



UNIVERSITY OF  
CAMBRIDGE

INSTITUTE FOR  
SUSTAINABILITY LEADERSHIP



# Primer on the financial materiality of Nature-based Solutions (NbS)

Authors: Laura Deltenre and Dr Nina Seega

Created as part of the Naturance project, funded by EU Horizon

## Primer on the financial materiality of Nature-based Solutions (NbS)

### The University of Cambridge Institute for Sustainability Leadership

The University of Cambridge Institute for Sustainability Leadership (CISL) partners with business and governments to develop leadership and solutions for a sustainable economy. We aim to achieve net zero, protect and restore nature, and build inclusive and resilient societies. For over three decades, we have built the leadership capacity and capabilities of individuals and organisations and created industry-leading collaborations to catalyse change and accelerate the path to a sustainable economy. Our interdisciplinary research engagement builds the evidence base for practical action.

### Citing this report

University of Cambridge Institute for Sustainability Leadership (CISL). (2023). Primer on the financial materiality of Nature-based Solutions (NbS). Cambridge, UK: University of Cambridge Institute for Sustainability Leadership.

### Author and acknowledgements

The lead authors of this primer were Laura Deltenre and Dr Nina Seega of the University of Cambridge Institute for Sustainability Leadership (CISL).

### Copyright

Copyright © 2023 University of Cambridge Institute for Sustainability Leadership (CISL).

Some rights reserved. The material featured in this publication is licensed under the Creative Commons Attribution-NonCommercial-Share-Alike License. (Attribution-NonCommercial 4.0 International (CC BY-NC 4.0)).

### Disclaimer

The opinions expressed here are those of the authors and do not represent an official position of CISL, the University of Cambridge, or any of its individual business partners or clients.



# Natural capital and ecosystem services

## Why and how nature matters

### KEY FACTS

- 75% of land is now degraded
- At least 20 per cent of land-based species have been lost since 1900 and one million are threatened
- USD 10 trillion of economic losses estimated by 2050 due to the decline of ecosystem services

### UNDERSTANDING WHY AND HOW NATURE MATTERS



#### Natural capital

The stock of renewable and non-renewable natural resources (e.g., plants, animals, air, water, soils, minerals, ecosystems) that combine to yield a flow of benefits to people

Biodiversity underpins this.

#### Ecosystem Services

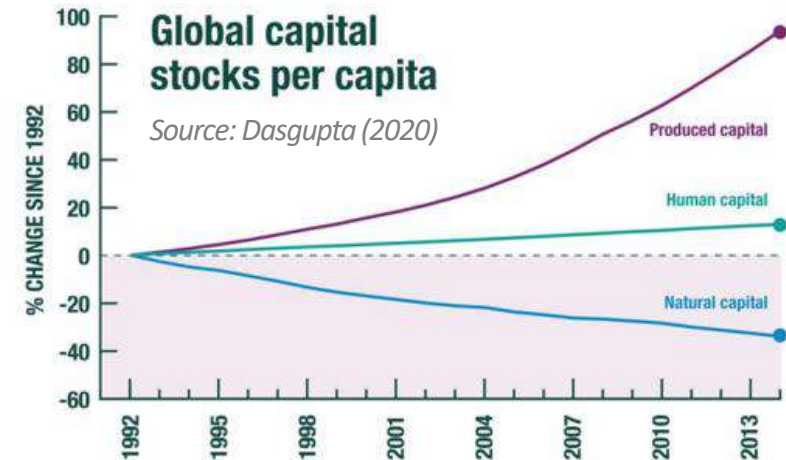
Source: *Natural Capital Coalition (2018)*

The benefits people obtain from natural capital. Four categories:

- **Provisioning:** Material outputs from nature (e.g. water, food, fiber)
- **Regulating:** Indirect benefits from nature (e.g. mitigation of climate change, water filtration, storm protection, pollination).
- **Cultural:** Non-material benefits from nature (e.g. recreational).
- **Supporting:** Fundamental ecological processes that support the delivery of other ecosystem services (e.g. nutrient cycling, soil formation).

