rise in infectious diseases, including water- and vector-borne illnesses, with location-specific impacts. This increases hospitalization rates and contributes to long-term health conditions and disorders, potentially increasing mortality and morbidity risks.</p>
	B	Physical risk—chronic	Chronic illnesses and mental health issues	<p>Long-term health issues driven by chronic environmental trends, including declining water quality, reduced agricultural productivity, and food insecurity, contributing to increased rates of non-communicable diseases and higher morbidity. Additionally, limited access to green and blue spaces is linked to worsening mental health outcomes, potentially increasing mortality and morbidity risks.</p>
	C	Physical risk—chronic	Lack of available pharmaceutical products	<p>Potentially increasing morbidity and mortality risks, due to reduced accessibility and availability of genetic material and organic feedstock (biomass) for pharmaceutical discovery and development, particularly amid increasing antimicrobial resistance (AMR) and reliance on soil biodiversity for antimicrobial drug production.</p>
	D	Transition risk	New emerging technologies with negative or positive impact on human health	<p>Transition to nature positive will bring a range of health benefits. Depending on how the transition is managed, there could be environmental risks associated with the deployment of new climate technologies, potentially resulting in significant long term-health consequences, but conversely can also lead to positive impacts on human health (e.g., reduced pollution), potentially increasing longevity risks.</p>
	E	Transition risk	Reputational risks from providing group insurance	<p>Potential reputational risks in connection of providing insurance to companies (e.g., workers compensation insurance) in industries or areas with significant negative impact on nature or which operate/expand in ecologically sensitive locations.</p>

Figure 17: Examples nature-related physical and transitions risks life & health insurance business



3.5 Nature-related opportunities in insurance underwriting portfolios

3.5.1 Non-life insurance business

Nature-related opportunities for non-life insurers may arise across their value chain—including through their customers, insured assets and activities, and the claims process. Consistent with definitions used in nature-related approaches, particularly the TNFD,²⁰⁶ such opportunities refer to actions that generate positive outcomes for both nature (sustainability performance) and business (business performance).

Nature-related opportunities for non-life insurers are partially explored in the *PSI Nature Action Guide*. While the guide focuses on enabling a shift towards nature-positive and resilient outcomes, the actions outlined also present business opportunities for insurers, including:^{207,208}

- Insurance for nature: Risk transfer solutions to de-risk investments in nature restoration and conservation.
- Enabling the transition: Risk transfer and risk advisory that support clients in transitioning to nature-positive.
- Risk reduction: Investments in and incentives for nature-based solutions to reduce physical hazards.
- Building resilience: Addressing emerging nature-related physical risks through tailored risk transfer solutions.
- Green claims practices: Integrating circular economy principles and “build back greener and more resilient” approaches in the claims process.

Following the opportunity categories proposed by the TNFD, the opportunities mentioned above can translate into new products and services, greater resource efficiency, and improved sustainability performance. Business opportunities for insurers may include access to new markets and customer segments shaped by changing consumer demand and the ability to sustain or expand insurable business. These actions can also contribute to enhanced reputation through support for community resilience and strengthen insurers’ financial resilience.

Below are illustrative examples structured according to commonly used opportunity categories in nature-related approaches.²⁰⁹ Insurers should assess nature-related opportunities in line with their specific business models, geographies, markets, and portfolios.

Products and services		Reputation and markets	
New risk transfer solutions	Risk advisory services	Emerging consumer demands	Reputation
Insurance for new emerging nature-related risks	Risk advisory services for nature-related risk prevention and management including research and data	Changing consumer demand for green products and access to new markets	Increased reputation through risk reduction and increased community resilience
Insurance for transition			
Insurance for nature-based solutions			
Incentives and access to insurance		Financial resilience	
Promoting/incentivizing risk reduction	Education and awareness	Operational costs	Access to capital
Incentivizing customers to reduce nature-related risks, maintaining insurability	Education of customers and policy engagement advocate for impact/risk mitigation	Reducing claims costs (e.g., reduced resource use)	Access to capital markets and improved financing terms
Sustainability performance (can be connected to positive business outcomes)			
Green choices	Sustainable claims process	Investment in NbS	
Green choices along the product life-cycle e.g., incentives for more sustainable management	Circular economy principles, and build back greener and resilient approaches	Investment in NbS for positive impact on nature and risk reduction	

Figure 18: Nature-related opportunities for non-life insurance business (excerpt only)



3.5.2 Life & health insurance business

Nature-related opportunities for life & health insurers can arise across their value chain, including insured individuals, commercial policyholders, and healthcare service providers. While these opportunities are still emerging, they have been explored in initial guidance such as the *PSI Nature Action Guide*²¹⁰ and the *PSI Health is Our Greatest Wealth* report.²¹¹ These opportunities span both sustainability and business performance dimensions, offering insurers avenues to create value by supporting nature-positive outcomes.

Insurers can contribute to reducing negative impacts on nature by promoting more sustainable healthcare practices, encouraging behavioural change among policyholders and insureds, and addressing nature-related risks through risk mitigation—at both individual and community levels—as well as through new risk transfer solutions.

Aligned with the opportunity categories proposed by the TNFD, these actions can translate into new products and services, improved resource efficiency, and enhanced sustainability performance. Business opportunities may include access to new markets and customer segments driven by evolving consumer expectations, and the ability to sustain or expand access to insurance for customers. Such efforts can also strengthen insurers' financial resilience and enhance their reputation through support for public health outcomes and community resilience.

In life & health insurance, nature-related opportunities are particularly aligned with the sector's core purpose of promoting positive outcomes for people—recognizing the intrinsic connection between human health and nature. The examples below illustrate such opportunities, grouped according to commonly used opportunity categories in nature-related approaches.²¹² As the insurance industry continues to innovate, new opportunities to support nature-positive and resilient outcomes will continue to emerge.

