ISCA-LawSoc's Sustainability Apex Programme (SAP)

Masterclass 8: Natural Capital and Biodiversity

January 2025

Agenda for today's masterclass…

Introduction to Natural Capital and Biodiversity

Explore the growing importance of natural capital and biodiversity, understanding how biodiversity loss poses material risks to organisations

1.1 Biodiversity Loss as an Emerging Risk

Biodiversity Loss

Examine how climate change accelerates biodiversity degradation and how biodiversity loss, in turn, undermines climate resilience.

2.1 Climate Change and Biodiversity Loss

Nature and Biodiversity Risks

Explore the current landscape of biodiversity risk analysis in corporate sustainability, with a focus on frameworks, data gaps, and evolving standards.

3.1 The State of Current Analysis into Biodiversity Risks

Regulatory Landscape for Nature and Biodiversity

Examine how organizations are responding to the evolving biodiversity regulatory landscape, to align with global standards.

4.1 Biodiversity Frameworks and Market Expectations

Introducing nature and biodiversity

Biodiversity

Within nature, biodiversity is the diversity of life on Earth, including the diversity of ecosystems, species and genes. Biodiversity is a **key indicator** to understand the status and intactness of nature.

Ecosystems **Species** **Genes**

Nature

Nature considers both the **living (biodiversity) and non-living components** (water, soil, air) of a well-functioning ecosystem. Nature can be understood through a construct of four realms:

Land **Ocean** **Water** **Atmosphere**

Ecosystem services

Nature and biodiversity create ecosystems which provide services that are fundamental to human well-being. These services can be grouped into different categories:

Provision of services
Material benefits, such as food, energy and raw materials.

Regulating services
Benefits obtained from the regulation of ecosystem processes, such as carbon sequestration, moderation of extreme weather events.

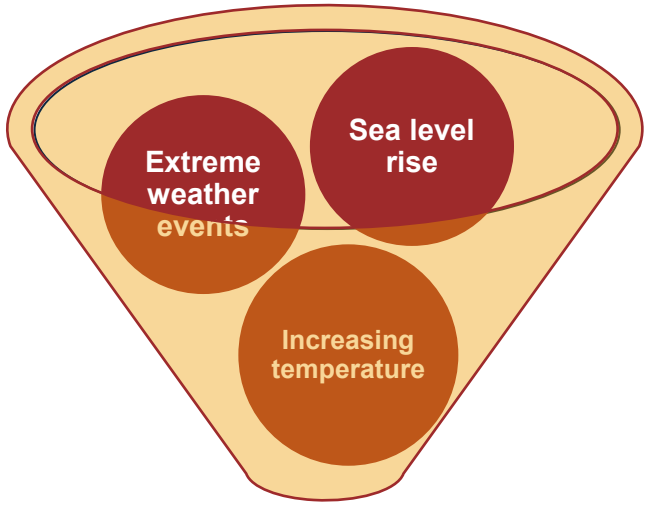
Cultural services
Non-material benefits people gain from ecosystems that enhance mental and physical health, such as spiritual and cultural benefits, a sense of place and belonging.

Supporting service
Necessary for the production of all other ecosystem services, such as nutrient cycling, soil formation and pollination.

Source: IPBES Global Assessment, 2019

Biodiversity loss alone is much harder to calculate and prevent

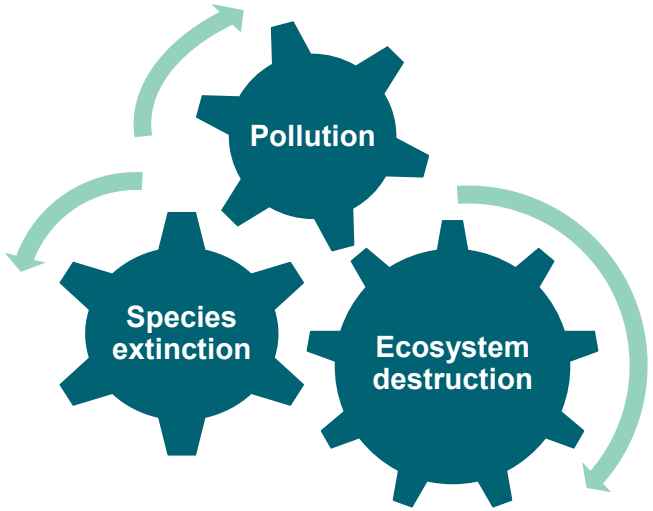
Climate action



Mitigation measures

Reduction of CO^2 emissions

Biodiversity loss



Mitigation measures

Biodiversity loss cannot be reduced to a single metric

Policy makers still have very little awareness of biodiversity loss compared to climate change, especially in terms of mitigation measures, monitoring, data, methods and tools to address biodiversity loss.