### NATURE IS IN DECLINE

Natural capital has been transformed into produced capital



### KEY INITIATIVES



Abiotic services: Flows from the environment to economic and other human activity that do not arise from biophysical processes and other interactions within and between ecosystems.

Reference: United Nations; European Union; Food and Agriculture Organization of the United Nations; Organisation for Economic Co-operation and Development; The World Bank. (2014). System of Environmental-Economic Accounting 2012: Experimental Ecosystem Accounting. Retrieved from: [http://ec.europa.eu/eurostat/ramon/statmanuals/files/UN\\_experimental\\_ecosystem\\_accounting\\_2012\\_EN.pdf](http://ec.europa.eu/eurostat/ramon/statmanuals/files/UN_experimental_ecosystem_accounting_2012_EN.pdf)

# Nature-positive

NATURE  
POSITIVE



adj — neɪ.tʃər.pɒzətɪv

Nature-positive means halting and reversing the loss of nature by 2030 so that species and ecosystems begin to recover.

It is a new operating model based on regeneration, resilience and circularity not extraction, destruction and pollution.

NATURE  
POSITIVE

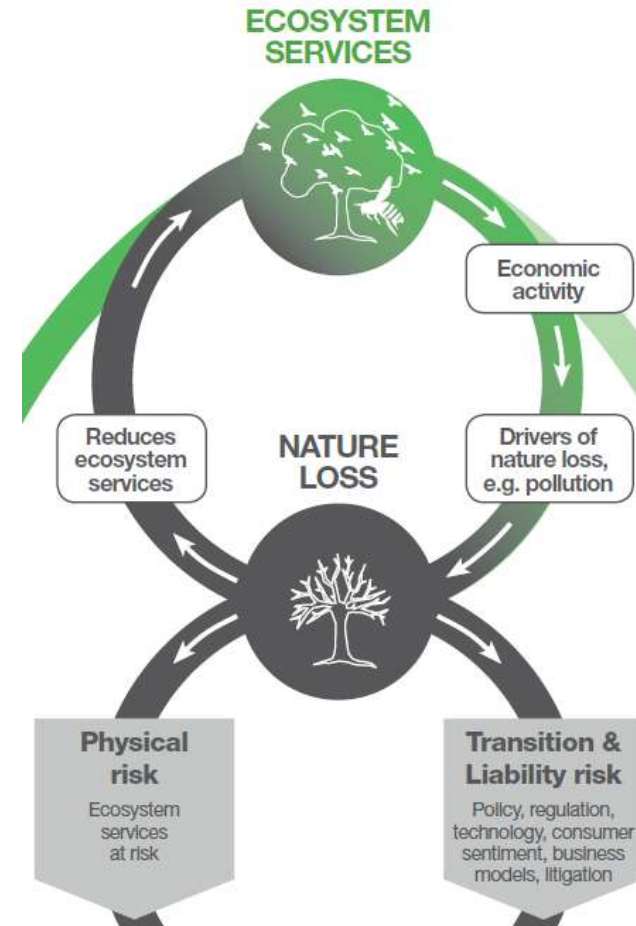


There are many definitions of nature-based solutions, but CISL defines them as *“ways of working with natural systems to strengthen them while solving broader problems such as climate change, health, social inclusion, and more.”*



# Nature loss is a source of financial risk

- Economic activity that is dependent on ecosystem services is causing nature loss
- Nature loss results in physical risk
- To combat nature loss, we also see transition risks emerging and liability risks crystallising

