

PSI WORKING GROUP FOR NATURE

Climate–Nature Nexus Atlas

Making Nature Visible and Actionable in
Insurance Underwriting



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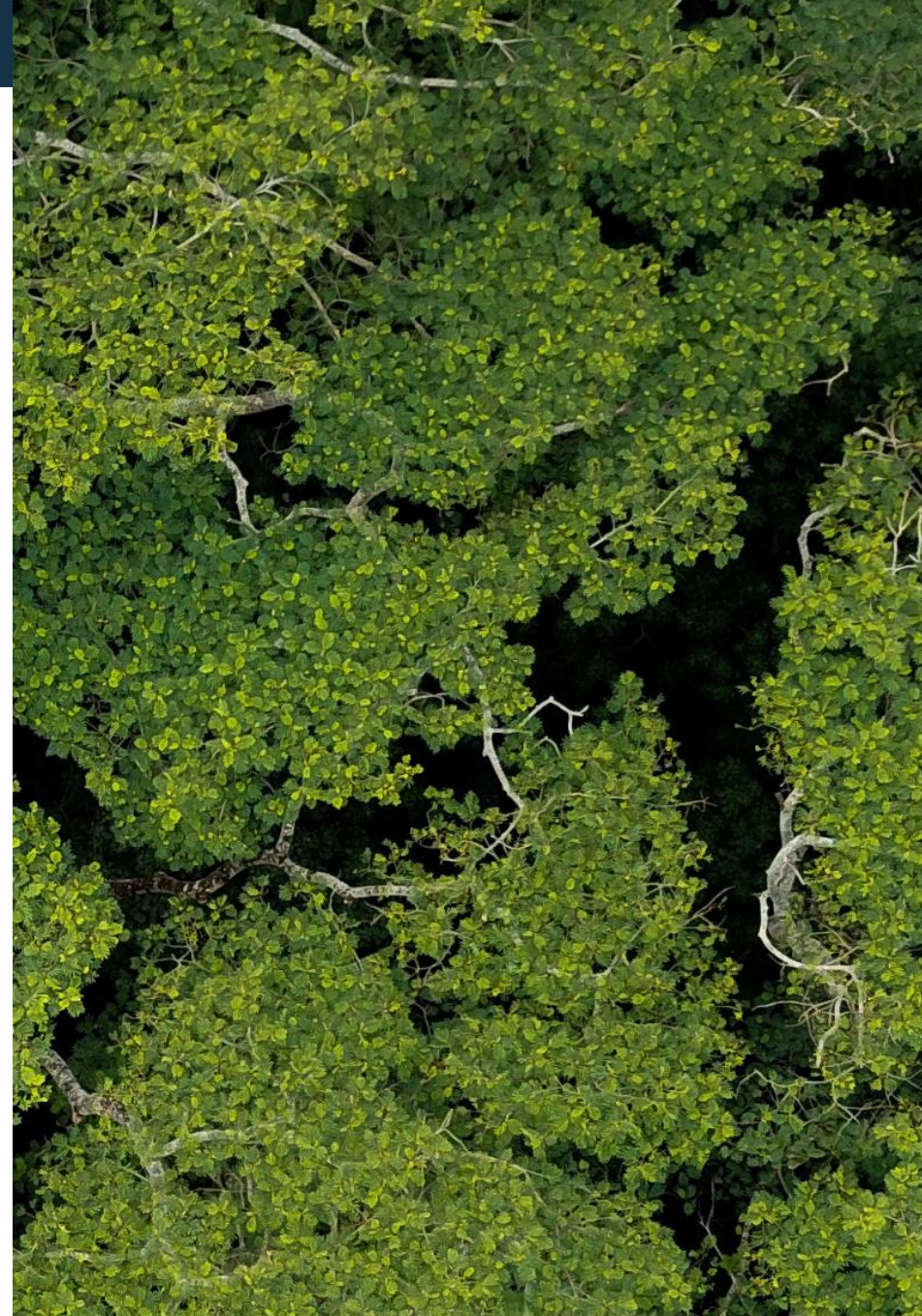
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About the PSI Working Group for Nature



Principles for Sustainable Insurance Working Group for Nature



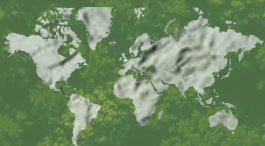
First multi-stakeholder community addressing portfolio-wide approaches to nature

50+

Insurers, reinsurers, brokers participating

20+

organizations as technical partners and part of consultative group



5

regions

20

countries



Advancing insurer capability and technical approaches to address nature-related dependencies, impacts, risks and opportunities across risk management and underwriting in non-life and life & health portfolios.



Enabling insurers to contribute to the GBF mission to halt and reverse nature loss by 2030, while supporting resilience for businesses and communities.

How we help insurers advancing insurance practices for a nature-positive and resilient future

Develop approaches to assess nature-related dependencies, impacts, risks and opportunities

Identify priority actions for insurers to contribute to nature-positive and inform transition planning

Integrate nature into risk management and underwriting frameworks

Expand insurance solutions that enable the transition to nature-positive futures

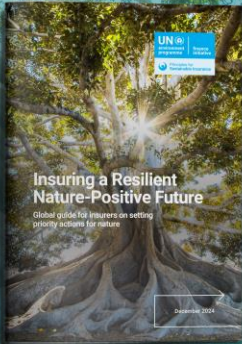
Training & Learning Support

Closing a critical gap in guidance for insurers

PSI Nature Action Guide

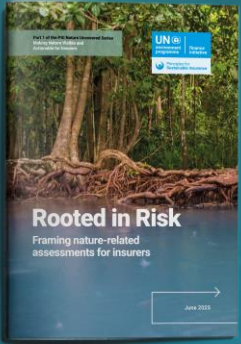
Priority actions
for insurers to contribute to a
nature-positive future while
building resilience with
nature

Guidance and key actions for
non-life and life & health
underwriting portfolios



Nature Uncovered for Insurers Rooted in Risk

Provides foundational
understanding of
nature-related dependencies,
impacts, risks & opportunities in
underwriting portfolios
(non-life and life & health)



Nature Uncovered for Insurers Breaking Ground

Provides practical
considerations for conducting
nature-related assessments
in non-life insurance
underwriting business



PSI Working Group for Nature 2026 Activities

Core Thematic Group

Advancing approaches for quantitative nature-related risk and opportunity assessments and pathways for integration into underwriting.

Equip insurers with methods to engage clients and stakeholders on nature-related risks and opportunities.

Deliver pragmatic, decision-useful approaches that support real-world application.

Nature Practice Sessions

Build deeper understanding of nature-related opportunities for insurers, including nature-positive, resilience, and transition insurance.

Enable knowledge exchange and discussion, supported by technical partners, and expert speakers.