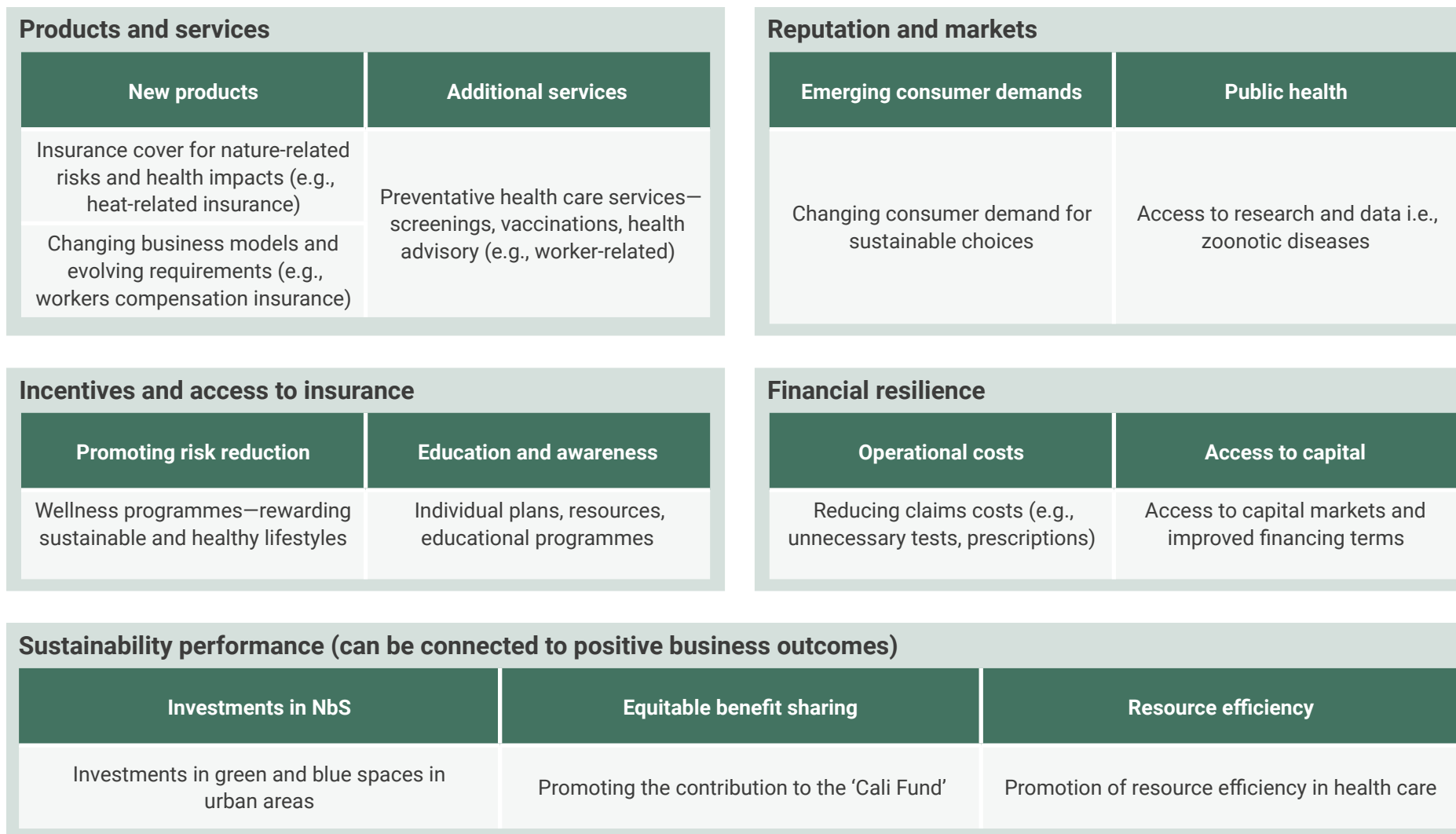


Figure 19: Nature-related opportunities for life & health insurance business (excerpt only)



3.5.3 Considerations for financial materiality

Table 12: Considerations for financial materiality

Financial materiality	<p>Definitions and considerations related to financial materiality—both in the context of disclosures and prudential regulation—are relevant for assessing nature-related financial risks and opportunities for insurers.</p> <p>For disclosure purposes, identified and quantified risks and opportunities should be assessed against the materiality criteria provided by the ISSB’s IFRS S1 guidance, or by equivalent regional or national frameworks such as the ESRS, to determine disclosure obligations.²¹³</p> <p>From a prudential perspective, insurers may refer to existing definitions of material sustainability risks, where available,²¹⁴ noting that dedicated definitions and supervisory approaches for nature-related risks continue to evolve.^{215 216}</p>
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Annex

Glossary

Term	Definition used in this report
Affected stakeholders	A stakeholder refers to any individual who may affect or be affected by an organisation's activities. An affected stakeholder refers here specifically to an individual whose human rights have been affected by an enterprise's operations, products or services. Affected stakeholders might include internal stakeholders (e.g., employees and contract workers), as well as external stakeholders (e.g., supply chain workers, communities, consumers and end users of products). ²¹⁷
Beneficiary	Beneficiary—an individual who may become eligible to receive payment due to will, life insurance policy, retirement plan, annuity, trust, or other contract.
Claims	A request made by the insured for insurer remittance of payment due to loss incurred and covered under the policy agreement.
Claims service provider	A claims service provider in this report refers to any third-party entity or organization involved in supporting or delivering services within the insurance claims process. This includes entities contracted or owned by insurers to handle claims administration (such as claims intake, assessment, processing, and settlement), as well as operational service providers engaged in the delivery of repairs, replacements, or other remedial services to insureds.
Customers	A customer is an individual or entity that purchases or intends to purchase insurance products or services.
Direct dependency	Nature-related dependencies resulting from the insurance company's own facilities and owned service providers
Direct impact	Nature-related impacts resulting from the insurance company's own facilities and owned service providers
Direct drivers of nature change	The IPBES Global Biodiversity Assessment defines five direct drivers of biodiversity loss including: land and sea use change, climate change, pollution, overexploitation of resources and invasive alien species.
Exposure	Implies the presence of people, livelihoods, species, or ecosystems, environmental services and resources, infrastructure, or economic, social, or cultural assets in places that could be adversely affected. For this report, especially in the context of third-party liability insurance, exposure also considers the presence of environmental assets that are located in areas potentially affected by hazardous activities covered by the insurance policy.
Financial risks	Financial risk from nature-related risks emerge through traditional financial risk categories. In this report considered as the potential for financial loss or adverse changes in an insurer's liabilities arising from various factors.