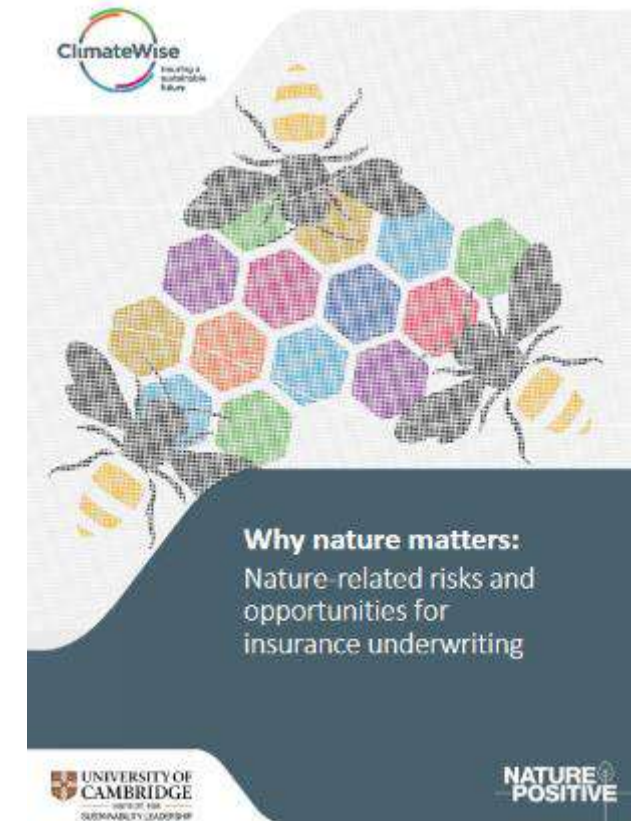


## Financial materiality for nature-related risks in the insurance sector

Half of the re/insurers surveyed believe that nature-related risks are material for their underwriting business. However, nature-related risks are not currently being assessed in underwriting by the majority of re/insurance industry participants due to:

- a lack of awareness and understanding of nature-related risks;
- data and information;
- regulatory and supervisory guidance;
- technical capacity and skills;
- and mandate/buy-in from Executive Management.

Nature-related risks are also challenging to measure as there are multiple interrelations between nature, society and the global economy that amplify uncertainties.



### References:

- UNDP SIF. (2021). SIF Scoping study: Nature-related risks in the global insurance sector. New York. Retrieved from: [www.sustainableinsuranceforum.org](http://www.sustainableinsuranceforum.org)
- NGFS-INSPIRE. (2022). Central banking and supervision in the biosphere. Retrieved from: <https://inspiregreenfinance.org/publications/central-banking-and-supervision-in-the-biosphere>
- Chandellier, J., Malacain, M. (2021). Biodiversity and Re/insurance: An Ecosystem at Risk. [Research Report]. Retrieved from: <https://hal.archives-ouvertes.fr/hal-03213905>