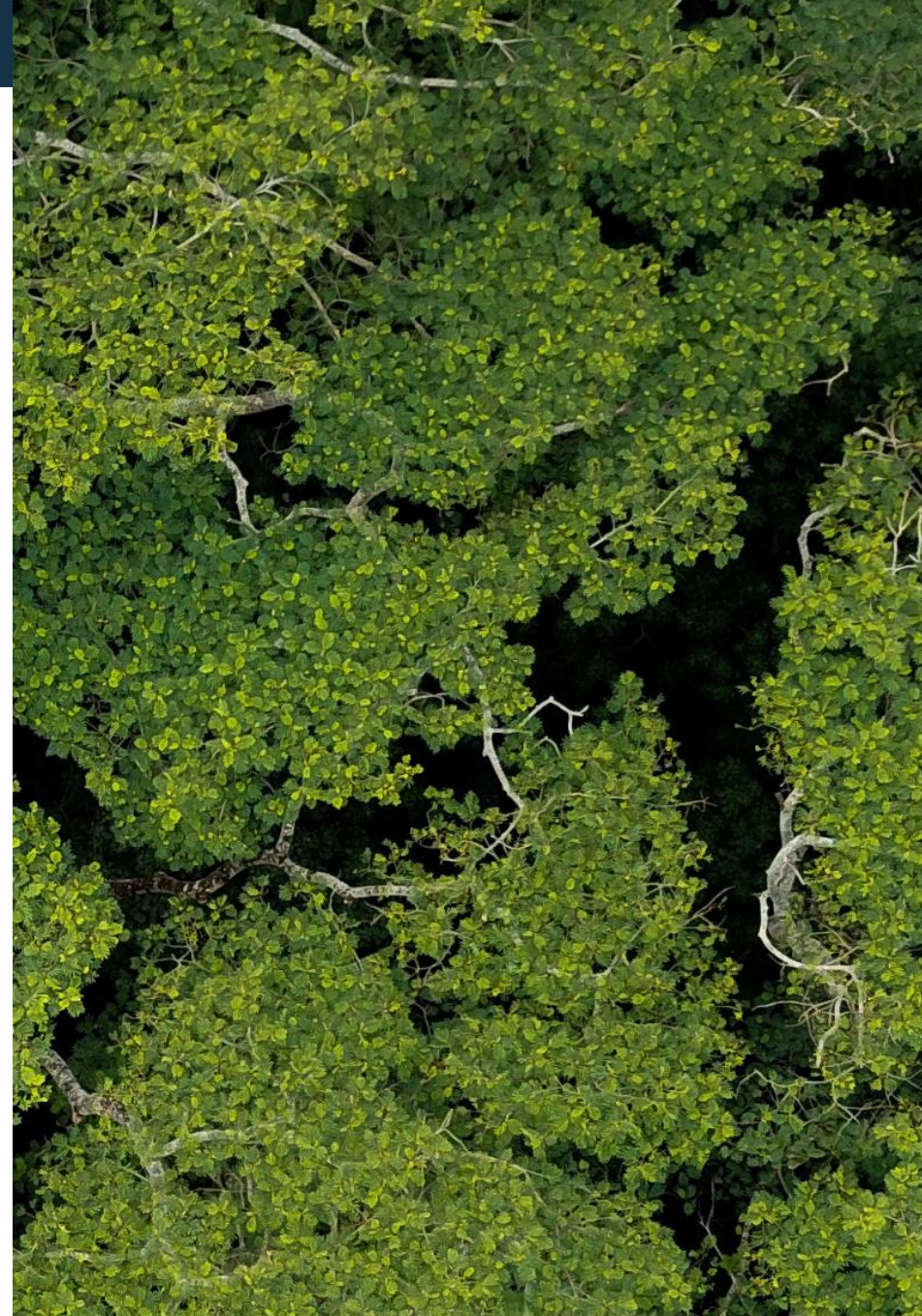
Provide clarity on feasible insurance solutions for nature, including how these can be translated and scaled in practice.

Training & Learning Series

Translating technical working group reports into a training & learning series tailored to the different teams within an insurance company.

This will include a digital training format and interactive training sessions.

Integrating Nature in Underwriting – Approach & 2026 Activities



Valuing Nature in (Non-Life) Insurance Underwriting

We set out to make nature visible and actionable in underwriting and product design – moving from concepts toward quantified, decision-useful guidance.

Problem we are addressing

- **Ecosystem condition** is not captured in claims or risk models, risking mispricing
- **Nature opportunities** are under-recognised for reducing losses and insurability
- **Quantification is constrained** — qualitative, limited data, not embedded in underwriting

Our Focus and Scope

- **Building on** the group's foundational frameworks and definitions
- **Pragmatic**, decision-useful approaches
- **In scope:** P&C physical nature-related risks and opportunities
- **Location-based** risk assessments

Intended outcomes

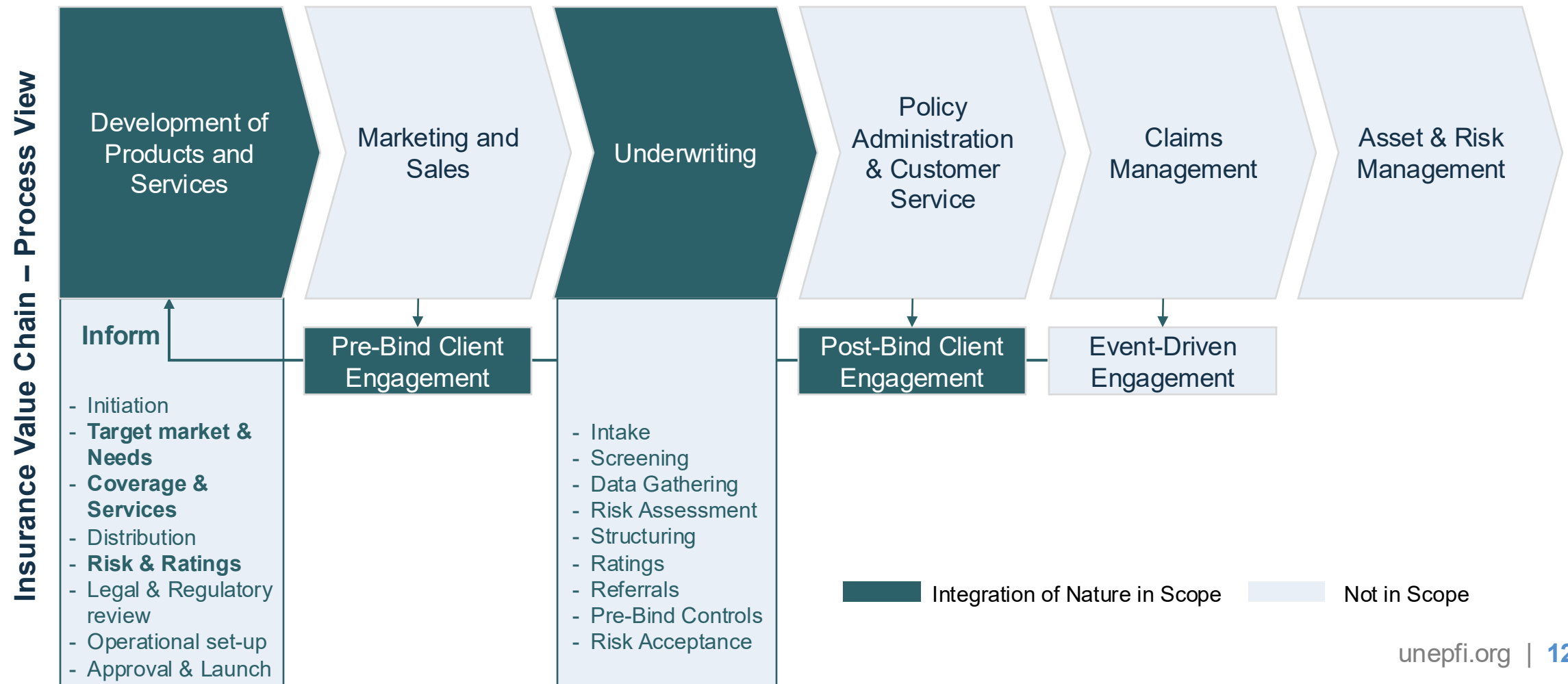
- **Causal understanding** of how ecosystem condition shifts risk
- **An aligned framework** embedded in risk models
- **Stronger underwriting** capability and decisions
- **Nature opportunities** built into products
- **Insurers equipped** to engage clients and stakeholders