Climate Change and Biodiversity loss are strongly linked

Climate action

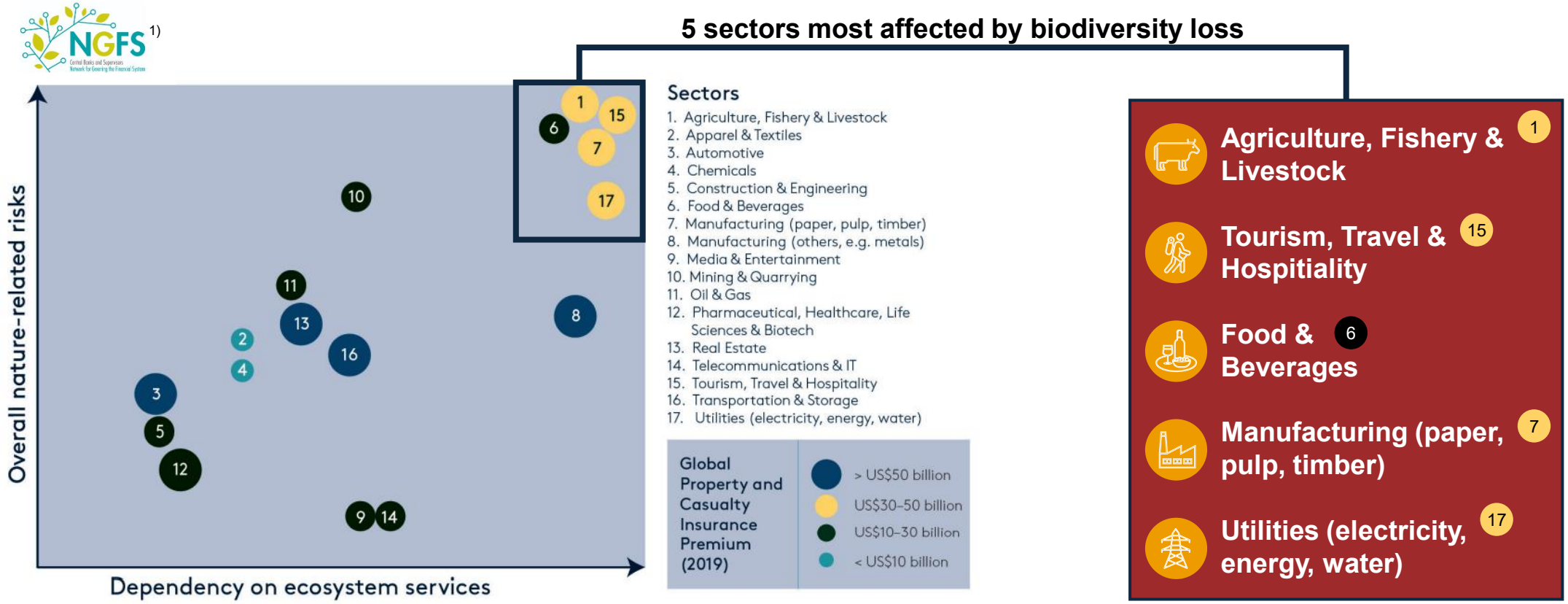
- **GHG emissions** cause ocean and land acidification
- Increase of temperature leads to vegetation shifts and **endangers ecosystems:**
  - Savannas
  - Tropical forests
  - High latitude and altitude ecosystems
  - Mediterranean climate ecosystems
  - Coastal ecosystems
- Other upcoming physical risks, e.g. extreme weather events, additionally **destroy ecosystems**
- Climate change mitigation technologies can have a **negative impact on biodiversity** (dams, sea walls)
- Climate change can cause **biophysical limits of corals** to be exceeded or sea-ice ecosystems to disappear, leading to **regime changes toward algal-dominated communities**
- Climate change is one of the **main drivers impacting biodiversity** by altering species ranges, species abundances and ecological communities, restructuring trophic food webs and altering ecosystem functions

Biodiversity loss

- Photosynthesis and consequent **carbon storage** in biomass and organic material, as well as CO_2 dissolution in ocean water absorbs 50% of anthropogenic CO_2-emissions (mangroves may sequester even four times as much carbon as rainforest per area)
- A functioning ecosystem is **essential for renewable energy production**, however, renewable energy infrastructures (e.g. wind farms, dams, solar plants, bioenergy plantations) can directly destroy natural habitats and lead to carbon emissions
- Ecosystems can **counteract physical impacts** of climate change as e.g. coastal wetlands and coral reefs provide coastal protection from storm surges and rising sea level, while wetlands help reduce flooding
- Improved management of cropland and grazing systems such as soil conservation and reduction of fertilizer input is estimated to provide **climate change mitigation** potential of >3 to >6 $GtCO_2$ e a year
- Decreasing consumption of ruminant meat, fish and dairy products could not only protect **carbon-rich vegetated habitats** but also counteract species' extinction through habitat loss

- **Ecosystem restoration is one of the cheapest and most rapidly implementable nature-based climate mitigation measures as it enhances the resilience of biodiversity in the face of climate change. Restoration should occur in priority areas for both mitigation of climate change and biodiversity loss.**
- **Sustainable agricultural intensification will play an enormous role in the implementation of environmental targets of the Paris Agreement.**
- **New technologies or technical measures concerning climate change should also take into account the accompanying violation of ecosystems**

Overall nature-related risks for economic sectors



Agriculture, Fishery and Livestock affect ecosystem services, including water quality, pollination, nutrient cycling, soil sequestration and carbon sequestration. Changes in the availability of ecosystem services such as pollination, soil quality and water regulation in turn have massive impacts on those sectors.

1) 20210609_workshop_report_embargo_3pm_CEST_10_june_0.pdf (ipbes.net)

How are policy, frameworks, standards and regulations connected?