



Society of Actuaries in Ireland

Biodiversity & Nature Related Risks for Actuaries
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9th April 2024



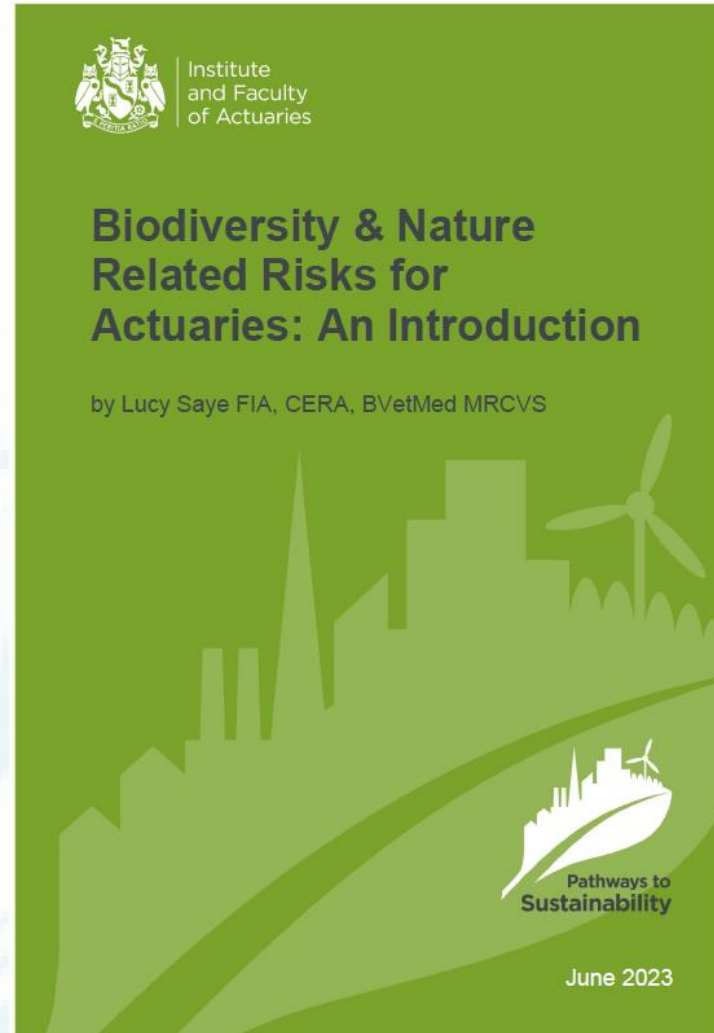
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Agenda

- Introduction
 - Key terms
 - Scientific consensus
 - International response
- Dependencies on Nature
- Impacts on Nature
- Implications for actuaries





Key terms

| | |
|--------------------|--|
| Nature | The natural world, with an emphasis on the diversity of living organisms (including people) and their interactions among themselves and with their environment |
| Biodiversity | The variability among living organisms from all sources, including diversity within species, between species and of ecosystems |
| Ecosystem services | The benefits people obtain from nature |
| Physical risks | Result from a dependence on nature and materialise when nature is compromised |
| Transition risks | Result from misalignment between an organisations management and the changing regulatory, policy or societal landscape |



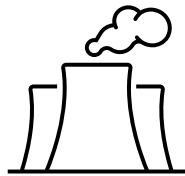
Scientific Consensus



Average 68% decline in species populations since 1970 – WWF Living planet index²
1 in 4 Species are at risk of extinction¹³



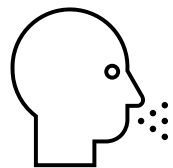
Significant impacts are found across 75% of the global land surface and 66% of global ocean area as well as the loss of over 85% of wetlands¹.