Photo by [Noah Buscher](#) on [Unsplash](#)

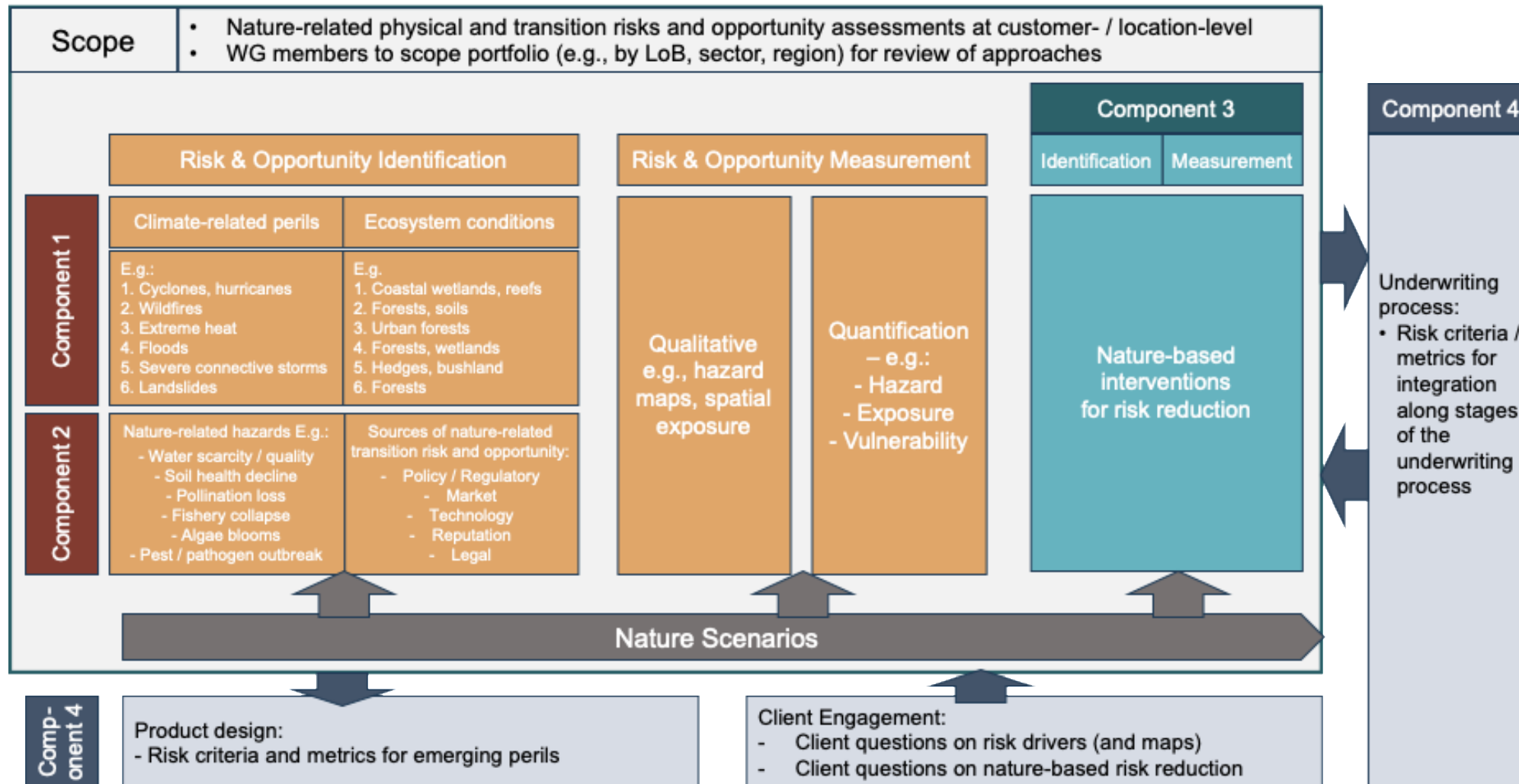
Insurance Functions in Scope for Nature Integration

We map the insurance value chain to pinpoint where nature integration is in scope – concentrating on product design, underwriting and client engagement, where nature-related risks and opportunities are most decision-relevant.



High-Level Approach

A four-component approach: (1) the Climate–Nature Nexus; (2) nature-related risks and opportunities; (3) Nature-based Solutions (NbS) for risk reduction; and (4) integration into the insurance value chain.



Intended Outputs and Timelines

We map four programme components to a phased delivery schedule – sequencing outputs from the Nexus Atlas to the Underwriting Toolkit across 2026 and 2027.

Intended Outputs	Timelines
Component 1 – Climate-Nature Nexus Atlas	January – August 2026
Component 2 – Nature-Related Risks & Opportunities Register	September – December 2026
Component 3 – NbS Integration Playbook	January – March 2027
Component 4 – Underwriting Toolkit	January – March 2027

Component 1: Climate-Nature Nexus Atlas



Component 1 – Context and Objective

Component 1 targets the core gap in underwriting for climate-related perils – defining the objective and the Nexus Atlas outputs that make nature decision-useful.

