Biodiversity and the Re/Insurance Industry: from Uncertainty to Risk

SCOR SE CSR Committee - Presentation

Jules Chandellier – November 4th, 2020

Executive Summary

- This study will be leveraging on the Museum's scientific expertise and on SCOR's experience of the re/insurance industry to create space for discussion on addressing biodiversity erosion topics in the re/insurance industry.
- The scope of the study includes the indirect interactions between biodiversity and the re/insurance industry, that is to say through re/insurer's underwriting and investing activities.
- The study aims at understanding the impacts of re/insured activities on biodiversity, as well as the risks and opportunities linked to biodiversity loss for the re/insurance industry.
- The study will be divided into two main parts :
  - Understanding **biodiversity concepts** and scientific knowledge on **biodiversity erosion causes** and the implication of humans
  - Understanding the **interactions** between biodiversity loss and the insurance industry:
    - Understanding the **re/insurers' activities impacts** on biodiversity loss
    - Understanding **biodiversity loss related risks and opportunities**
- The study will be published in March 2021 during a symposium co-organised by the SCOR Foundation and the Museum.

Agenda

1. **Museum & team presentation**
2. **Context:** Does biodiversity matter to business ?
    1. *Biodiversity & ecosystem services underpin human existence*
    2. *Biodiversity is severely declining, and with it, all vital contributions to people*
    3. *Our values and behaviours are at the root of direct and indirect drivers of change on nature*
    4. *Our societal and economic model, as we know it today, is at risk*
    5. *Companies are facing hidden risks*
    6. *What about the re/insurance industry ?*
3. **The Study:** A public-private partnership to explore the interactions between re/insurance and biodiversity
    1. A partnership between a research centre and a reinsurer
    2. A global approach
        1. Raising awareness
        2. Building bridges
    3. Project Charter
4. **Next Steps**

1 Museum & team

The Muséum National d'Histoire Naturelle

The Muséum is a **research centre** with a clear objective: to **make knowledge about the natural world accessible to everyone** and to make as many people as possible aware of **the importance of protecting our planet.**

13 **sites in France**

Jardins des Plantes

Parc Zoologique de Paris

Musée de l'Homme

& others in all corners of France.

5 **missions** to learn more about nature and protect it :

- basic and applied **research**
- conservation and the expansion of its **collections**
- **education**
- **dissemination** of knowledge
- **expertise**

MNHN – Team presentation

Project Team

Nirmala Seon-Massin – Director of the Expertise Department
Nirmala.seon-massin@mnhn.fr
After a PhD in Evolutionary ecology obtained in 2006, Nirmala has dedicated her career to the scientific support of environmental public policies. She has worked at several French public agencies, building up expertise on several environmental issues and the relevant policies (pesticides, climate change, water management, hunting, One Health, and foremost biodiversity and nature). Her experience covers both national and EU levels.

Magali Gorce – Deputy Director of the Expertise Department
magali.gorce@mnhn.fr | +33140793677
With an academic background in geography, Magali has now 20 years of experience in the definition and implementation of environmental public policies, with an expertise in the knowledge and management of natural habitats.

Jules Chandellier – Project leader
jules.chandellier@mnhn.fr | +3362912352
Recently graduated from a MSc in Management at ESSEC Business School and Bocconi University, Jules has had professional experiences in project finance, strategy consulting and sustainability consulting. Passionate about biodiversity, Jules joined the MNHN to study interactions between biodiversity issues and the corporate world.

Marine Malacain – Project Teammate
marine.malacain@mnhn.fr
Holding a MSc in Economics from Paris-Dauphine University – PSL, Marine has held Analyst positions within public institutions for the past 5 years, specializing in climate, environment and energy policies. Prior to joining the MNHN, she was Sustainable Development Attachée within the Economic Section of the Embassy of France in Japan, where biodiversity was part of her portfolio.