Hazard	The potential occurrence of a natural or human-induced physical event or trend that may cause loss of life, injury or other health impacts, as well as damage and loss to property, infrastructure, livelihoods, service provision, ecosystems and environmental resources.
Healthcare service providers	For the purposes of this report, healthcare service provider is broadly applied to encompass any individual or organisation that delivers health-related goods or services aimed at maintaining, improving, or restoring health. This broad definition includes direct care providers, support services, manufacturers of medical products, and administrative entities.
Indigenous Peoples	Indigenous Peoples as those whose social, cultural, and economic conditions distinguish them from other sections of the national community, and who are regulated wholly or partially by their own customs or traditions or by special laws or regulations (ILO). ²¹⁸
Indirect dependency	Indirect dependency on ecosystem services from the perspective of the insurance company through its value chain (upstream and downstream).
Indirect impact	Indirect impact from the perspective of the insurance company through its value chain (upstream and downstream) contributing to the five direct drivers of nature change.
Indirect and direct drivers of nature change	The IPBES Global Biodiversity Assessment defines indirect drivers of biodiversity loss (economic, demographic, societal and cultural, governance and institutions, technology).
Insurance risk	Insurance risk is the risk that inadequate or inappropriate underwriting, product design, pricing and claims settlement will expose an insurer to financial loss and consequent inability to meet its liabilities.
Insured	The insured is the person or entity whose life, health, property, or liability is covered under an insurance policy.
Insured (insurable) risk	<p>An insured risk refers to the potential for loss or damage arising from an insurable event that an insurance company agrees to cover under the terms of a policy. It reflects both the probability of the event occurring and the magnitude of potential damages or injuries.</p> <p>An insurable risk is a risk that an insurance company is willing to cover—specifically, one for which it is possible to estimate both the likelihood of occurrence and the potential financial impact, enabling the insurer to underwrite and price the risk appropriately.</p>
Insured asset and activities	<p>Refers to the assets owned or controlled by the insured, and the activities they undertake, that are covered under an insurance policy. Coverage may protect these assets and activities from damage or loss, or against liabilities they may cause to others.</p> <p>In liability insurance—such as environmental liability—the insured asset or activity is what the policy enables to operate. This is distinct from third-party assets or affected stakeholders and environmental resources that may be exposed to impacts by the insured.</p>
Insured liabilities	Refers to liabilities covered under third party liability insurance policies, such as legal obligations to compensate for bodily injury, property damage, or environmental harm caused to third parties as a result of the insured’s activities, operations, or products.



Insured (loss) event	Refers to an event or incident that results in a loss or damage covered by an insurance policy. This loss can stem from various causes, like accidents, theft, natural disasters, or other unforeseen circumstances, as long as the event is covered under the policy's terms. Essentially, it's a situation where the insured party experiences financial damage due to a covered peril, leading to a claim for reimbursement from the insurance company.
Insured losses	An insured loss refers to a financial loss or damage that is covered under the terms of an insurance policy.
Liabilities	Liabilities refer to the insurer's financial obligations to policyholders and other parties under the terms of insurance contracts. These include expected future claim payments and related expenses, as well as unearned premiums and other technical provisions.
Local Communities embodying traditional lifestyles	Local Communities may not identify as Indigenous but maintain close ties to their lands and resources. They typically: Reside in and derive livelihoods from specific territories; Possess traditional knowledge and cultural practices tied to their environment. ²¹⁹
Natural disasters	A serious disruption of the functioning of a community or a society at any scale due to natural hazardous events interacting with conditions of exposure, vulnerability and capacity, leading to one or more of the following: human, material, economic and environmental losses and impacts.
Natural hazard	Natural hazard is a geographical event that occurs naturally and has the potential to cause injury/loss of life or property/environmental damage. Natural hazards include four types (meteorological, hydrological, geological and geomorphological, biological and disease hazards). Hazards are the origins of disasters.
Natural peril	A natural peril refers to a specific cause of loss or damage that is natural in origin, such as a flood, earthquake, or storm.
Nature-related hazards/shock	In the context of nature-related physical risks, hazards specifically arise from both acute shocks and chronic or gradual changes in ecosystem conditions—such as declining soil fertility, or change in water quality (e.g., algae bloom due to excess nutrients) (referred to as nature-related hazards/shocks).
Nature-related physical risks	Nature-related physical risks are risks to an organization that stem from the degradation of nature, such as through climate events or changes in ecosystem equilibria like soil quality and species composition, and the consequential loss of ecosystem services that economic activities depend upon. Nature-related physical risks arise from changes in the biotic (living) and abiotic (non-living) conditions that support healthy, functioning ecosystems. These risks can be chronic (e.g., gradual soil degradation) or acute (e.g., abrupt changes due to spills or extreme weather events).
Nature-related transition risks	Nature-related transition risks are risks to an organization that result from a misalignment of economic actors with actions aimed at protecting, restoring and/or reducing negative impacts on nature. These risks can be prompted by policy or regulatory changes, market (consumer preferences or investor sentiment) or technology developments—all of which can be considered as sources of risk.
Peril	Perils are typically understood as the cause or trigger of a potential loss event and represent the events explicitly covered in insurance policies. Perils may be either natural (e.g., droughts, earthquakes, storms) or human-induced/accidental (e.g., fire, theft, industrial accidents, cyber-attacks, or liability from human error or negligence).



Physical hazard	A physical hazard refers to a physical condition or process that influences the likelihood and/or severity of a peril. For example, in the case of the peril flood, physical hazards may include increased river runoff, degraded upstream wetlands, or loss of forest cover. These are conditions that increase the potential for losses by raising the probability, frequency, or severity of an insured peril.
Policyholder	The policyholder is the individual or entity that owns the insurance policy and is responsible for premium payments.
Rightsholders	Stakeholders as a term can include rightsholders. Rightsholders are groups, internal or external to the FI, whose human rights are potentially or actually impacted by the FIs operational or financial activities. ²²⁰
Risk	In this report refers to the potential financial loss as a function of physical hazard, exposure, and vulnerability in the underwriting portfolio, and can be understood as (insurable or) insured risk. The potential for consequences where something of value is at stake and where the outcome is uncertain, recognizing the diversity of values. Risk is often represented as probability of occurrence of hazardous events or trends multiplied by the impacts if these events or trends occur. Risk results from dynamic interactions between hazards with the exposure and vulnerability of the affected human or ecological system to the hazards. Hazards, exposure and vulnerability may each be subject to uncertainty in terms of magnitude and likelihood of occurrence, and each may change over time.
Third Party	Person other than the insured or insurer who has incurred losses or is entitled to receive payment due to acts or omissions of the insured.
Underwriting risk	Underwriting risk means the risk of loss or of adverse change in the value of insurance liabilities, due to inadequate pricing and provisioning assumptions.
Vulnerability	Vulnerability is the propensity or predisposition to be adversely affected by the hazard. Vulnerability encompasses a variety of concepts including sensitivity or susceptibility to harm and lack of capacity to cope and adapt.