Problem Statement	The state of nature is not yet systematically integrated into underwriting processes for climate-related perils, beyond partial or implicit use (e.g., hazard maps), across screening, risk assessment, models, and pricing.
Objective	Identify risk-relevant ecosystems that are present and assess how their extent and condition and species (where feasible, considering future scenarios) attenuate or amplify climate-related perils , and how this information can be integrated into underwriting processes .
Intended Output	Climate-Nature Nexus Atlas including: • mapping of climate-related perils and risk-relevant ecosystem factors • framework to integrate ecosystem (and species) metrics into risk models (≥ 3 peril–ecosystem pairs with agreed metrics and data sources) • practical underwriting guidance (≥ 2 lines of business where nature signals inform specific underwriting decisions)

Component 1: Climate–Nature Nexus Atlas

We developed the Atlas – a science-based map of where ecosystems demonstrably move climate risk, peril by peril, by following the below key steps.

Development of Climate–Nature Nexus Atlas

- a Embedding ecosystems in the risk function**
Framework to capture how ecosystem condition shapes hazard, exposure and vulnerability
- b Building the evidence base on ecosystem influence**
Climate perils where ecosystems demonstrably influence risk
- c Mapping ecosystem condition to perils**
Determinants and metrics – extent, condition, species – for each peril
- d Translating evidence into underwriting guidance**
Embedding ecosystem factors in data gathering, screening and risk assessments

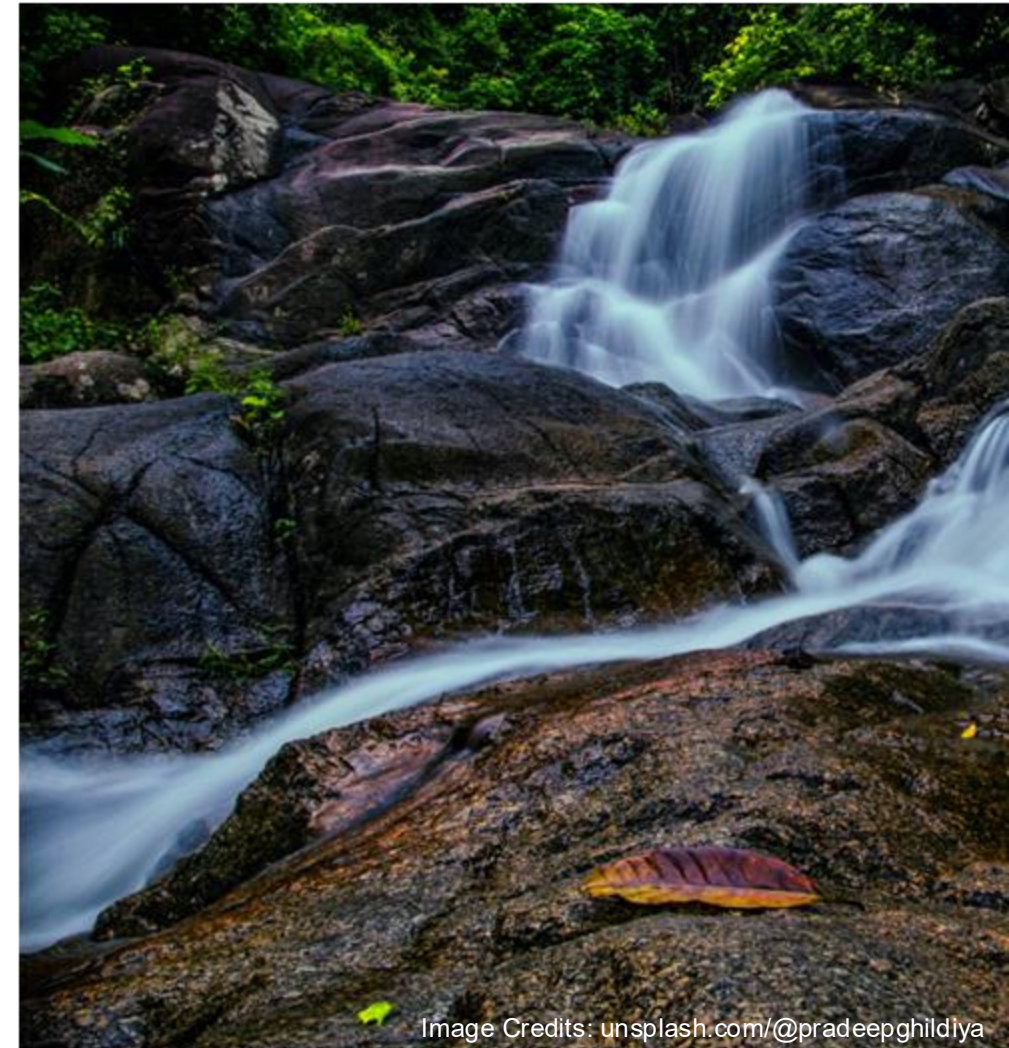
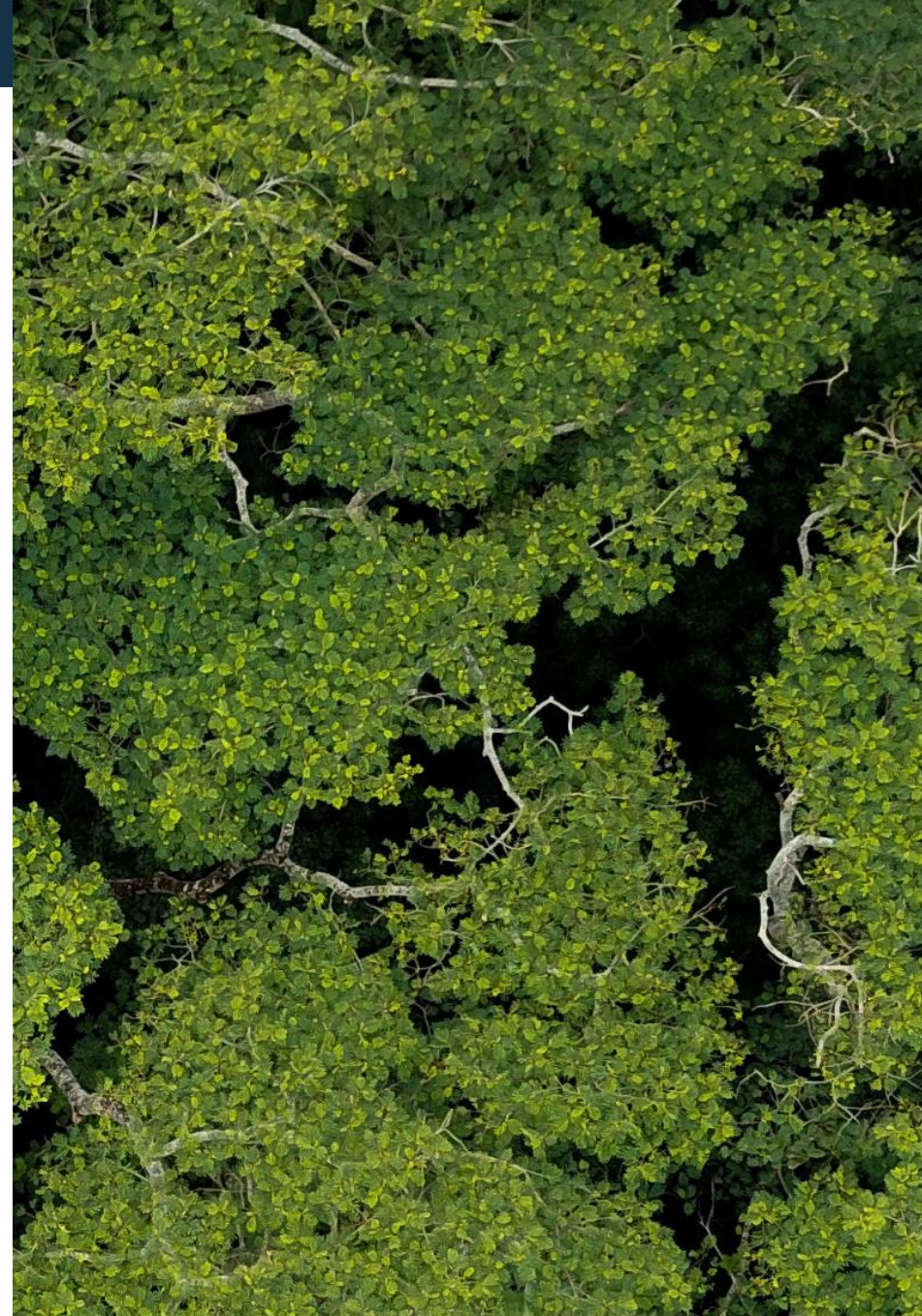