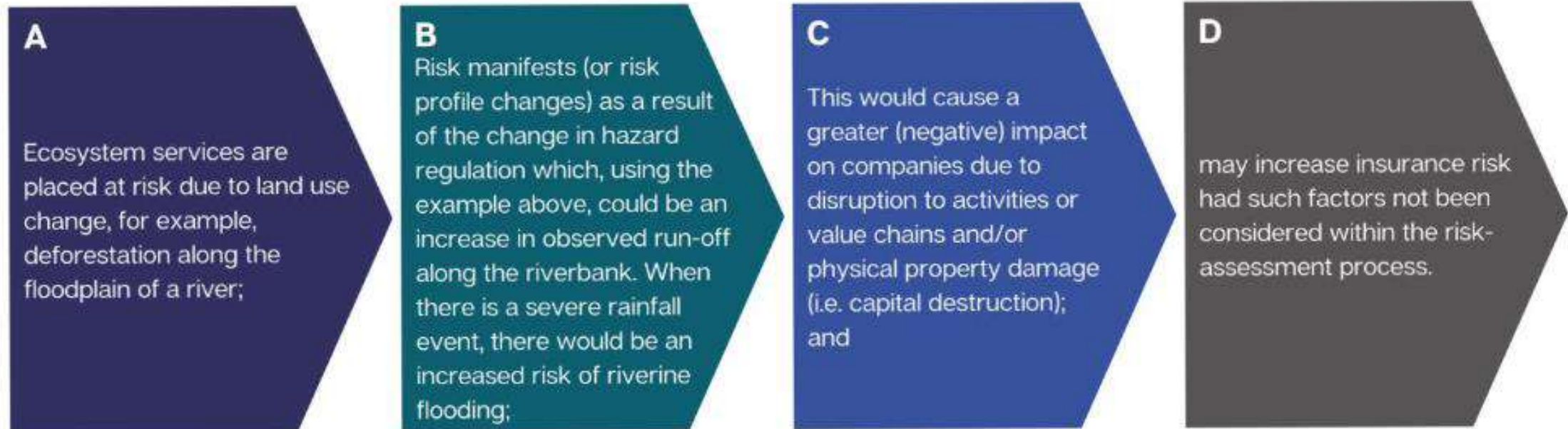


# Framework for identifying nature-related financial risks



- Included in CISL's [\*Handbook for Nature-related financial risks\*](#)
- Handbook enables financial institutions to identify these risks
- Five direct drivers of nature loss [A] can damage five types of ecosystem service [B], e.g. water security
- Transition and liability risks [A] contribute a further five risk categories [B], e.g. policy and regulation

## An example of how the framework could be applied in the context of re/insurance



### References:

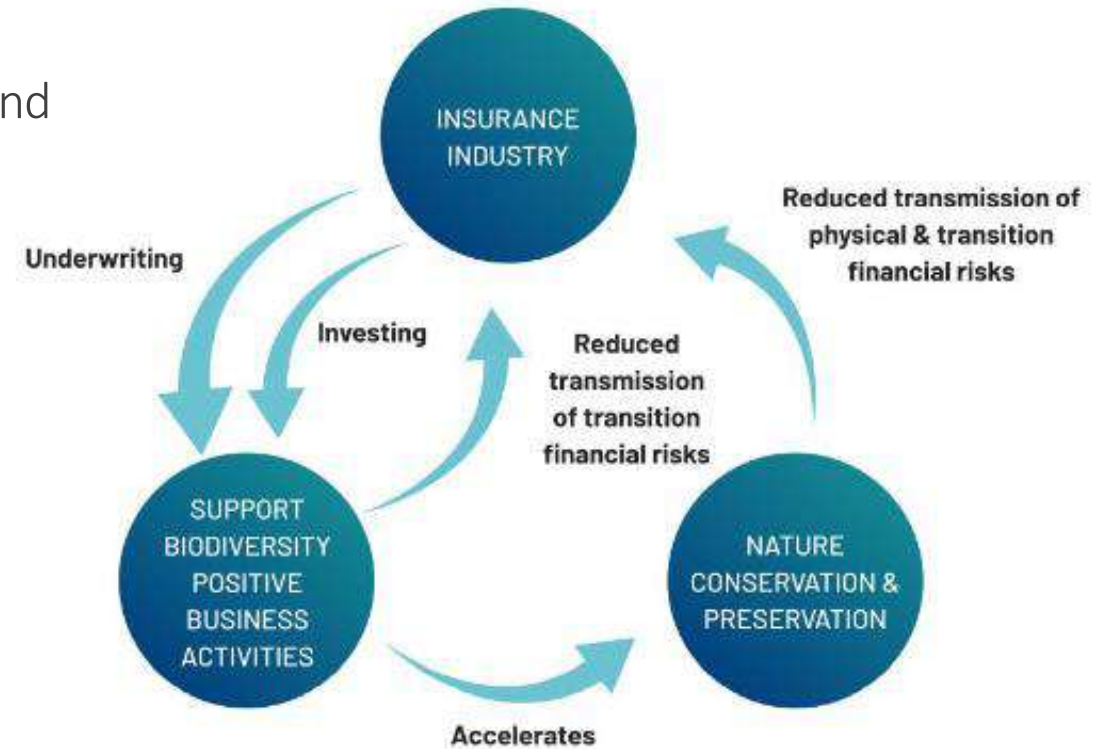
University of Cambridge Institute for Sustainability Leadership (CISL). (2022). Why nature matters: Nature-related risks and opportunities for insurance underwriting. Retrieved from: [https://www.cisl.cam.ac.uk/files/why\\_nature\\_matters.pdf](https://www.cisl.cam.ac.uk/files/why_nature_matters.pdf)



