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The nature imperative in the actuarial profession

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Agenda

- What is 'nature' and why should we be concerned about it now?
- How could nature loss manifest as a material financial risk for the insurance and pensions industry?
- Case studies exploring the tangible steps that firms are taking today:
 - Blue bonds and ESG debt swaps to support ocean financing
 - Carbon in-setting as a nature-based solution
 - Parametric insurance designed to protect natural assets and the ecosystem services they provide
- How can we leverage the latest thinking on climate change to tackle the nature crisis?

The ideas and content of this presentation represent the views of the presenters and not necessarily the views of their respective employers.



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What is 'nature'?

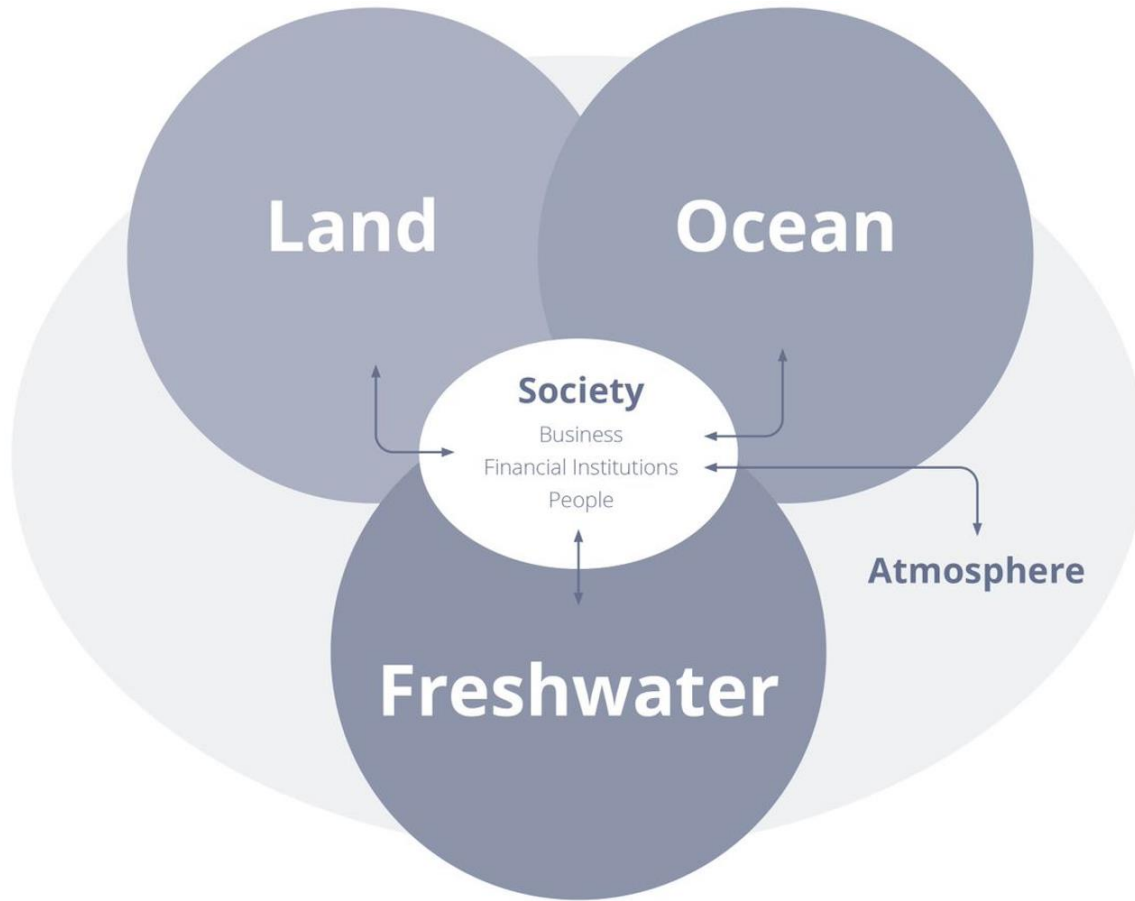
Nature	The natural world, with an emphasis on the diversity of living organisms (including people) and their interactions among themselves and with their environment.
Natural capital	The stock of renewable and non-renewable natural resources (e.g. plants, animals, air, water, soils, minerals) that combine to yield a flow of benefits to people.
Biodiversity	The variability among living organisms from all sources, including diversity within species, between species and of ecosystems.