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a

Embedding ecosystems in the risk function – Draft Methodology



Where Nature Shapes Risk and Opportunity

The risk pathway is the baseline – ecosystems both amplify hazards and offer opportunities to reduce them – beginning with the climate–nature nexus.

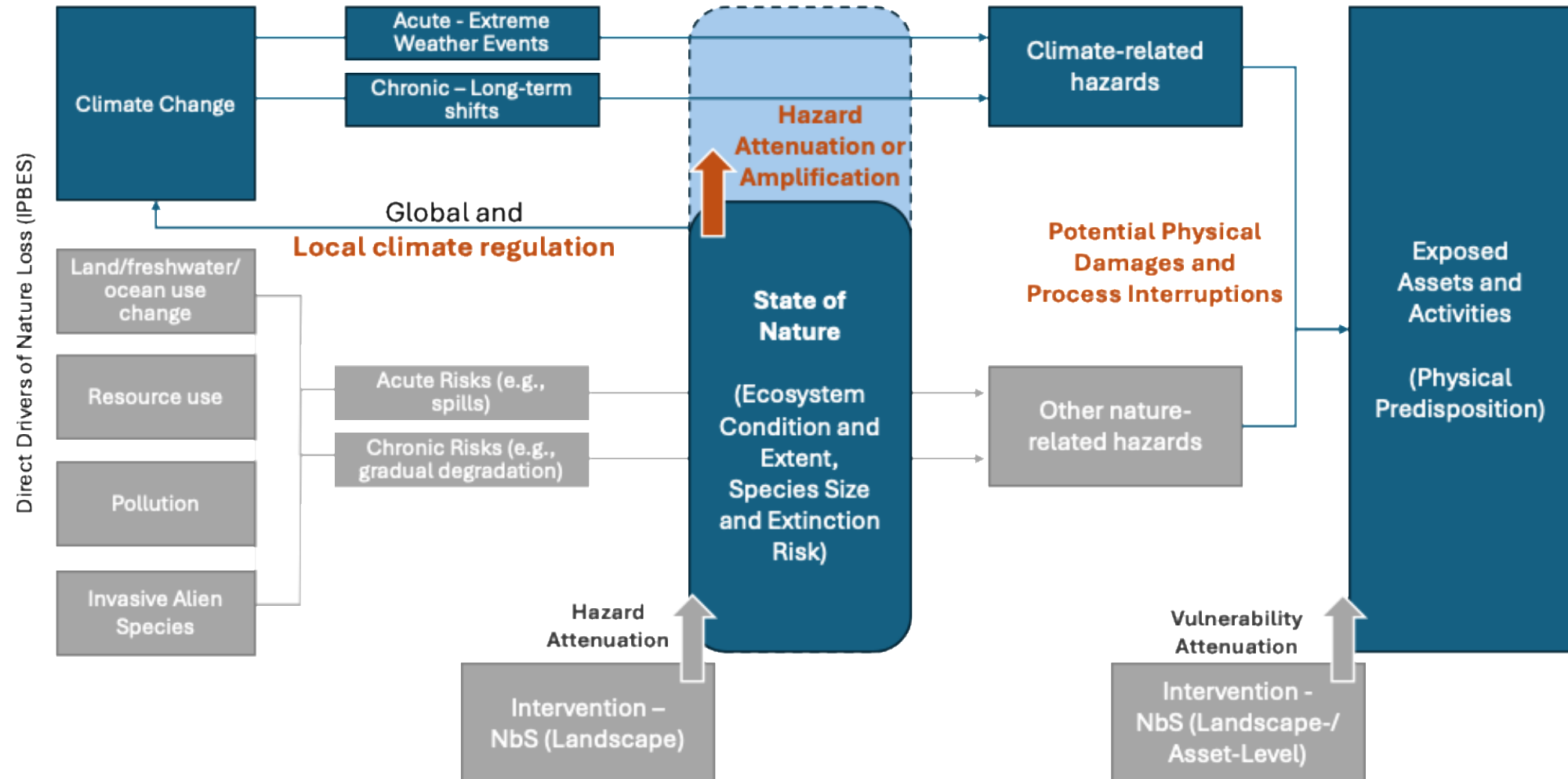
4 components in development:

1 · Climate–Nature Nexus Atlas

2 · Nature-Related Risks & Opportunities Register

3 · NbS Integration Playbook

4 · Underwriting Guidance & Resources



Baseline: Risk Definition and Risk Function

Nature-related risks act as sources of risk to the state of nature – framed via the Rooted in Risk and IPCC hazard–exposure–vulnerability lens.

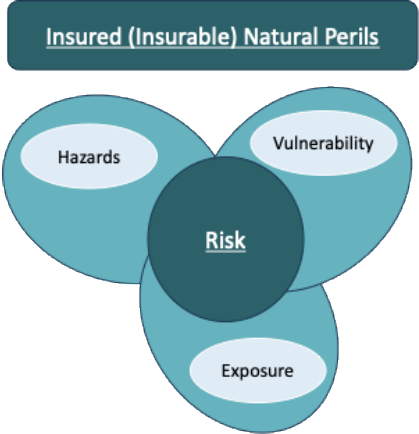
Risk Definition for Underwriting acc. to Rooted in Risk¹

Nature-related risks are understood as **sources of risk**, such as **chronic** ecosystem degradation or **acute** events (e.g., pollution incidents), that affect the **state of nature**.

These changes can **modify underlying physical conditions**, influencing the frequency and severity of insured climate-related perils (**Component 1**), or give **rise to new or emerging nature-related hazards**, potentially resulting in new insurable perils (**Component 2**).