## Building a nature-positive insurance industry

There are at least four different approaches that insurers can adopt to reduce the impact on nature or contribute to its restoration:

1. Incentivizing nature-positive behaviours with clients and customers;
2. Innovating in asset protection;
3. Facilitating capital flows; and
4. Collaborating with governments



### References:

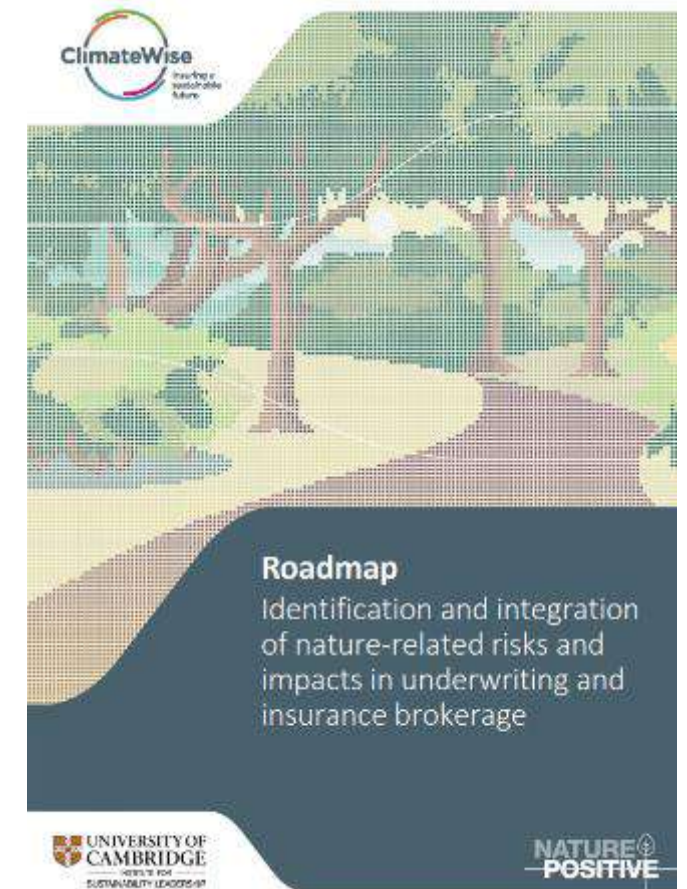
University of Cambridge Institute for Sustainability Leadership (CISL). (2022). Why nature matters: Nature-related risks and opportunities for insurance underwriting. Retrieved from: [https://www.cisl.cam.ac.uk/files/why\\_nature\\_matters.pdf](https://www.cisl.cam.ac.uk/files/why_nature_matters.pdf)

## Nature-related risks are material for the insurance industry underwriting business

The re/insurance industry has an opportunity to revisit and redefine its role in society to support risk management through proactive nature-positive measures and contribute to the protection and restoration of nature, and not simply by reactively responding to claims following a disaster or loss.



Roadmap: set out an actionable pathway to integrate nature-related risks and opportunities into underwriting, with the aim that this pathway will also complement net zero underwriting commitments.