Nature-related approaches in scope for this report

This report leverages the nature-related approaches and relevant aspects outlined in the table below, alongside insights from the “Accountability for Nature” report, which provides summary information and comparative analysis.²²¹

Various nature-related standards, frameworks, systems, and guidance (collectively “nature-related approaches”) have emerged, typically aligned with or structured around the key steps of assessment, response through actions and targets, and disclosure.²²² The “ACT-D: High-Level Business Actions on Nature” framework provides a useful high-level structure within which these approaches can be understood.²²³

This report places particular emphasis on the assessment step, focusing on nature-related risk assessment frameworks and methods. Its scope is limited to nature-related approaches—or components thereof—that provide requirements, frameworks, or guidance for assessing nature-related DIROs.²²⁴



Table 13: Nature-related approaches in scope for the report

Nature-related approach	Type of approach ²²⁵	Aspects of approach considered in the report
Natural Capital Protocol (NCP) ²²⁶	Measurement and valuation framework	<p>The NCP is a voluntary framework for decision-making and/or reporting that enables organizations to identify, measure and value their direct and indirect impacts and dependencies on natural capital.</p> <p>The Protocol provides guidance to companies on how to measure, value and integrate natural capital impacts and dependencies into existing business processes such as risk mitigation, sourcing, supply chain management and product design.</p>
Science-Based Targets Network (SBTN) ²²⁷	Target-setting standard	<p>The SBTN's target-setting standards consists of five stages: Assess, Prioritize, Set Targets, Act, and Track. For this report, the Assess and Prioritize stages are particularly relevant.</p> <p>As the SBTN standards currently only apply to corporates in the real economy, their relevance to insurers is limited. The stages Set Targets, Act, and Track are not covered, except where relevant references are made to the <i>PSI Nature Action Guide</i>.²²⁸</p>
Taskforce on Nature-related Financial Disclosures (TNFD) ²²⁹	Risk management and disclosure framework	<p>The TNFD provides the LEAP (Locate, Evaluate, Assess, Prepare) approach, which guides organizations on the identification and assessment of nature-related DIROs. It aims to help organizations to conduct the due diligence necessary to inform disclosure statements aligned with the TNFD recommendations, but it is also useful for organizations looking to identify and assess their nature-related issues, regardless of their formal disclosure requirements.</p> <p>The <i>PSI Nature Uncovered for Insurers</i> report series specifically focuses on the Locate, Evaluate, and Assess phases of the LEAP approach. The Prepare phase, which addresses responses to nature-related issues, target setting, metrics, and reporting preparation, is not covered, except where relevant references are made to the <i>PSI Nature Action Guide</i>.²³⁰</p>



Nature-related approach	Type of approach ²²⁵	Aspects of approach considered in the report
Global Reporting Initiative (GRI) ²³¹	Disclosure standard	<p>The GRI provides sustainability reporting standards, including topic-specific standards for environmental issues including biodiversity,²³² water and effluents,²³³ waste,²³⁴ emissions.²³⁵ While these standards primarily focus on disclosure requirements, they inherently indicate what organizations need to understand and assess, making them implicitly relevant to this report.</p> <p>GRI's Biodiversity Standard (GRI 101: Biodiversity 2024) references other nature-related approaches to identify material topics, including the SBTN guidance,²³⁶ the Natural Capital Protocol,²³⁷ and the TNFD LEAP approach.²³⁸</p> <p>Additionally, the GRI sector programme is currently developing sustainability reporting standards for the insurance sector, as part of the GRI Sector Standard Project for Financial Services. The sector standard includes insurance-specific disclosures for collecting nature-related information to make informed, data-driven decisions that maximize positive impacts and minimize negative ones in topics such as biodiversity, water and waste.</p>
CDP disclosure system ²³⁹	Disclosure system	<p>The CDP disclosure system provides questionnaires and guidelines for disclosures related to climate change, forests, water security, plastics, and biodiversity.²⁴⁰ While primarily focused on reporting, the required data points in the CDP's questionnaires indicate what organizations need to understand and assess, making them implicitly relevant to this report.</p>
International Sustainability Standards Board (ISSB) ²⁴¹	Disclosure standard	<p>The ISSB standards focus on financial materiality, requiring entities to disclose sustainability-related risks and opportunities that could reasonably be expected to affect their financial prospects. Its current standards, IFRS S1 and IFRS S2, set disclosure recommendations for sustainability and climate-related financial risks. While these standards do not yet provide specific guidance on biodiversity, ecosystems, or ecosystem services, the ISSB has initiated work on these topics.²⁴²</p>
European Sustainability Reporting Standards (ESRS) ²⁴³	Disclosure standard	<p>The ESRS include disclosure standards for environmental issues. While primarily focused on reporting, the disclosure requirements also specify the information that organizations need to understand and assess, making them relevant to this report. This is particularly the case as the ESRS environmental standards (E2, E3, E4, and E5) explicitly reference the TNFD LEAP approach and its four phases as a tool for conducting materiality assessments for environmental issues.²⁴⁴</p>



Endnotes

- 1 UNEP FI (2025). PSI Nature Uncovered Series to make nature visible and actionable for insurers: unepfi.net/
- 2 The concept of “nature-positive,” as defined by the Nature-Positive Initiative (NPI), is a global societal goal rooted in the GBF’s mission to “halt and reverse biodiversity loss by 2030” based on a 2020 baseline,²³³ with the ultimate objective of achieving full recovery by 2050. In other words, it calls for a clear path towards more nature in the world, with thriving ecosystems, species, and genetic diversity.
- 3 UNEP FI (2024). Insuring a Resilient Nature-Positive Future. Geneva: unepfi.org/
- 4 The GBF’s target 15 specifically calls on large businesses and financial institutions to regularly monitor, assess, and disclose their risks, impacts, and dependencies on biodiversity across their operations, value chains, and portfolios.
- 5 UNEP FI (2024). Insuring a Resilient Nature-Positive Future. Geneva: unepfi.org/
- 6 Refer to UNEP FI (2024). Insuring a Resilient Nature-Positive Future. Geneva: unepfi.org/ for more information on the state of nature, the drivers of nature change, and how nature-related issues are already materializing in insurance underwriting portfolios.
- 7 For more details refer to: McElwee, P., Harrison, P.A., et al (2024). Summary for policymakers of the thematic assessment of the interlinkages among biodiversity, water, food and health (nexus assessment) of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES). ipbes.net/; and UN SEEA EA (2021). System of Environmental-Economic Accounting—Ecosystem Accounting: seea.un.org/
- 8 UNEP FI (2025). PSI Nature Uncovered Series to make nature visible and actionable for insurers: unepfi.net/
- 9 Nature-related approaches as defined in UNEP FI, UNEP-WCMC (2025). Accountability for Nature: Comparison of Nature-related Assessment and Disclosure Frameworks and Standards: unepfi.org/
- 10 UNEP FI (2025). Breaking Ground: Getting practical with nature-related assessments for insurers. Part 2 of the PSI Nature Uncovered Series. Geneva: unepfi.net/-/forthcoming
- 11 UNEP FI (2024). PSI Working Group for Nature: unepfi.org/
- 12 UNEP FI (2024). Insuring a Resilient Nature-Positive Future. Geneva: unepfi.org/
- 13 Also refer to WWF, Deloitte (2023) Underwriting our Planet. How insurers can address the crisis in climate and biodiversity: wwf.ch/ as a relevant source for guidance on addressing the climate and nature crisis in the context of insurance underwriting business.
- 14 UNEP FI (2024). Insuring a Resilient Nature-Positive Future. Geneva: unepfi.org/
- 15 Ibid.
- 16 Ibid.
- 17 Biodiversity—the variability among living organisms (biotic) across terrestrial, marine, and other ecosystems, including diversity within species, between species, and of ecosystems—underpins the functioning and resilience of ecosystems. CBD (1992). The Convention on Biological Diversity. Article 2 Use of Terms: cbd.int
- 18 TNFD (2023). Guidance on the identification and assessment of nature-related issues: The LEAP approach: tnfd.global/
- 19 While the PSI Nature Action Guide does not explicitly address financial risk management or mitigation, actions to avoid and reduce nature-related impacts and risks—such as those outlined in the guide—may contribute to mitigating financial risks (e.g., through nature-based solutions reducing insured losses).
- 20 Nature-related approaches as identified and analyzed in the UNEP FI, UNEP-WCMC (2025). Accountability for Nature: Comparison of Nature-related Assessment and Disclosure Frameworks and Standards: unepfi.org/
- 21 CDP. CDP’s Alignment with Disclosure Frameworks and Standards. Accessed on February 2025. cdp.net/
- 22 EC (2023). Commission Delegated Regulation (EU) 2023/2772 of 31 July 2023 supplementing Directive 2013/34/EU of the European Parliament and of the Council as regards sustainability reporting standards. Accessed on February 2025. eur-lex.europa.eu/
- 23 GRI. The global standards for sustainability impact. Accessed on February 2025. globalreporting.org/
- 24 International Sustainability Standards Board (2023). IFRS S1: General Requirements for Disclosure of Sustainability-related Financial Information: ifrs.org/ International Sustainability Standards Board (2023) IFRS S2: Climate-related Disclosures: ifrs.org/
- 25 Capitals Coalition. ACT-D: High Level Business Actions on Nature. Accessed on February 2025. capitalscoalition.org/