In **Rooted in Risk**, risk is understood as a **function of hazard, exposure, and vulnerability**, resulting in **potential financial loss** associated with a **specific peril**.

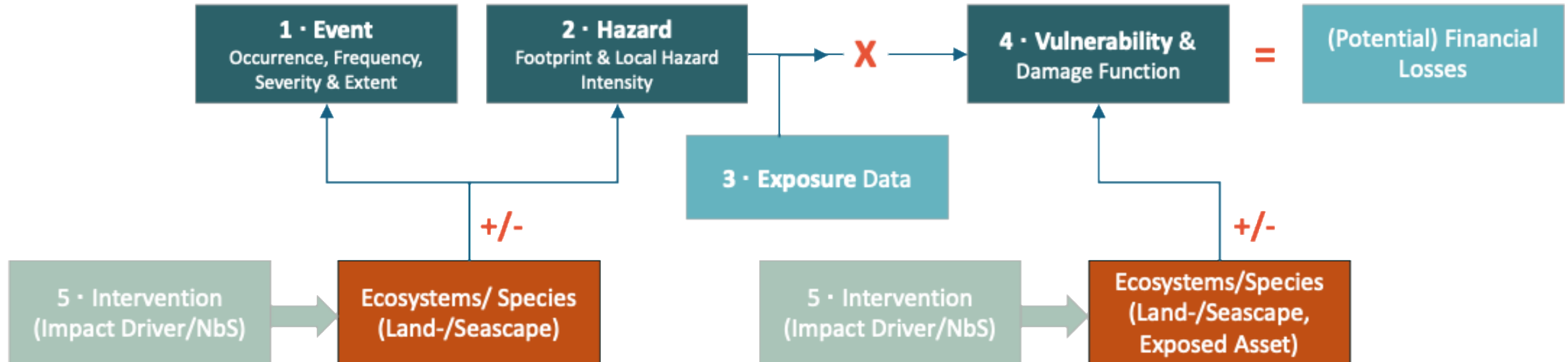
Risk Function acc. to IPCC ²	Hazard	Exposure	Vulnerability	Risk
Description	Potential occurrence of a physical event or trend that may cause harm to people, assets, ecosystems, or services.	People, assets, ecosystems, or activities located in areas that could be affected by a hazard.	Propensity to be adversely affected, reflecting sensitivity to harm and limited capacity to cope or adapt.	Potential adverse outcomes arising from the interaction of hazard, exposure, and vulnerability.



1 UNEP FI (2025). Rooted in Risk. Nature Uncovered for Insurer Series. Geneva: [unepfi.com/](https://www.unepfi.com/) based on TNFD (2023) and NGFS (2023).
2 IPCC AR6 Working Group II – Glossary – [ipcc.ch/](https://www.ipcc.ch/)

Ecosystems in the Risk Function

Ecosystems enter the risk function at three points – shaping event generation, local hazard intensity, and the vulnerability of exposed assets.



1 · Event

Influences event frequency and severity – for some perils, via local climate regulation.

2 · Hazard intensity

Modifies hazard behaviour and local intensity before it reaches exposed assets.

3 · Exposure

Ecosystems, or assets within them, are exposed; their condition an indirect influence.

4 · Vulnerability

Drives damage severity and recovery where ecosystems or assets are insured.

5 · Interventions

Nature-based interventions and condition trends shift risk over the policy period.

b

Building the evidence base on ecosystem influence



Climate-Related Perils and Ecosystems in Scope

Scope is set on both sides of the risk equation – the climate perils insurers cover and the ecosystem typologies that shape them.

- **Insured natural perils** (meteorological, hydrological, climatological) affected by climate change and nature loss.
- Focus on **acute extreme events** covered by insurers (e.g., storms, floods, hail, wildfire), with **insured slow-onset perils** (e.g., drought) also included.
- **Non-insured slow-onset trends** (e.g., sea-level rise) are recognized indirectly as **drivers increasing event occurrence and intensity** (e.g., coastal flooding).

This results in consideration of the following perils:

1. **Tropical cyclones** (wind, surge, flooding)
2. **Extratropical cyclones** (wind, surge, flooding)
3. **Severe convective storms** (SCS; tornado, wind, hail, flooding)
4. **Fluvial floods**
5. **Pluvial floods** (surface water, flash)
6. **Coastal floods** (surge / wave action)
7. **Landslides** (slope failure, mudflows)
8. **Wildfires**
9. **Droughts** (agricultural, hydrological)
10. **Extreme snowfall / freezing rain / ice**

Ecosystems are the functional units of nature, interacting **living and non-living components** (plants, animals, microorganisms, soil, water, air, nutrients, climate) functioning together as a system. **Species** are the living organisms that **underpin ecosystem functioning** (IPBES).

Ecosystems are grouped using typologies based on shared biophysical and functional characteristics (acc. to IUCN typology).

Levels of aggregation relevant for Component 1:

- **Level 1 – Realms:** Broad domains (terrestrial, freshwater, marine) used for high-level framing.
- **Level 2 – Biomes:** Used to structure the high-level review of the evidence base.
- **Level 3 – Ecosystem Functional Groups (EFGs):** Used for **detailed evidence review**, as hazard-regulation functions and ecosystem condition metrics vary across EFGs.

Approach for Peril-Ecosystem-LoB Mapping

A mapping links each climate-related peril to relevant ecosystems and lines of business – scored by the strength of evidence behind each ecosystem–peril connection.

Climate-Related Peril and Hazards ->	TC Wind	TC Coastal Flood	Wildfires	[...]
Biome A				
Ecosystem Group 1	**	-	**	[...]
Ecosystem Group 2	*	-	**	[...]
Biome B				
[...]	-	***	-	[...]
Line of Business -> - Property - [...]	Yes	Yes	No	[...]