Climate change, pollution, land & sea use change, resource use and invasive species are key drivers of biodiversity loss¹



We have experienced 1.3°C increase in global average temperature, current policies put us on course for 2.7°C of warming by 2100¹²

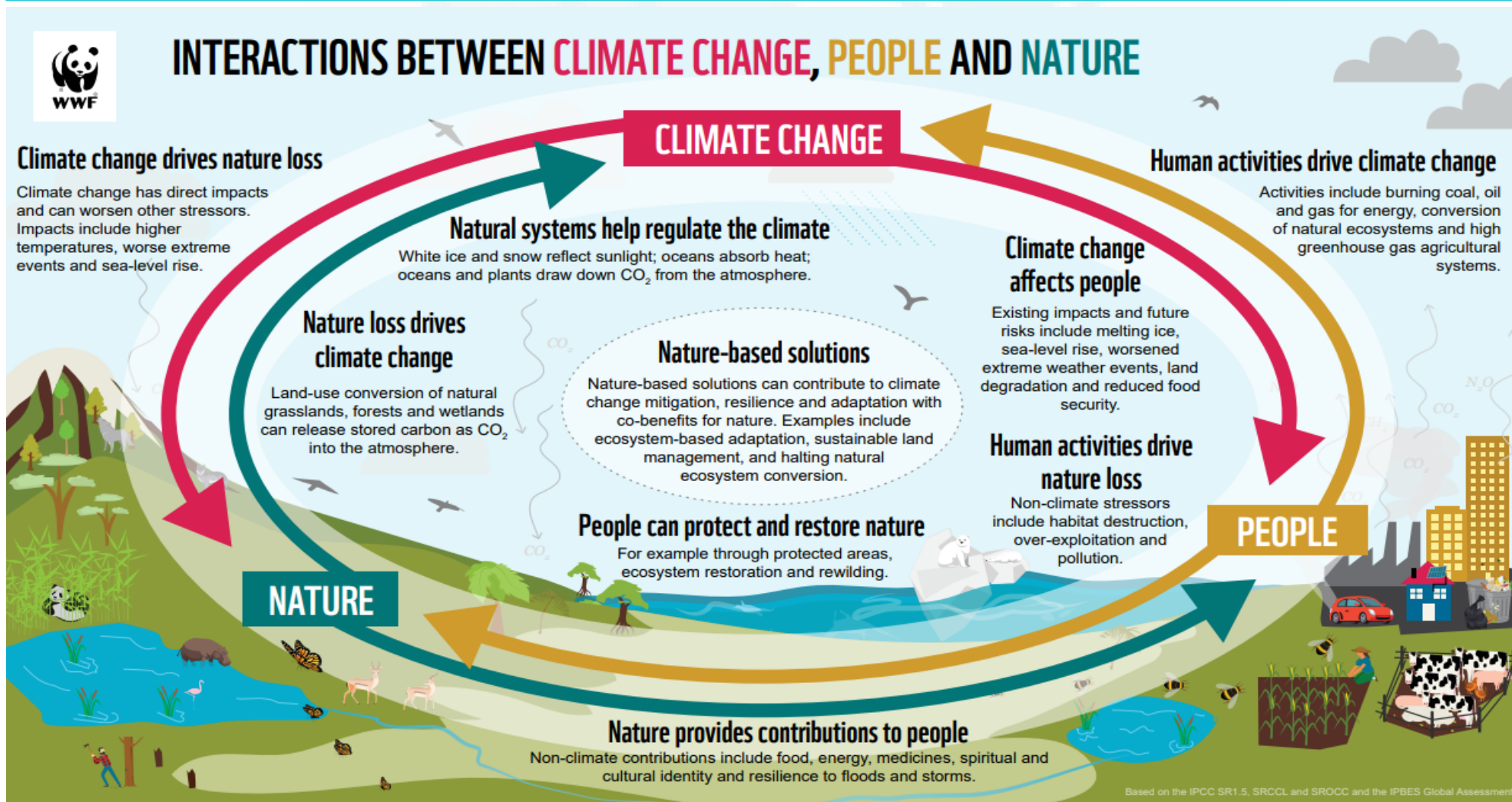


Human induced environmental changes that drive biodiversity loss and climate change also drive infectious disease emergence¹¹



Climate change and nature

The mutual reinforcing of climate change and biodiversity loss means that satisfactorily resolving either issue requires consideration of the other.⁸