- 26 SBTN. Target-setting guide. Accessed on February 2025. sciencebasedtargetsnetwork.org/
- 27 TNFD (2023). Guidance on the identification and assessment of nature-related issues: The LEAP approach: tnfd.global/
- 28 UNEP FI, UNEP-WCMC (2025). Accountability for Nature: Comparison of Nature-related Assessment and Disclosure Frameworks and Standards: unepfi.org/.
- 29 UNEP FI (2024). Insuring a Resilient Nature-Positive Future. Geneva: unepfi.org/
- 30 Approaches for assessing nature-related impacts and dependencies, primarily for lending and investment activities by PBAF (2024). Partnership for Biodiversity Accounting Financials: pbafglobal.com/. This report also draws on the Partnership for Carbon Accounting Financials (PCAF), which has developed a specific standard for insured emissions, of which certain aspects are leveraged within this report.
- 31 NGFS (2023). Nature-related Financial Risks: a Conceptual Framework to guide Action by Central Banks and Supervisors: ngfs.net/
- 32 For example, the European Commission (EC) has incorporated sustainability risks into prudential regulation under Solvency II and has mandated the European Insurance and Occupational Pensions Authority (EIOPA) to review how (re)insurance undertakings currently address biodiversity loss risk within their Own Risk and Solvency Assessment (ORSA) practices.
- 33 Refer to the TNFD for additional sector guidance relevant for an insurers own operations: TNFD (2025). Additional sector guidance—Engineering, construction and real estate: tnfd.global/; And other resources for insurers’ investments including PBAF (2023). Taking biodiversity into account PBAF Standard v2023—Assessment of Dependencies on ecosystem services: pbafglobal.com/; PBAF (2025). Finance & Nature Toolbox: pbafglobal.com/; Finance for Biodiversity Foundation various publications including: FFB (2024). Multi Tool Study—Assessment of the biodiversity impacts and dependencies of globally listed companies: financeforbiodiversity.org/; FFB (2025). Biodiversity measurement approaches. A practitioner’s guide for financial institutions: financeforbiodiversity.org/
- 34 For more details on the climate-nature nexus see NGFS (2024). Nature-related Financial Risks: a Conceptual Framework to guide Action by Central Banks and Supervisors: ngfs.net/, and Nature Finance (2022). The Climate Nature Nexus. Implications for the Financial Sector: naturefinance.net/
- 35 WTW (2023). Counting the costs of climate and land-use change after the Chilean Wildfires. Accessed on 10 May: wtwco.com/
- 36 WTW (2024). WTW Natural Catastrophe Review 2024: wtwco.com/
- 37 Office of Financial Research (2023). Wind, Fire, Water, Hail: What Is Going on In the Property Insurance Market and Why Does It Matter? financialresearch.gov/
- 38 IPCC (2019). Technical Summary. In: In: IPCC Special Report on the Ocean and Cryosphere in a Changing Climate: ipcc.ch/
- 39 WWF, ZSL (2024): 2024 Living Planet Report. A System in Peril: worldwildlife.org; EIOPA (2023): The role of insurers in tackling climate change: challenges and opportunities :eiopa.europa.eu
- 40 Ewison, W., Low, L.P., and O’Brien, D. (2023): Managing nature risks, From understanding to action: pwc.com/
- 41 Nature Finance (2022). Global Nature Markets Landscape Study: naturefinance.net/
- 42 The PSI Nature Action Guide provides a review of the accelerating loss of nature and puts emphasis on the exposure and role of insurers in addressing these nature-related issues—refer to this guide for more information—UNEP FI (2024). Insuring a Resilient Nature-Positive Future. Geneva: unepfi.org/
- 43 For example, through the integration of nature-related considerations into underwriting policies, guidelines, criteria, and product design, insurers can positively influence nature-related outcomes within the businesses they insure (see UNEP FI (2024). Insuring a Resilient Nature-Positive Future. Geneva: unepfi.org/)
- 44 PCAF (2022). Insurance-Associated Emissions. The global GHG accounting & reporting standard: carbonaccountingfinancials.com/
- 45 Ibid.
- 46 Ibid.
- 47 UNEP FI (2025). Breaking Ground: Getting practical with nature-related assessments for insurers. Part 2 of the PSI Nature Uncovered Series. Geneva: unepfi.net/-/forthcoming
- 48 Ibid
- 49 PCAF (2022). Insurance-Associated Emissions. The global GHG accounting & reporting standard: carbonaccountingfinancials.com/
- 50 Ibid.