Source: TNFD Beta Framework (v1.0 release)



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Introducing the four realms of nature



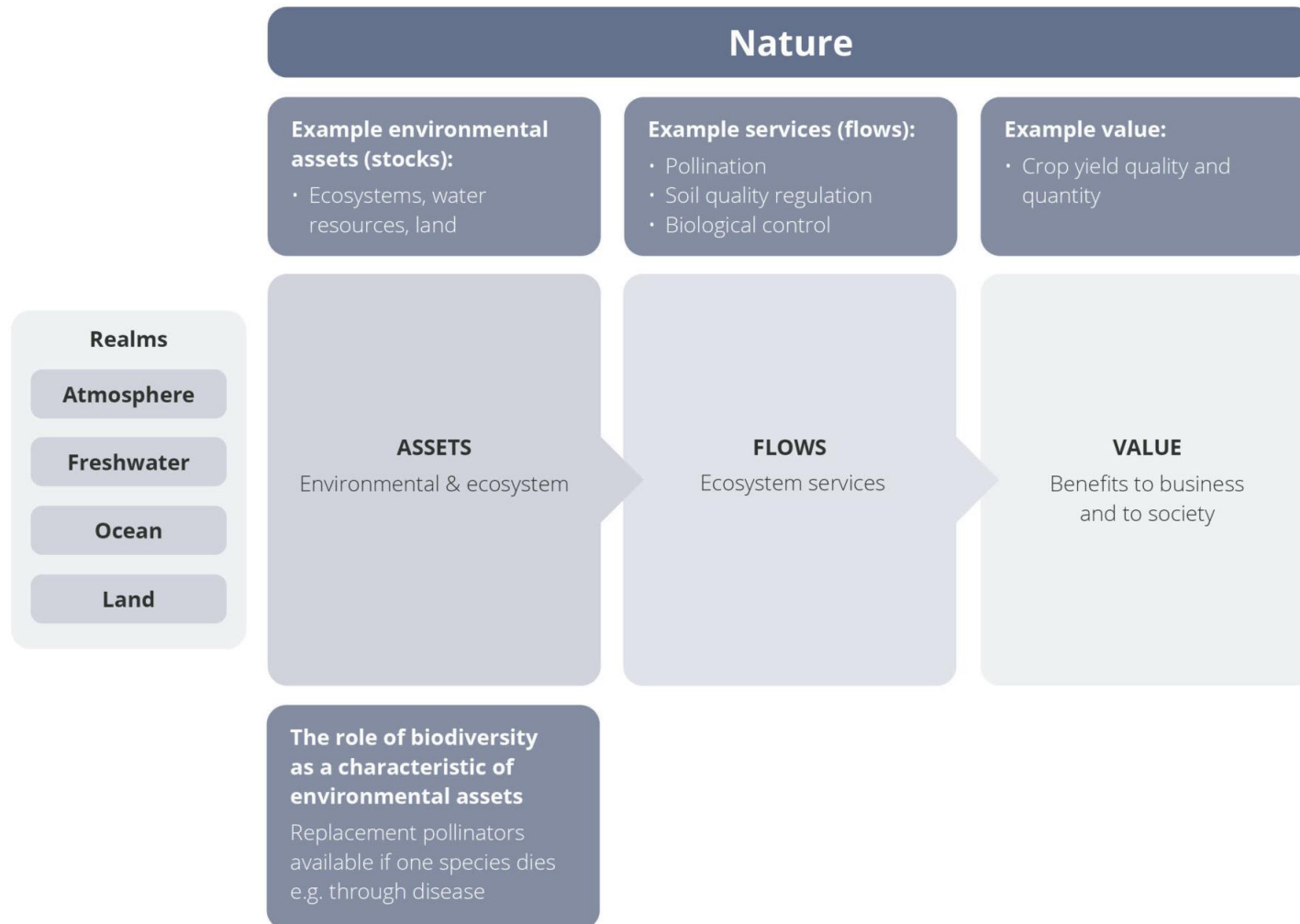
- Nature can be understood through a construct of four realms
- These are major components of the natural world that differ fundamentally in their organisation and function.
- Society interacts with and across all four realms and therefore sits at the centre.
- The four realms provide an entry point for understanding how organisations and people depend on, and have impacts on, natural capital.