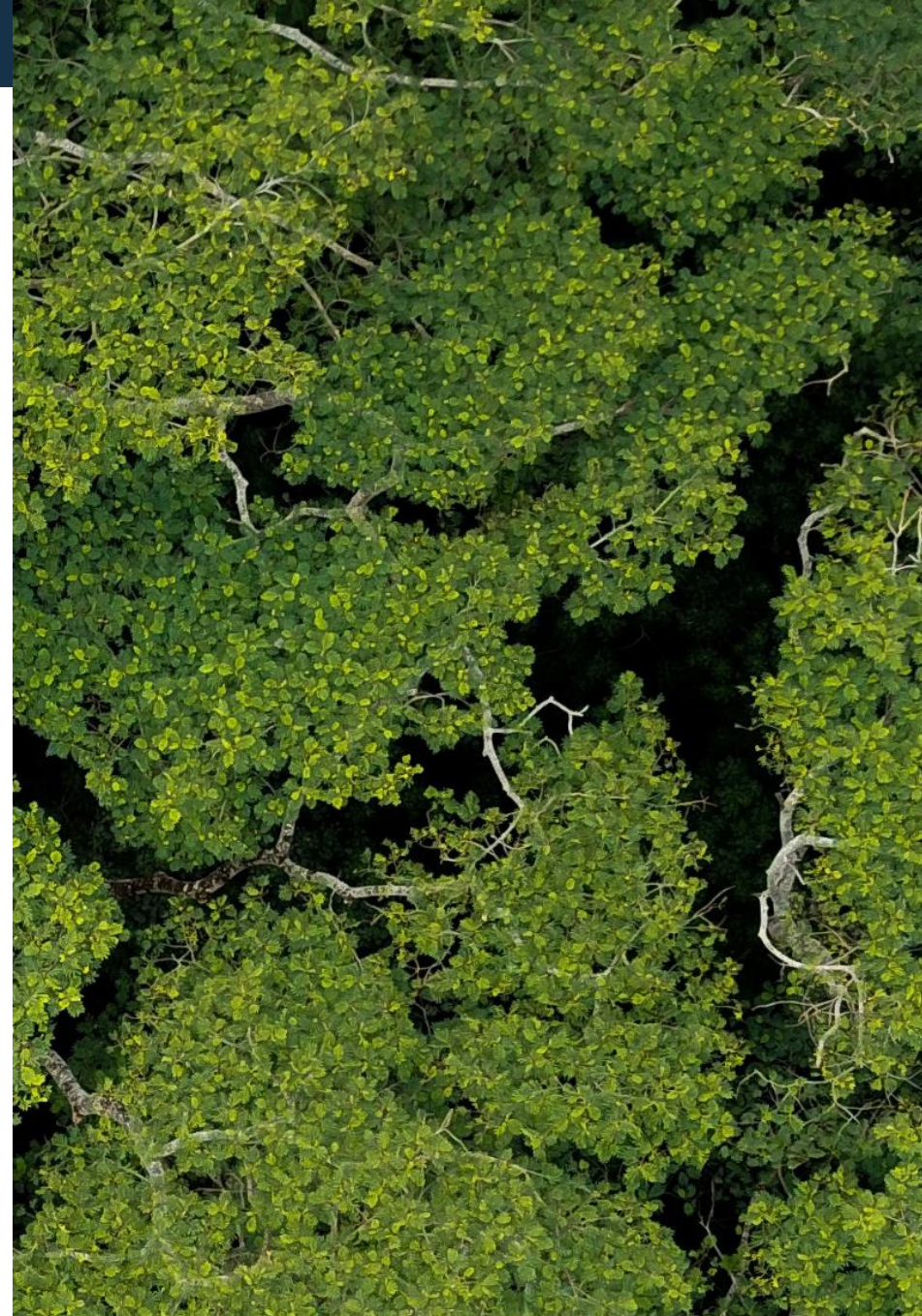
Key

- ***** **Strong, well-established connection;** substantial body of research demonstrating effects on hazard regulation and/or vulnerability, with defined methods and/or indicators available.
- **** **Established connection;** emerging or partial research on hazard regulation and/or vulnerability, but methods and indicators are not yet clearly specified or standardised.
- *** **Mechanism recognised/plausible,** but not yet empirically demonstrated for this pairing
- **No documented connection identified** in the literature or research on hazard regulation or vulnerability to date.

*Note: The **symbols** (*/-) indicate the strength of the evidence base only. They **do not imply a decrease or increase in risk**, but rather the degree to which ecosystem state (including species) has been shown to influence hazards and/or vulnerability in the literature.*

C

Mapping ecosystem condition to climate-related perils



Derive relevant Ecosystem Determinants (1/2)

Approach for Mapping Ecosystems to the Generic Risk Function: [By Peril]

- **Additional determinants and metrics for the respective ecosystem functional group(s) (EFG)**

[illegible]

Approach for Mapping Ecosystems to the Generic Risk Function: [By Peril]

- **Additional determinants and metrics for the respective ecosystem functional group(s) (EFG)**

[illegible]

Early Outcomes: Evidence (b) and Ecosystem Relevance (c)



Evidence Base and Ecosystem Mapping

The evidence backs it – 12 perils, 108 ecosystem groups and 367 sources, yielding to 148 evidenced ecosystem–peril relationships.

THE MAPPING

	Event frequency & severity	Hazard intensity (LHI)	Vulnerability & damage	
State of nature	catchment forest cover, fragmentation & fuel load	riparian-corridor & floodplain condition; fuel continuity	near-asset vegetation & defensible-space condition	Data input / metrics ecosystem condition indicators
Ecosystem service	runoff & flood regulation; wildfire fuel control	discharge attenuation; fireline-intensity regulation	localised buffering of the asset	Mapped relationship condition → service, from evidence
Resulting effect	shifts flood frequency & wildfire extent	modifies flood depth & fire intensity at the asset	alters the damage ratio at a given hazard intensity	Quantified output effect, where evidence allows

EVIDENCE BASE

12 Natural perils and hazards in scope	108 Ecosystem Functional Groups in scope ¹	367 peer-reviewed, empirical & intergovernmental sources	148 evidenced ecosystem–peril relationships
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¹ IUCN Global Ecosystem Typology – Level 3 – Ecosystem Functional Group (EFG)

Synthesis: Ecosystem condition is a two-way lever on risk

Brought together – a consolidated view of where the evidence is strong, where gaps remain, and where ecosystem condition moves risk both ways.

REALM GROUP	TC Wind	TC Coastal Flood	ETC Wind	ETC Coastal Flood	Snow/Ice	SCS Wind	SCS Hail	Fluvial Flood	Pluvial Flood	Coastal Flood	Wildfire	Drought
● Terrestrial								+4–28%	~60× infil.		–30–76%	–60%
● FW–Terrestrial								–60%	–22–35%			
● Freshwater								–37–60%				
● FW–Marine				+255%								
● Marine	+71%	–64%		–30–50%						–20–94%		
● Marine–Terr.		–42%		–42%								
● Mar–FW–Terr.		–10–30% +14–30%		–37%								