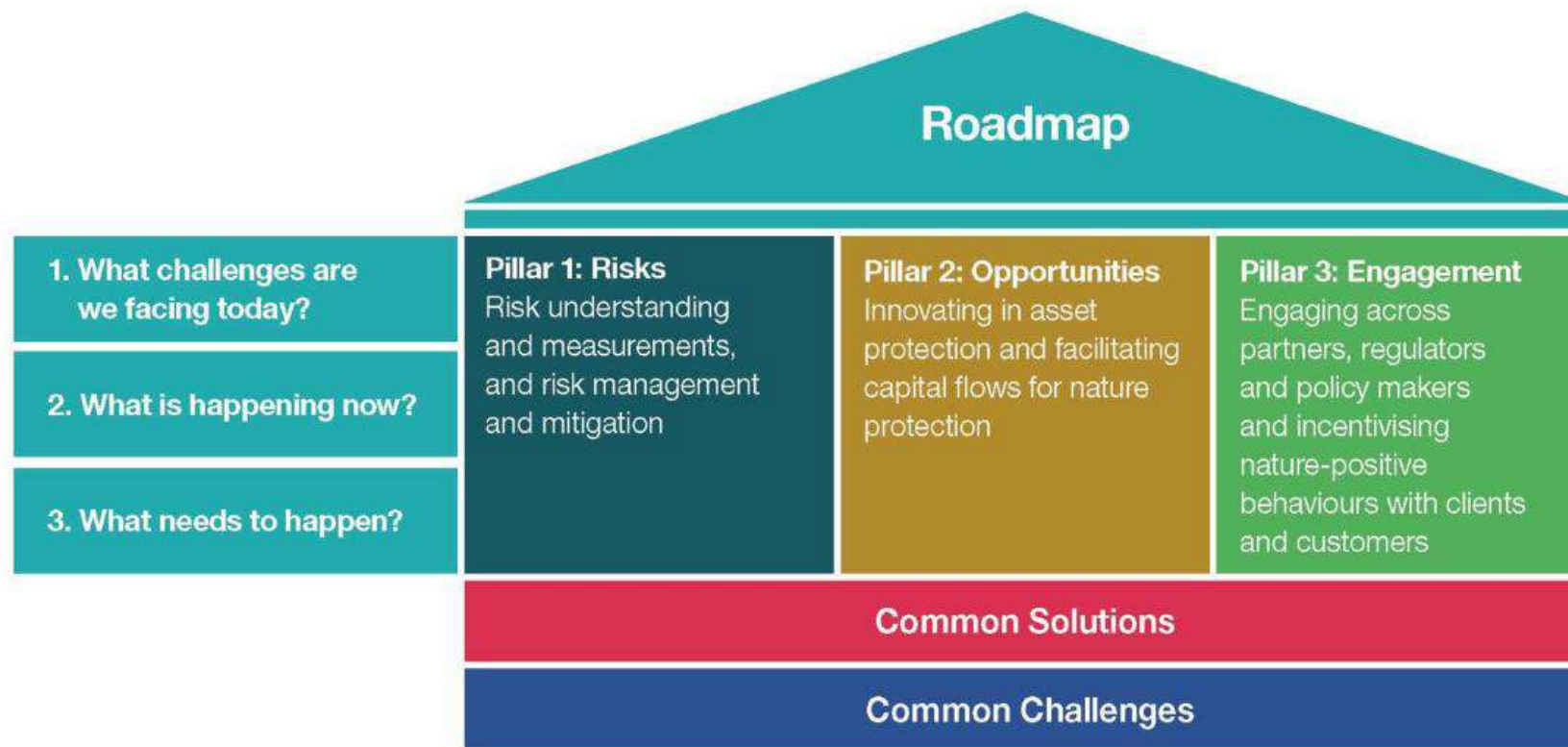


### References:

University of Cambridge Institute for Sustainability Leadership (CISL). (2022). Why nature matters: Nature-related risks and opportunities for insurance underwriting. Retrieved from: [https://www.cisl.cam.ac.uk/files/why\\_nature\\_matters.pdf](https://www.cisl.cam.ac.uk/files/why_nature_matters.pdf)

## Nature-related risks are material for the insurance industry underwriting business

This roadmap explores the previous four approaches in more detail by setting out three key pillars; Risks, Opportunities and Engagement. It charts a path for the insurance sector towards nature-positive underwriting and explores the insurance sector’s role in supporting the transition of its clients towards a sustainable economy.



### References:

University of Cambridge Institute for Sustainability Leadership (CISL). (2023). Roadmap: Identification and integration of nature-related risks and impacts in underwriting and insurance brokerage. Retrieved from: <https://www.cisl.cam.ac.uk/resources/publications/roadmap-integration-nature-related-risks-in-underwriting>