Source: TNFD Beta Framework (v1.0 release)



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TNFD's building blocks for understanding nature



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Why does nature matter?

- The degradation of nature is happening at an unprecedented rate.
- The drivers of degradation are broader than just climate change.
- Investors are exposed to companies who both depend and impact nature.
- Risks can be large, material and unrecognised.
- Nature also presents a huge investment opportunity.



'We now have to shape [the finance sector's commitments to net zero] ...to include biodiversity and nature.'

Mark Carney, UN Special Envoy for Climate Action and Finance

'Biodiversity is now a financially material investment risk and is only set to grow further - making a compelling case for it to be on every investor's agenda.'

Faith Ward, Chief Responsible Investment Officer, Brunel Pension Partnership Limited

'Third-party impacts are a risk tomorrow but then the day after tomorrow is when they become a cost as they hit the bottom line.'

Pavan Sukhdev, WWF International

How could nature loss become a material financial risk?

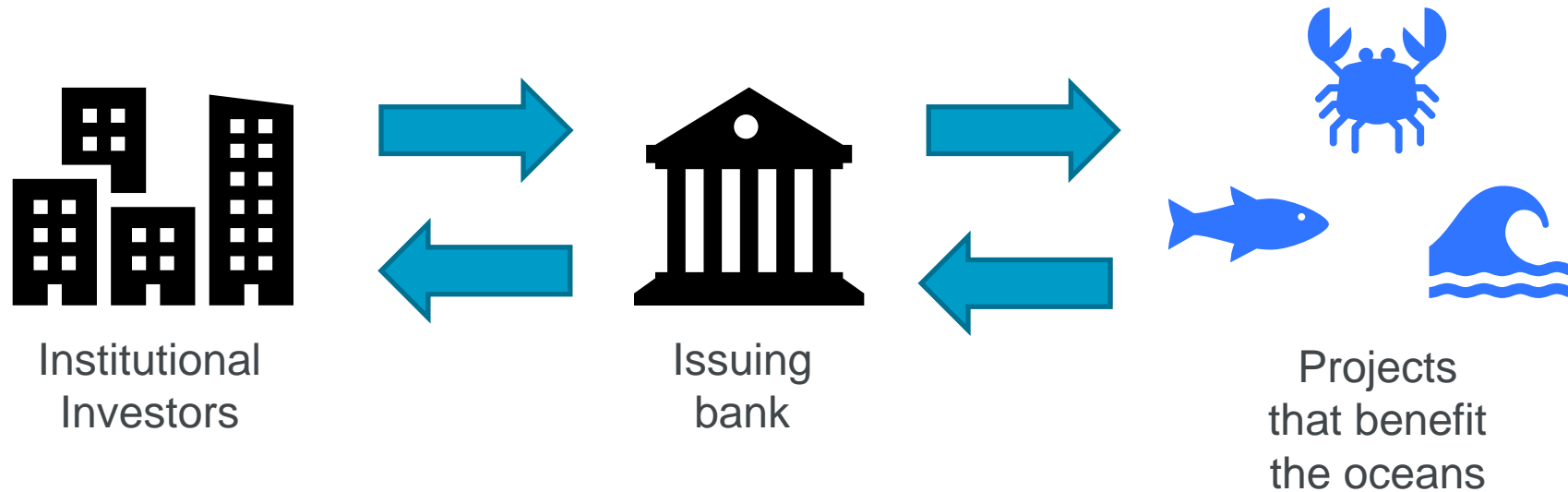
Nature-related dependency

- California grows around 80% of the world's almonds, contributing around US\$11 billion to the local economy each year. Almond production depends on bee pollination.
- Many of the bees required to pollinate California's annual almond harvest are trucked in from out-of-state to meet the increasing demand. Approximately 1.6 million colonies of commercial honeybees are placed in almond orchards in California each year.
- The areas of the United States most reliant on insect pollinators for high-value crops also tend to have poor habitats for pollinators, with regular use of pesticides and a lack of diverse flowering plants. An increasing number of bees are lost each winter in the US.
- Pollination expenses as a percentage of operating costs have increased from 6.7% in 1998 to 20% in 2016.