- 51 Natural Capital Coalition (2018). Connecting Finance and Natural Capital. A supplement to the Natural Capital Protocol. capitalscoalition.org/
- 52 Ibid.
- 53 PBAF (2024). Biodiversity Footprinting Standard: Financed Impact: pbafglobal.com/; PBAF (2023). Taking biodiversity into account PBAF Standard v2023—Assessment of Dependencies on ecosystem services: pbafglobal.com/;
- 54 SBTN. Target-setting guide. Accessed on February 2025. sciencebasedtargetsnetwork.org/
- 55 TNFD (2023). Recommendations of the Taskforce on Nature-related Financial Disclosures: tnfd.global/
- 56 TNFD (2023). Guidance on the identification and assessment of nature-related issues: The LEAP approach: tnfd.global/
- 57 European Parliament and of the Council, (2022). Directive (EU) 2022/2464 of the European Parliament and of the Council: eur-lex.europa.eu/
- 58 EC (2025). Deletion of sector-specific standards requirements. Accessed on February 2025: ec.europa.eu/
- 59 GSSB, (2024). GRI Sector Standard Project for Financial Services: Insurance Sector Standard: globalreporting.org
- 60 Ibid.
- 61 Ibid.
- 62 CDP (2024). CDP Full Corporate Questionnaire: cdn.cdp.net/
- 63 CDP (2023). Climate change 2023 Reporting Guidance: cdn.cdp.net/
- 64 IFRS Foundation (2024). General Requirements for Disclosure of Sustainability-related Financial Information: issbstandards/
- 65 IFRS Foundation (2023). Climate-related disclosures: issbstandards.climate-related/
- 66 For more details refer to: McElwee, P., Harrison, P.A., et al (2024). Summary for policymakers of the thematic assessment of the interlinkages among biodiversity, water, food and health (nexus assessment) of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES). ipbes.net/; and UN SEEA EA (2021). System of Environmental-Economic Accounting—Ecosystem Accounting: seea.un.org/
- 67 TNFD (2023). Guidance on the identification and assessment of nature-related issues: The LEAP approach: tnfd.global/
- 68 Capitals Coalition. ACT-D: High Level Business Actions on Nature. Accessed on February 2025. capitalscoalition.org/
- 69 EC (2023). Commission Delegated Regulation (EU) 2023/2772 of 31 July 2023 supplementing Directive 2013/34/EU of the European Parliament and of the Council as regards sustainability reporting standards. Accessed on February 2025. eur-lex.europa.eu/
- 70 GRI. The global standards for sustainability impact. Accessed on February 2025. globalreporting.org/
- 71 PBAF, (2024). Biodiversity Footprinting Standard: Financed Impact: pbafglobal.com/
- 72 NGFS (2023). Nature-related Financial Risks: a Conceptual Framework to guide Action by Central Banks and Supervisors: ngfs.net/
- 73 EIOPA (2024). Consultation paper on a Report on Biodiversity Risk Management by Insurers: eiopa.europa.eu.
- 74 UNEP FI, UNEP-WCMC (2025). Accountability for Nature: Comparison of Nature-related Assessment and Disclosure Frameworks and Standards: unepfi.org/.
- 75 An exception in terms of the level of interface in the context of liability insurance is environmental pollution liability insurance. However, in terms of dependencies, the connection is less significant here compared to nature-related impacts.
- 76 It leverages the established guidance and descriptions of key concepts found in other nature-related approaches and should be read in tandem with these frameworks—particularly the ‘[Guidance on the TNFD LEAP](#)’, the ‘[Financial Sector Supplement to the Natural Capital Protocol](#)’ for enhanced understanding and clarifications.
- 77 Considerations in terms of nature-related dependencies for service providers in the upstream value chain can also be applied for own service provider.
- 78 Adopted from TNFD (2023). Guidance on the identification and assessment of nature-related issues: The LEAP approach: tnfd.global/.
- 79 UNEP (2023). Towards a Robust Measurement of Business Dependencies on Nature. UNEP-WCMC, Cambridge, UK. unep-wcmc.org/



- 80 CBD, WHO, UNEP (2015): Connecting Global Priorities: Biodiversity and Human Health: cbd.int/health/SOK-biodiversity-en
- 81 Rendón, O. R., Garbutt, A., Skov, M. et al (2019). A framework linking ecosystem services and human well-being: Saltmarsh as a case study: besjournal.com/
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- 85 CBD, WHO, UNEP (2015): Connecting Global Priorities: Biodiversity and Human Health: cbd.int/health/SOK-biodiversity-en
- 86 It leverages the established guidance and descriptions of key concepts found in other nature-related approaches and should be read in tandem with these frameworks—particularly the ‘[Guidance on the TNFD LEAP](#)’, the ‘[Financial Sector Supplement to the Natural Capital Protocol](#)’ for enhanced understanding and clarifications.
- 87 Considerations in terms of nature-related dependencies for service providers in the upstream value chain can also be applied for own service provider.
- 88 ENCORE Partners (Global Canopy, UNEP FI, and UNEP-WCMC) (2025). ENCORE: Exploring Natural Capital Opportunities, Risks and Exposure. [On-line], 2024 version, Cambridge, UK: the ENCORE Partners. Available at: encorenature.org. DOI: doi.org/10.34892/dz3x-y059
- 89 TNFD (2024). Additional sector guidance Biotechnology and pharmaceuticals: tnfd.global/
- 90 WHO Regional Office for Europe (2021). Nature, Biodiversity and Health: An overview of interconnections: who.int/
- 91 Da Silva, R.M.D., Dias, M. A., Barbosa, V. R. F., et al (2024). Greenness and Hospitalization for Cardiorespiratory Diseases in Brazil: ehp.nigh.gov/ and Yeager, R. A., Smith T.R., Bhatnagar, A. (2019). Green environments and cardiovascular health: pmc.nigh.gov/
- 92 WHO (2024). Heat and health: who.int/ and Jones, B.A., Grace, D., Kock, R. et al (2013). Zoonosis emergence linked to agricultural intensification and environmental change: pmc.nih.gov/
- 93 WHO Regional Office for Europe (2021). Nature, Biodiversity and Health: An overview of interconnections: who.int/
- 94 WHO (2019): Global Report on Traditional and Complementary Medicine: who.int/
- 95 Ali, S.M., Siddiqui, R., Khan, N.A. (2018). Antimicrobial discovery from natural and unusual sources. Journal of Pharmacy and Pharmacology: wiley.com/
- 96 Kistemann, T., Zerbe, S., Sauemel, I. et al (2023). Urban green and blue spaces in times of climate change: pubmed.gov/
- 97 This largely follows the logic of the ‘Global GHG Accounting & Reporting Standard Part C—Insurance-Associated Emissions’, which considers indirect greenhouse gas (GHG) emissions of insured activities (Scope 3 emissions). The ‘[GHG Protocol’s Corporate Value Chain \(Scope 3\) Accounting and Reporting Standard](#)’ defines Scope 3 indirect GHG emissions as those occurring in the value chain of the reporting company. Scope 3 emissions can be broken down into upstream emissions in the supply chain and downstream emissions as result of the organization’s products and services. Insurance underwriting activities are an optional category under Scope 3. The ‘[Global GHG Accounting & Reporting Standard Part C—Insurance-Associated Emissions](#)’ focuses on and suggests reporting of insured emissions under Scope 3.
- 98 The IPBES Global Biodiversity Assessment defines indirect drivers of biodiversity loss (economic, demographic, societal and cultural, governance and institutions, technology) and direct drivers of biodiversity loss (land and sea use change, climate change, pollution, overexploitation of resources and invasive alien species). The [TNFD](#) applies definition for indirect impact as ‘a change in the state of nature caused by a business activity with an indirect causal link’, and direct impact as ‘a change in the state of nature caused by a business activity with a direct causal link’. However, in the context of this report it is being differentiated between direct and indirect impact from the perspective of the insurance company contributing to the 5 direct drivers of nature change (please refer to the Glossary in the annex of this report).
- 99 TNFD (2023). Guidance on the identification and assessment of nature-related issues: The LEAP approach: tnfd.global/
- 100 Please refer to: Forum for Insurance Transition to Net Zero (FIT): unepfi.org/