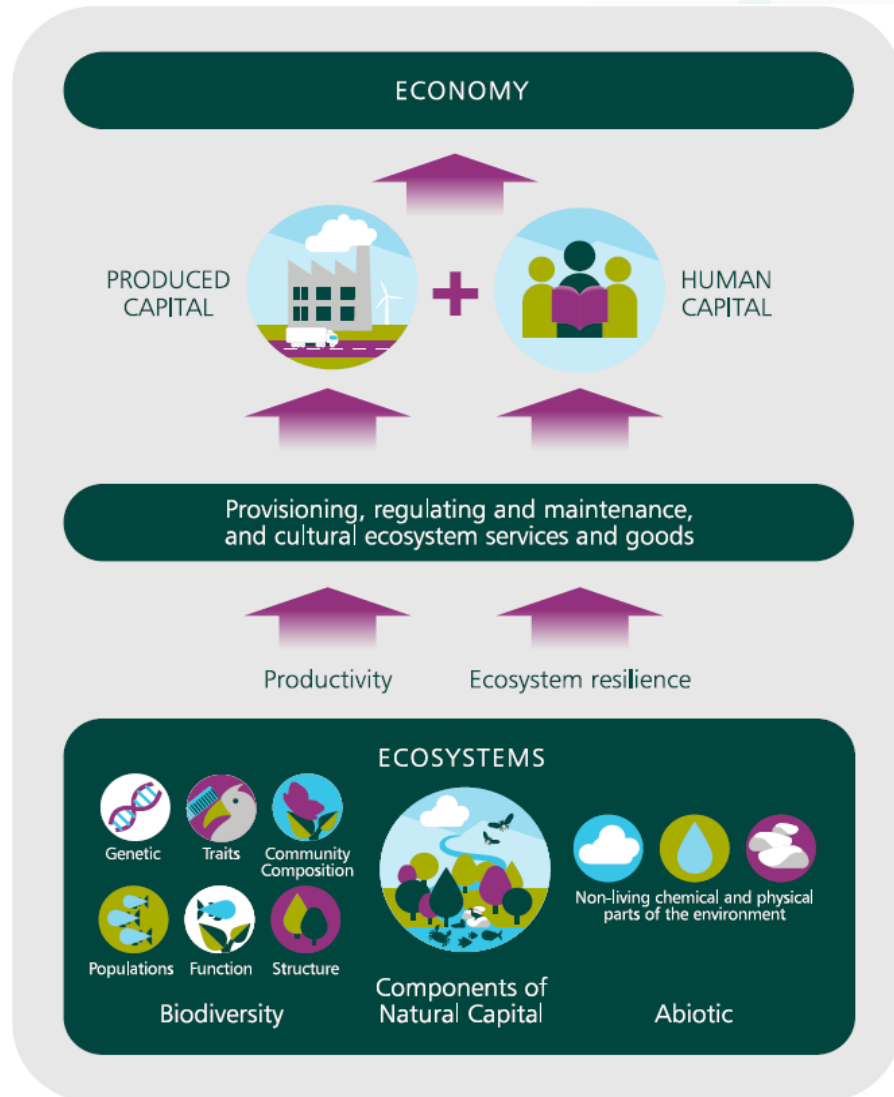
International Response: Halt and reverse biodiversity loss by 2030

| Goal A <ul style="list-style-type: none"> Maintaining/enhancing/restoring ecosystems Halting human induced extinction Maintaining genetic diversity | Goal B <ul style="list-style-type: none"> Sustainable use of biodiversity Ecosystem services are valued, maintained and restored | Goal C <ul style="list-style-type: none"> Equitable sharing of the benefits from the use of genetic resources including IPLC's Traditional knowledge protected | Goal D Adequate Implementation: Financial resources, capacity building, technical and scientific cooperation. |
|---|---|---|---|
| 1 Effective management of land- and sea-use change, loss of highly important biodiverse areas close to zero by 2030 | | 13 Fair and equitable sharing of the benefits arising from the use of genetic resources | |
| 2 Effective restoration of 30% of degraded ecosystems by 2030 | | 14 Integration of biodiversity into policies and development across all sectors | |
| 3 Effective conservation and management of 30% of land and 30% of oceans by 2030 | | 15 Enable businesses to monitor, assess and disclose their impacts on biodiversity | |
| 4 Halt human-induced extinctions and maintain and restore genetic diversity | | 16 Encourage sustainable consumption, including by reducing food waste by half by 2030 | |
| 5 Sustainable use, harvesting and trade of wild species | | 17 Strengthen capacity for biosafety measures and ensure benefits-sharing from biotechnology | |
| 6 Mitigate or eliminate the impacts of invasive alien species, reduce the rates of establishment of invasive species by 50% by 2030 | | 18 Phase out or reform harmful subsidies in a just way, reducing them by \$500bn by 2030 | |
| 7 Reduce pollution risks and impacts from all sources by 2030, reduce the overall risk from pesticides by half | | 19 Substantially increase financial resources, mobilise \$200bn per year by 2030 from all sources, including \$30bn from developed to developing countries | |
| 8 Minimise the impacts of climate change and ocean acidification on biodiversity | | 20 Strengthen capacity-building and technology transfer | |
| 9 Ensure sustainable use and management of wild species, while protecting customary use by Indigenous peoples | | 21 Integrated and participatory management, including the use of traditional knowledge | |
| 10 Sustainable management of areas under agriculture, aquaculture, fisheries and forestry | | 22 Equitable representation and participation of Indigenous peoples and local communities | |
| 11 Restore and enhance ecosystem function through nature-based solutions and ecosystem-based approaches | | 23 Ensure gender equality in the implementation of the framework | |
| 12 Increase the area and quality of urban green and blue spaces | | | |