## What are the challenges?

Common challenges across all pillars				
• Knowledge and awareness		• Data	• Terminology and frameworks	
• Organisational capacity				
Pillar 1: Risks	Pillar 2: Opportunities		Pillar 3: Engagement	
<b>Risk understanding &amp; measurements and risk management &amp; mitigation</b> <ul style="list-style-type: none"> <li>• Value of nature</li> <li>• Dependencies on nature</li> </ul>	<b>Innovating in asset protection</b> <ul style="list-style-type: none"> <li>• Tools</li> <li>• Asset ownership</li> </ul>	<b>Facilitating capital flows</b> <ul style="list-style-type: none"> <li>• Scalable solution for every ecosystem</li> <li>• Verification</li> <li>• Political and territorial risks</li> </ul>	<b>Engaging with policy</b> <ul style="list-style-type: none"> <li>• Policy uncertainty</li> <li>• Inconsistent and insufficient disclosure requirements</li> <li>• Regulatory restrictions</li> </ul>	<b>Incentivising nature-positive behaviours with clients and customers</b> <ul style="list-style-type: none"> <li>• Customer and client perception</li> <li>• Insufficient discussions</li> </ul>

### Challenges

### Solutions

Pillar 1: Risks	Pillar 2: Opportunities		Pillar 3: Engagement	
<b>Risk understanding &amp; measurements and risk management &amp; mitigation</b> <ul style="list-style-type: none"> <li>• Develop more use cases</li> <li>• Adapting models</li> </ul>	<b>Innovating in asset protection</b> <ul style="list-style-type: none"> <li>• Create new approaches to modelling</li> <li>• Understand and determine asset ownership</li> </ul>	<b>Facilitating capital flows</b> <ul style="list-style-type: none"> <li>• Develop investment solutions</li> <li>• Develop insurance solutions</li> <li>• Prioritise significant dependencies on nature</li> </ul>	<b>Engaging with policy</b> <ul style="list-style-type: none"> <li>• Constructive engagement with policy makers to support effective and ambitious policies that can unlock further action</li> <li>• Monitor the use of captives</li> </ul>	<b>Incentivising nature-positive behaviours with clients and customers</b> <ul style="list-style-type: none"> <li>• Customer and client education and engagement</li> </ul>
Common solutions across all pillars				
• Build knowledge and improve awareness		<ul style="list-style-type: none"> <li>• Improve provision of consistent data</li> <li>• Mandate and align disclosure</li> </ul>	<ul style="list-style-type: none"> <li>• Improve consistency across terminology, definitions and frameworks</li> </ul>	
			<ul style="list-style-type: none"> <li>• Build organisation capacity</li> <li>• Address organisational buy-in</li> </ul>	

## What needs to happen?

### References:

University of Cambridge Institute for Sustainability Leadership (CISL). (2023). Roadmap: Identification and integration of nature-related risks and impacts in underwriting and insurance brokerage. Retrieved from: <https://www.cisl.cam.ac.uk/resources/publications/roadmap-integration-nature-related-risks-in-underwriting>

# Financial materiality of nature-positive and NbS the insurance industry underwriting business

There are numerous challenges relate to the integration of nature-related risks in insurance underwriting. While some actions are being taken within the industry, more is required to deliver nature-positive outcomes. Collaboratively taking these actions into consideration could help halt and reverse the loss of nature, enabling species and ecosystems to recover.

Actions	Actors			
	Insurance industry	Policy makers	Non-profits and academic institutions	Standard setting bodies
Improve data	X	X	X	X
Introduce consistent terminology and definitions	X	X	X	X
Develop more use cases	X		X	X
Understand and determine asset ownership	X	X		
Understand and quantify dependencies on nature			X	X
Adapt natural catastrophe models and create new approaches to modelling	X	X		
Build capacity across the insurance industry	X			
Introduce voluntary and then mandatory disclosures		X		
Develop investment and insurance solutions	X			
Increase appetite to invest in green projects	X			
Increase senior management buy-in	X			
Constructive engagement with policy makers to support effective and ambitious policies that can unlock further action	X	X		
Monitor the use of captives as vehicles for environmental risk finance	X	X		
Customer and client education and engagement	X		X	