Nature-related risk

- An agrochemical company that develops herbicides to battle weeds produced a chemical to protect soybean from weeds.
- The chemical drifted from fields where it was sprayed, damaging millions of acres of unprotected soybeans and other crops.
- An estimated 3 million acres of soybeans in the country were damaged in a single year, and critical pollination sources were decimated. It led to a three-year decline in farming income for soy farmers.
- A number of policy, legal and reputational risks materialised for the company. This included over 10,000 lawsuits, a 3-notch downgrade in long-term credit rating, and US\$14bn in total settlement claims.

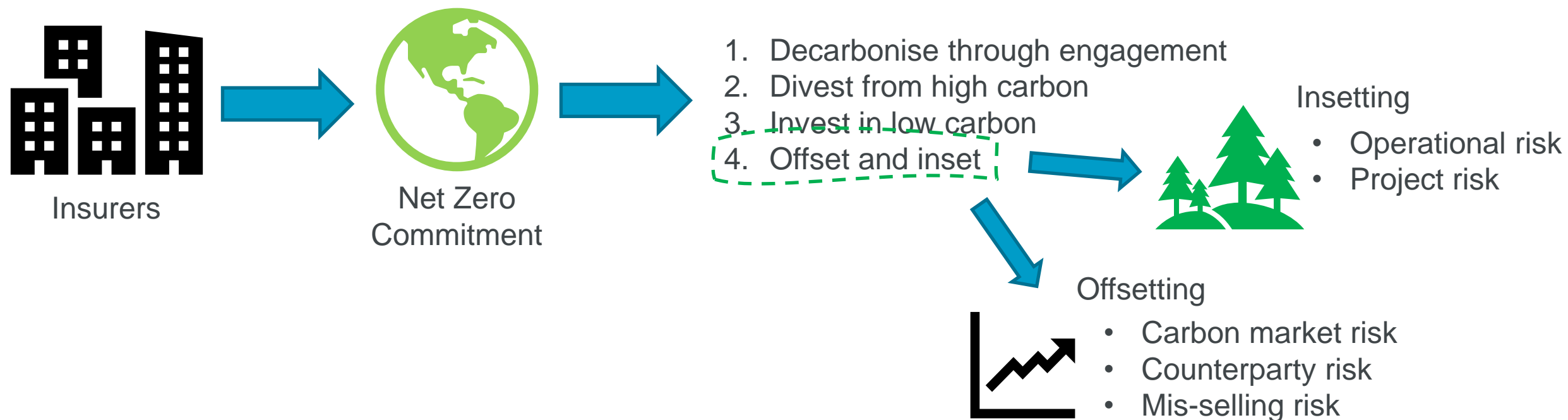
Case study 1: Blue bonds



How can actuaries help?

- Working with banks to ensure Matching Adjustment eligibility of nature-based assets unlocking billions of annuity fund investment.
- Working with regulators to offer a fairer fundamental spread treatment of sub-BBB assets.
- Assessing the new risks involved with ocean-supporting projects.

Case study 2: Carbon offsetting vs carbon insetting



How can actuaries help?

- Creating future risk projections over a range of risks to help support a choice between offsetting and insetting (or the optimal balance of the two).
- Supporting Matching Adjustment proposals for potential insetting projects.



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Case study 3: Parametric insurance to protect coral reefs

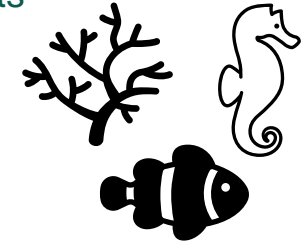
A parametric insurance policy is purchased by the Quintana Roo government



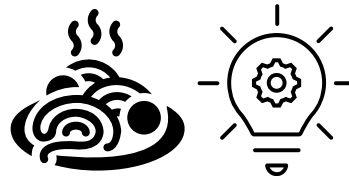
In the event of a qualifying hurricane (trigger based on windspeeds)



A payout is made to predefined organizations for early action response to remove debris, reattach coral fragments and perform other restoration efforts



FOOD FOR THOUGHT



Why is this product interesting?

How can actuaries get involved?

What could be next?



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How can we further use innovative product design to tackle nature loss?



Understanding that loss of nature has both economic and social impacts

Financial services products can be used to protect and restore nature, innovation outside of standard products

Willingness from people inside and outside the financial services industry to drive this forward



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Questions

Comments

Expressions of individual views by members of the Institute and Faculty of Actuaries and its staff are encouraged.

The views expressed in this presentation are those of the presenter.



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