Dependencies on nature

More than half the world's GDP is moderately or highly dependent upon nature⁴



Natural Resources

- Food, timber, animal & plant fibres, freshwater, energy

Healthcare

- Over 75% of antibacterial agents and 70% of cancer drugs are derived from nature^{1,11}
- Land-use change, climate change and biodiversity loss create synergies that drive emerging infectious diseases.
- Recreation, mental & physical health

Food systems

- 75% of global food crops rely on animal pollination¹
- Erosion prevention and maintenance of soil fertility through nitrogen fixation and nutrient cycling

Regulation of natural processes

- Local climate and air quality
- Protection from natural hazards
- Biological control & predator prey cycles



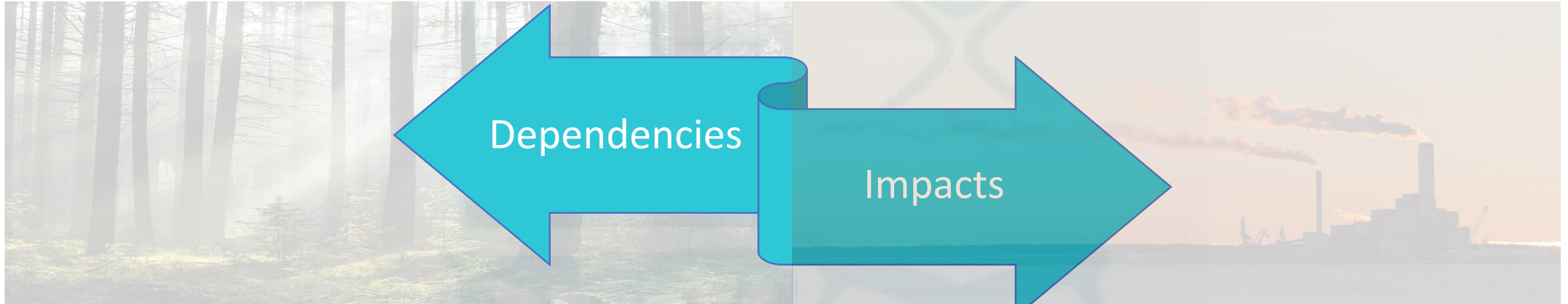
Impacts on nature





Dependencies and Impacts

Economic sectors that have dependencies and impacts on nature create risks for business and government