- 101 WRI, WBCSD (2011). Greenhouse Gas Protocol. Corporate Value Chain (Scope 3) Accounting and Reporting Standard: ghgprotocol.org/
- 102 In the context of this report this refers to the assets and activities that are enabled through insurance to take place (for details see the glossary in the annex).
- 103 It aligns with the established guidance and descriptions of key concepts found in other nature-related approaches and should be read in tandem with these frameworks—particularly the ‘[Guidance on the TNFD LEAP](#)’, the ‘[Financial Sector Supplement to the Natural Capital Protocol](#)’ and the ‘GRI Insurance Sector Exposure Draft’—for enhanced understanding and clarifications.
- 104 Considerations in terms of nature-related impacts for service providers in the upstream value chain can also be applied for own service provider.
- 105 GRI (2021). GRI 3: Material Topics 2021: globalreporting.org/— refers to the first step in due diligence to identify actual and potential negative impacts.
- 106 Noting the level of contribution, cause and direct link throughout the value chain can be further informed by the type of insurance product.
- 107 TNFD (2023). Guidance on the identification and assessment of nature-related issues: The LEAP approach: tnfd.global
- 108 For these products, it is particularly relevant to conduct a nature-related assessment in light of potential moral hazard—that is, where the behaviour of the insured may lead to increased risk-taking. In such cases, the assessment can provide input to review the product design and/or implement appropriate risk mitigation measures.
- 109 Although noting that typically influencing the behaviour of others, without a direct relationship related to the product or service value chain, it is not considered an attributable organisational nature-related impact.
- 110 When referring to nature-related impact, it is important to distinguish between impact drivers—which cause changes in nature—and the nature-related impact itself, defined as the resulting change in the state of nature and the flow of ecosystem services.
- 111 Adopted from TNFD (2023). Guidance on the identification and assessment of nature-related issues: The LEAP approach: tnfd.global/
- 112 Ibid.
- 113 Direct drivers of biodiversity loss defined in IPBES (2019): Global assessment report on biodiversity and ecosystem services: ipbes.net/; [Direct drivers of nature change defined in TNFD \(2023\)](#). Guidance on the identification and assessment of nature-related issues: The LEAP approach: tnfd.global/
- 114 Some insurers are already accounting for GHG emissions as one of these drivers, in line with the ‘[Global GHG Accounting & Reporting Standard Part C—Insurance-Associated Emissions](#)’. However, insurers should also address the other impact drivers of nature change.
- 115 Also refer to TNFD—‘Additional Guidance by sector’. Accessed on March 2025: tnfd.global/
- 116 While the operations of these assets are being insured, as outlined in the section on the value chain, nature-related impacts may also arise in other parts of their value chain—for example, during the manufacturing of these assets. It can also be considered that the negative nature-related impact through the operation of the asset, can be avoided or reduced through actions taken further upstream e.g., introduction of technology that reduces potential noise pollution.
- 117 Natural Capital Coalition (2018). Connecting Finance and Natural Capital. A supplement to the Natural Capital Protocol. capitalscoalition.org/
- 118 TNFD (2023). Guidance on the identification and assessment of nature-related issues: The LEAP approach: tnfd.global; Natural Capital Coalition (2018). Connecting Finance and Natural Capital. A supplement to the Natural Capital Protocol. capitalscoalition.org/
- 119 Also refer to TNFD—‘Additional Guidance by sector’. Accessed on March 2025: tnfd.global/
- 120 TNFD (2023). Guidance on the identification and assessment of nature-related issues: The LEAP approach: tnfd.global/
- 121 TNFD (2023). Guidance on the identification and assessment of nature-related issues: The LEAP approach: tnfd.global; GRI (2021). GRI 3: Material Topics 2021: globalreporting.org/
- 122 Nature-related disclosure frameworks and standards set out recommendations and requirements for disclosing both negative and positive impacts on nature.
- 123 TNFD (2023). Guidance on the identification and assessment of nature-related issues: The LEAP approach: tnfd.global; GRI (2021). GRI 3: Material Topics 2021: globalreporting.org/