Reduces risk
 Raises risk
 Quantified Descriptive
 Direction not yet rated

Split cell: top = intact reduces · bottom = degraded raises · figures show quantified effect size

d

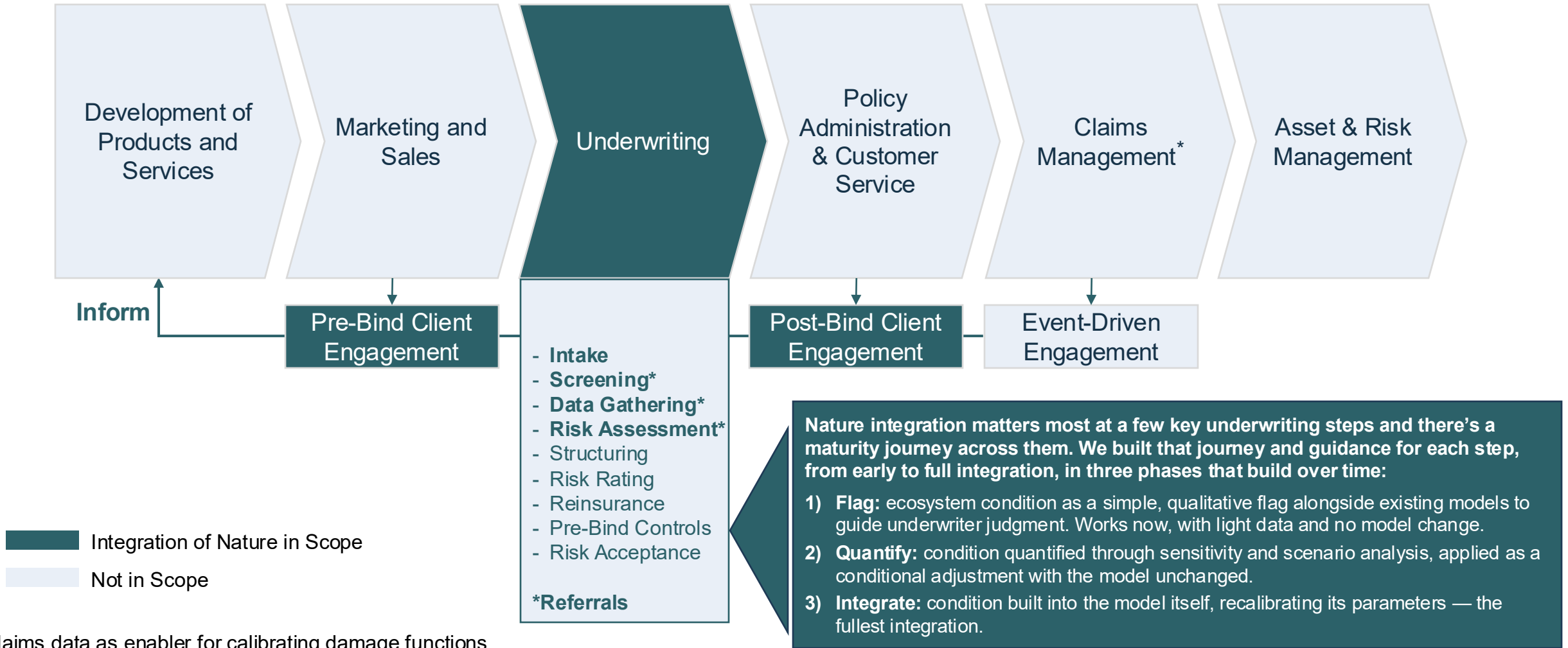
Translating evidence into underwriting guidance



Component 1 in the Insurance Value Chain

Component 1 focuses on the underwriting stage of the value chain — embedding ecosystem condition into risk screening and assessment through a phased maturity journey.

Insurance Value Chain – Process View



* Claims data as enabler for calibrating damage functions

Nature in underwriting: an integration journey

Insurers can act on nature in their underwriting process today – advancing step by step from a qualitative flag toward full model integration.

CLIMATE-RELATED PERIL

Extratropical Cyclone ▼

LINE OF BUSINESS (LOB)

Property Insurance ▼

ECOSYSTEM FUNCTIONAL GROUP

MFT1.3 Coastal saltmarshes ▼

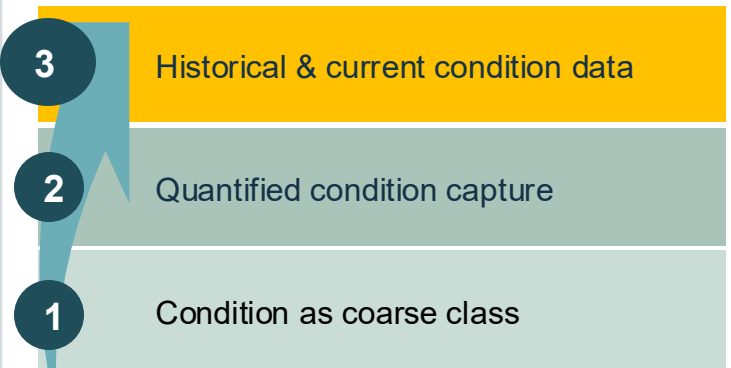
MATURITY LEVEL

Level 1 (Early Integration) ▼

UNDERWRITING PROCESS – components in scope for ecosystem consideration

Data Gathering

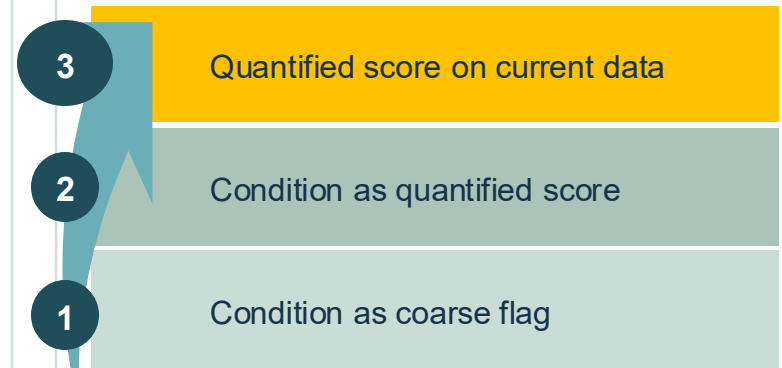
- Location of asset
- Asset characteristics



Discretionary Routing Decision

Screening

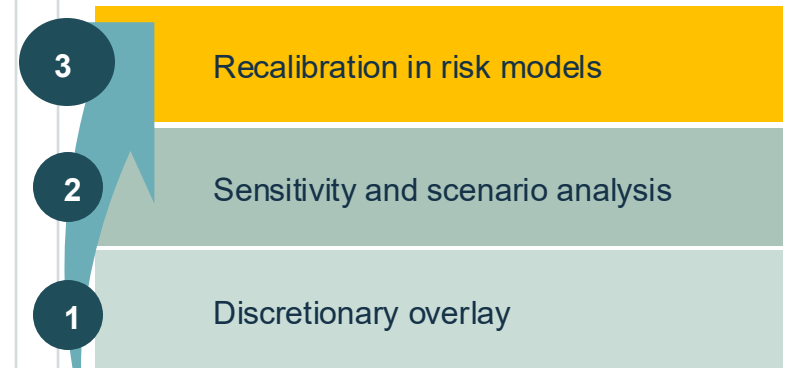
- Ecosystem interface
- Ecosystem condition



Discretionary Routing Decision

Risk Assessment

- Risk assessment
- Risk management



Discretionary Underwriting Decision

PSI WORKING GROUP FOR NATURE

Thank you!

This is a draft – and we want to hear from the wider market.

We'd welcome different perspectives – please share your feedback on the approach and methodology.

Feedback by 31 August 2026

**Nature in the Underwriting
process: Market and
expert feedback**



Scan to share your feedback