Paper & forest products

Fishing & aquaculture

Agriculture

Hospitality

Food & beverage production

Agriculture

Metals & Mining

Oil, Gas & consumable fuels

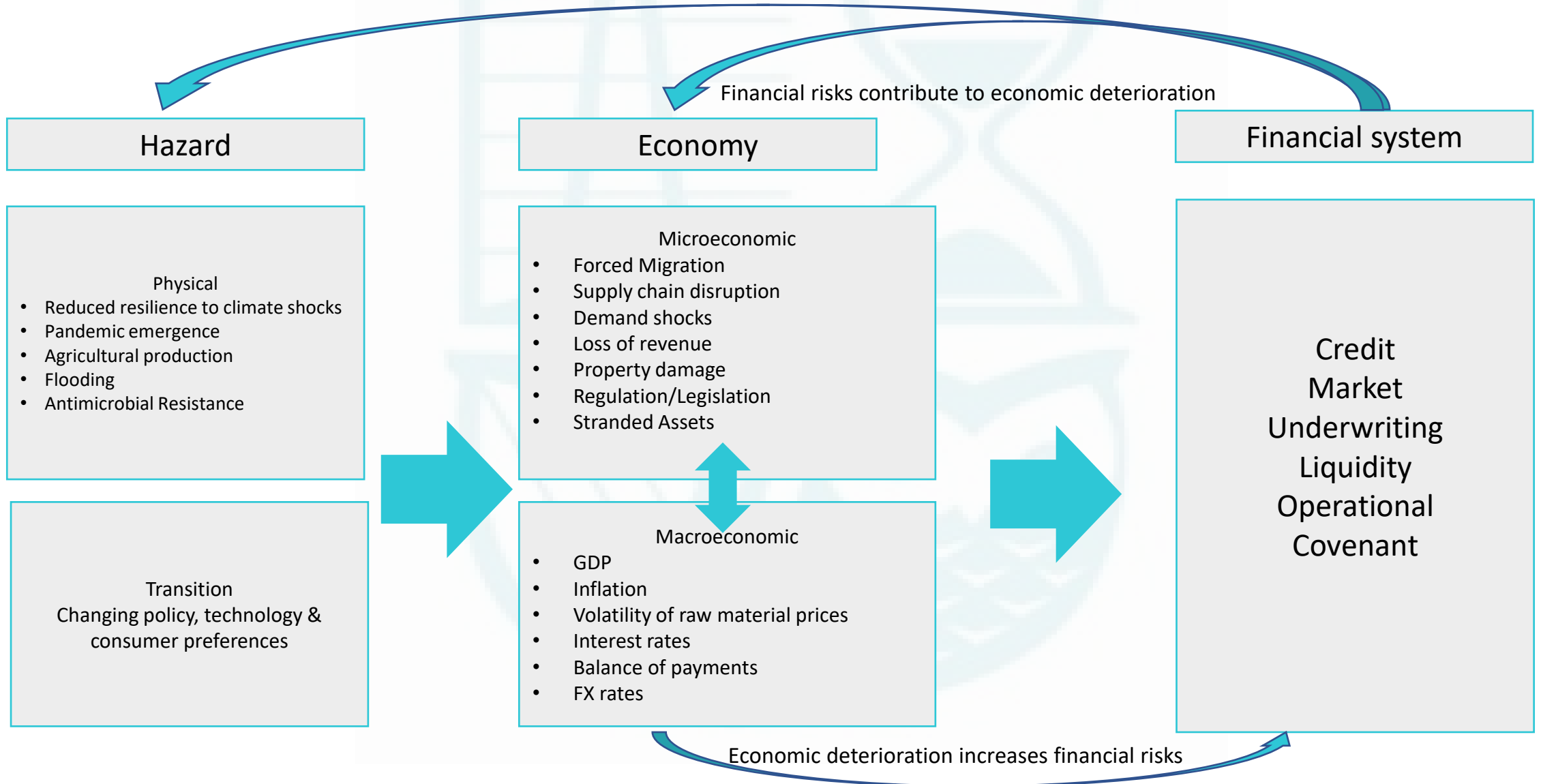
Land development & construction

Paper & forest products



Implications for actuaries

Double Materiality: Financial institutions contribute to the risks to which they are exposed





Role of Insurance

The most powerful action insurance companies can take to mitigate the risks they face is to become catalysts, in their twin roles as institutional investors and risk underwriters, for reaching the global climate and biodiversity goals

Strategy

- Commit to net zero by 2050
- Publish & implement transition plans
- Transparency
- Collaborate through industry initiatives
- Advocate for the transition

Increase positive impacts

- Promote green choices by customers & businesses
- Underwrite the transition
- Foster resilience
- Protect natural assets

Reduce negative impacts

- Product terms & conditions
- Engagement with commercial clients & brokers
- Exclusion & phase out policies