- 124 PBAF (2022). PBAF Standard v 2022 Biodiversity impact assessment—Overview of approaches: pbafglobal.com/ suggests definition for avoided impact as: The avoidance of negative impact on biodiversity refers to the prevention of negative impacts resulting from an intervention/economic activity by means of, for example, better management practices. The reference situation in case of an avoided impact is an alternative scenario, often the situation without the intervention ('business as usual').
- 125 More information can be found in the [discussion paper "Finance for Nature Positive"](#) which intends to solicit feedback from the financial sector on a proposed Finance for Nature Positive working model, including definitions and associated practices. It aims to help operationalize the "nature positive" concept for the private financial sector.
- 126 While insurers through their value chain contribute to negative impact on nature, their activities and actions to respond to nature loss should follow the impact mitigation hierarchy at project/product level to anticipate and avoid impacts on biodiversity and ecosystem services; and where avoidance is not possible, minimise; and, when impacts occur, rehabilitate or restore; and where significant residual impacts remain, offset. (Trewick, J., Bull, J., Ten Kate, K. (2023). 'Nature positive' must incorporate, not undermine, the mitigation hierarchy. *Nature Ecology & Evolution*: [researchgate.net/](https://www.researchgate.net/)
- 127 The TNFD Guidance on the identification and assessment of nature-related issues: [The LEAP approach](#) includes a definition of 'positive impact referring to positive changes to the state of nature, which can be generated by both positive impact drivers (e.g., rewilding, conservation and restoration) and reducing negative impacts drivers (e.g., waste reuse and recycling).' It is suggested that this can only be considered as a positive impact if there is a net positive impact through these activities on nature.
- 128 TNFD (2023). Guidance on the identification and assessment of nature-related issues: The LEAP approach: [tnfd.global](https://www.tnfd.org/global)
- 129 EC (2023). Commission Delegated Regulation (EU) 2023/2772 of 31 July 2023 supplementing Directive 2013/34/EU of the European Parliament and of the Council as regards sustainability reporting standards. Accessed on February 2025. eur-lex.europa.eu
- 130 For potential impacts, the mitigation hierarchy begins with efforts to avoid them entirely. Where avoidance is not possible, organizations should seek to reduce or minimize the impact. If the impact has already occurred, the next steps involve remediation or, where appropriate, compensation. Biodiversity offsets may be considered only as a last resort and are generally discouraged, particularly where impacts are irreversible or difficult to measure.
- 131 GRI (2024). GRI 101: Biodiversity 2024: [globalreporting.org/](https://www.globalreporting.org/)
- 132 GRI (2021). GRI 3: Material Topics 2021: [globalreporting.org/](https://www.globalreporting.org/) according to GRI 3 (step 2) and in line with OECD and UNGP instruments.
- 133 Ibid.
- 134 PBAF distinguishes between actual impacts—measured changes in biodiversity (attributed to a specific intervention)—and potential impacts, which are anticipated changes resulting from biodiversity impact drivers.
- 135 EC (2023). Commission Delegated Regulation (EU) 2023/2772 of 31 July 2023 supplementing Directive 2013/34/EU of the European Parliament and of the Council as regards sustainability reporting standards. Accessed on February 2025. eur-lex.europa.eu
- 136 UNEP FI (2025). Breaking Ground: Getting practical with nature-related assessments for insurers. Part 2 of the PSI Nature Uncovered Series. Geneva: [unepfi.net/-/forthcoming](https://www.unepfi.net/-/forthcoming)
- 137 The considerations leverage the principles outlined in the 'Global GHG Accounting & Reporting Standard Part C—Insurance-Associated Emissions' but does not attempt to resolve the challenges of determining the association or attribution of nature-related impacts to insurers. As is also the case with lending and investment, this remains a work in progress. dependencies and impacts give rise to risks and opportunities, which is why they're important to understand, even if there's no formal attribution.
- 138 PCAF (2022). Insurance-Associated Emissions. The global GHG accounting & reporting standard: [carbonaccountingfinancials.com/](https://www.carbonaccountingfinancials.com/)
- 139 While the level of detail proposed may currently pose challenges for portfolio-wide analysis and/or quantitative analysis, this section can help identify key themes for addressing nature-related impacts using a qualitative approach, serving as a starting point for strategic discussions. Additionally, these considerations can inform product development and review processes, as well as clarify data requirements within underwriting and ESG risk management frameworks, particularly when assessing new projects, companies, or processes in high-risk sectors or locations, as suggested in the '[PSI Nature Action Guide](#)'.
- 140 The 'Global GHG Accounting & Reporting Standard Part C—Insurance-Associated Emissions' excludes life & health insurance business lines from its scope.



- 141 UNEP FI (2024). Insuring a Resilient Nature-Positive Future. Geneva: [unepfi.org](https://www.unepfi.org)
- 142 It aligns with the established guidance and descriptions of key concepts found in other nature-related approaches and should be read in tandem with these frameworks—particularly the ‘[Guidance on the TNFD LEAP](#)’, the ‘[Financial Sector Supplement to the Natural Capital Protocol](#)’ and the ‘GRI Insurance Sector Exposure Draft’—for enhanced understanding and clarifications.
- 143 Considerations in terms of nature-related impacts for service providers in the upstream value chain can also be applied for own service provider.
- 144 GRI (2021). GRI 3: Material Topics 2021: [globalreporting.org/](https://www.globalreporting.org/)— refers to the first step in due diligence to identify actual and potential negative impacts.
- 145 Noting the level of contribution, cause and direct link throughout the value chain can be further informed by the type of insurance product.
- 146 TNFD (2023). Guidance on the identification and assessment of nature-related issues: The LEAP approach: [tnfd.global/](https://www.tnfd.global/)
- 147 CBD, WHO, UNEP (2015): Connecting Global Priorities: Biodiversity and Human Health: [cbd.int/health/SOK-bio-diversity-en](https://www.cbd.int/health/SOK-bio-diversity-en)
- 148 ENCORE Partners (Global Canopy, UNEP FI, and UNEP-WCMC) (2025). ENCORE: Exploring Natural Capital Opportunities, Risks and Exposure. [On-line], 2024 version, Cambridge, UK: the ENCORE Partners. Available at: encorenature.org. DOI: doi.org/10.34892/dz3x-y059
- 149 UNEP FI (2024). Insuring a Resilient Nature-Positive Future. Geneva: [unepfi.org](https://www.unepfi.org)
- 150 GRI (2021). GRI 3: Material Topics 2021: [globalreporting.org/](https://www.globalreporting.org/)— refers to the first step in due diligence to identify actual and potential negative impacts.
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- 152 The ‘Global GHG Accounting & Reporting Standard Part C—Insurance-Associated Emissions’ excludes life & health insurance business lines from its scope.
- 153 Refer to comparative analysis of materiality approaches here: UNEP FI, UNEP WCMC (2025). Accountability for Nature: Comparison of Nature-related Assessment and Disclosure Frameworks and Standards: [unepfi.org/](https://www.unepfi.org/)
- 154 GRI (2021). GRI 3: Material Topics 2021: [globalreporting.org/](https://www.globalreporting.org/)— refers to the first step in due diligence to identify actual and potential negative impacts.
- 155 Noting the level of contribution, cause and direct link throughout the value chain can be further informed by the type of insurance product.
- 156 TNFD (2023). Guidance on the identification and assessment of nature-related issues: The LEAP approach: [tnfd.global/](https://www.tnfd.global/)
- 157 UNEP FI (2025). Breaking Ground: Getting practical with nature-related assessments for insurers. Part 2 of the PSI Nature Uncovered Series. Geneva: [unepfi.net/- forthcoming](https://www.unepfi.net/-/forthcoming)
- 158 UNEP FI (2024). Insuring a Resilient Nature-Positive Future. Geneva: [unepfi.org/](https://www.unepfi.org/)
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- 160 Although noting that typically influencing the behaviour of others, without a direct relationship related to the product or service value chain, it is not considered an attributable organisational impact.
- 161 NGFS (2023). Nature-related Financial Risks: A Conceptual Framework to guide Action by Central Banks and Supervisors: [ngfs.net/](https://www.ngfs.net/)
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- 163 Ranger, N., Alvarez, J, Freeman, A. et al (2023). NGFS Occasional Paper. The Green Scorpion: the Macro-Criticality of Nature for Finance Foundations for scenario-based analysis of complex and cascading physical nature-related financial risks: [ngfs.net](https://www.ngfs.net)
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- 214 Under Solvency II, materiality refers to information whose omission or misstatement could influence users' decision-making or judgement.
- 215 EIOPA's 'consultation paper on biodiversity risk management' clarifies that, within the ORSA process, (re)insurers are expected to identify all material sustainability risks relevant to their business. Undertakings should carry out a materiality assessment—comprising both narrative and exposure analyses—and, where risks are deemed material, conduct a financial risk assessment within the ORSA.
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