## References:

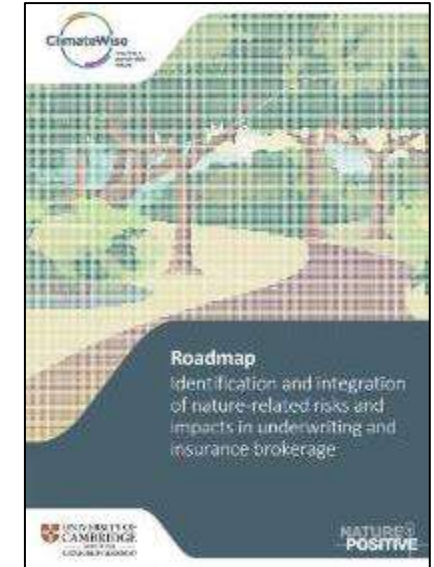
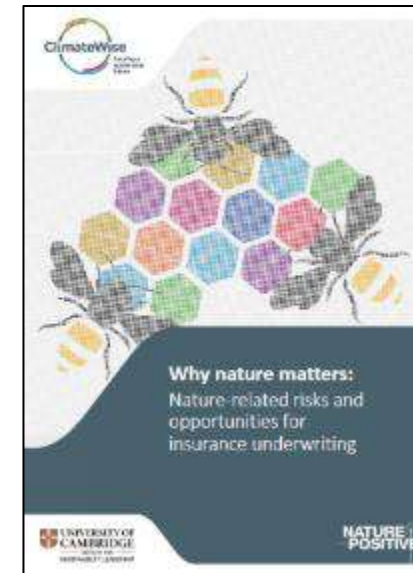
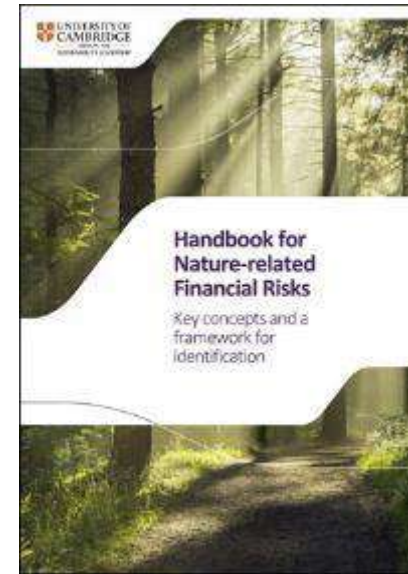
University of Cambridge Institute for Sustainability Leadership (CISL). (2023). Roadmap: Identification and integration of nature-related risks and impacts in underwriting and insurance brokerage. Retrieved from: <https://www.cisl.cam.ac.uk/resources/publications/roadmap-integration-nature-related-risks-in-underwriting>

# CALL TO ACTION

All financial firms are vulnerable to nature-related financial risks; and the financial materiality of nature loss evidenced constitutes an urgent call to action.

The re/insurance industry has a vital role to play in protecting our natural world. It is uniquely placed to improve our understanding of nature-related financial risks, invest in nature-based solutions and protect natural assets. Collaboration across various actors, including the insurance industry, policymakers, academic institutions and standard setting bodies, could help halt and reverse the loss of nature, enabling species and ecosystems to recover.

We call on the financial community to start identifying nature-related financial risks. The sooner we begin the journey to embedding nature into financial decision making, the sooner we rewire our economy to protect and restore our natural world.



## References:

University of Cambridge Institute for Sustainability Leadership (CISL). (2023). Nature-related financial risks. Retrieved from: <https://www.cisl.cam.ac.uk/centres/centre-for-sustainable-finance/nature-related-financial-risks>



**Thank you!**

**[climatewise@cisl.cam.ac.uk](mailto:climatewise@cisl.cam.ac.uk)**

Milestone Title	Primer on the financial materiality of Nature-based Solutions (NbS)
Brief Description	Report defining nature and financial materiality, and describing their importance.
WP number	3
Lead Beneficiary	CISL
Author(s)	Laura Deltenre and Nina Seega
Deliverable Due Date	30/06/2023
Actual Delivery Date	30/06/2023
Nature of the Deliverable	R – Report
Dissemination Level	PU - Public