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Q&A

Please click on the **'Raise Hand'** icon
to ask a question aloud
and
wait to be unmuted

or

Use the **Q&A function** to ask a question



TNFD

Figure 1: TNFD's recommended disclosures

| Governance | Strategy | Risk & impact management | Metrics & targets |
|--|--|--|--|
| <p>Disclose the organisation's governance of nature-related dependencies, impacts, risks and opportunities.</p> | <p>Disclose the effects of nature-related dependencies, impacts, risks and opportunities on the organisation's business model, strategy and financial planning where such information is material.</p> | <p>Describe the processes used by the organisation to identify, assess, prioritise and monitor nature-related dependencies, impacts, risks and opportunities.</p> | <p>Disclose the metrics and targets used to assess and manage material nature-related dependencies, impacts, risks and opportunities.</p> |
| <p>Recommended disclosures</p> <p>A. Describe the board's oversight of nature-related dependencies, impacts, risks and opportunities.</p> <p>B. Describe management's role in assessing and managing nature-related dependencies, impacts, risks and opportunities.</p> <p>C. Describe the organisation's human rights policies and engagement activities, and oversight by the board and management, with respect to Indigenous Peoples, Local Communities, affected and other stakeholders, in the organisation's assessment of, and response to, nature-related dependencies, impacts, risks and opportunities.</p> | <p>Recommended disclosures</p> <p>A. Describe the nature-related dependencies, impacts, risks and opportunities the organisation has identified over the short, medium and long term.</p> <p>B. Describe the effect nature-related dependencies, impacts, risks and opportunities have had on the organisation's business model, value chain, strategy and financial planning, as well as any transition plans or analysis in place.</p> <p>C. Describe the resilience of the organisation's strategy to nature-related risks and opportunities, taking into consideration different scenarios.</p> <p>D. Disclose the locations of assets and/or activities in the organisation's direct operations and, where possible, upstream and downstream value chain(s) that meet the criteria for priority locations.</p> | <p>Recommended disclosures</p> <p>A(i) Describe the organisation's processes for identifying, assessing and prioritising nature-related dependencies, impacts, risks and opportunities in its direct operations.</p> <p>A(ii) Describe the organisation's processes for identifying, assessing and prioritising nature-related dependencies, impacts, risks and opportunities in its upstream and downstream value chain(s).</p> <p>B. Describe the organisation's processes for managing nature-related dependencies, impacts, risks and opportunities.</p> <p>C. Describe how processes for identifying, assessing, prioritising and monitoring nature-related risks are integrated into and inform the organisation's overall risk management processes.</p> | <p>Recommended disclosures</p> <p>A. Disclose the metrics used by the organisation to assess and manage material nature-related risks and opportunities in line with its strategy and risk management process.</p> <p>B. Disclose the metrics used by the organisation to assess and manage dependencies and impacts on nature.</p> <p>C. Describe the targets and goals used by the organisation to manage nature-related dependencies, impacts, risks and opportunities and its performance against these.</p> |

LEAP – Integrated Assessment Approach

Locate your interface with nature;

Evaluate your dependencies and impacts on nature;

Assess your nature-related risks and opportunities; and

Prepare to respond to, and report on, material nature-related issues, aligned with the TNFD's recommended disclosures.



Nature at risk

FIGURE C

Global risks ranked by severity over the short and long term

"Please estimate the likely impact (severity) of the following risks over a 2-year and 10-year period."

Risk categories

- Economic
- Environmental
- Geopolitical
- Societal
- Technological

2 years

| | |
|------------------|-----------------------------------|
| 1 st | Misinformation and disinformation |
| 2 nd | Extreme weather events |
| 3 rd | Societal polarization |
| 4 th | Cyber insecurity |
| 5 th | Interstate armed conflict |
| 6 th | Lack of economic opportunity |
| 7 th | Inflation |
| 8 th | Involuntary migration |
| 9 th | Economic downturn |
| 10 th | Pollution |

10 years

| | |
|------------------|--|
| 1 st | Extreme weather events |
| 2 nd | Critical change to Earth systems |
| 3 rd | Biodiversity loss and ecosystem collapse |
| 4 th | Natural resource shortages |
| 5 th | Misinformation and disinformation |
| 6 th | Adverse outcomes of AI technologies |
| 7 th | Involuntary migration |
| 8 th | Cyber insecurity |
| 9 th | Societal polarization |
| 10 th | Pollution |

Source

World Economic Forum Global Risks
Perception Survey 2023-2024.