Scientific Council

	**Sara Aguiton**	**Sciences and environmental sociology**
	**Catherine Aubertin**	**Environmental Economics**
	**Denis Couvet**	**Socio-ecosystems dynamics**
	**Claire Gachon**	**Molecular plant pathologist**
	**Philippe Grandcolas**	**Phylogenetic**
	**Maud Mouchet**	**Functional Ecology**

2 Context:

Does biodiversity matter to business ?

Biodiversity & Nature's contribution to people underpin human existence

Nature supports quality of life by providing basic life support for humanity, as well as material goods and spiritual inspiration

Definitions

Nature = the natural world, with here, an emphasis on biodiversity.

Biodiversity = the diversity within species, between species and of ecosystems

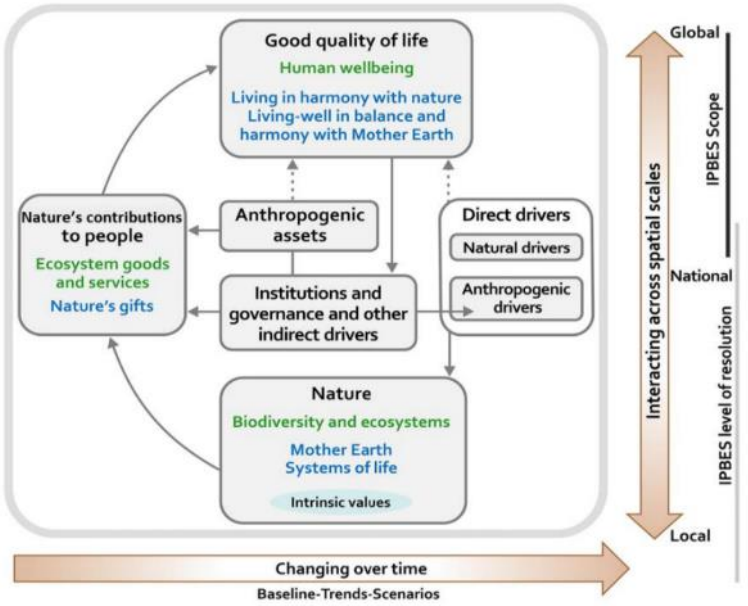
Ecosystem Services or **Nature's contribution to people and good quality of life*** = all the positive contributions, losses or detriments, that people obtain from nature' to capture both *beneficial* and *harmful* effects of nature on people's quality of life (Pascual et al. 2017)

*See the scientific differences: Disentangling 'ecosystem services' and 'nature's contributions to people'

Source: Living Planet Report 2020, WWF

Anthropogenic assets = knowledge and institutions, technology infrastructure and financial capital, enhancing good life through a co-production of benefits between nature and societies

Simplified model of interactions between nature & humans



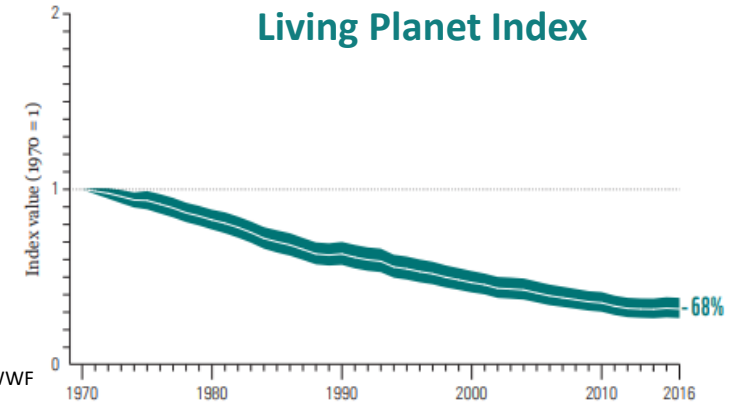
Source: IPBES 7 report, 2019

However, the biosphere, upon which humanity as a whole depends, is being altered to an unparalleled degree across all spatial scales. Biodiversity is declining faster than at any time in human history.

Biodiversity is severely declining, and with it, all vital contributions to people

The global rate of species extinction is already at least tens to hundreds of times higher than the average rate over the past 10 million years and is accelerating

All biodiversity indicators are red …



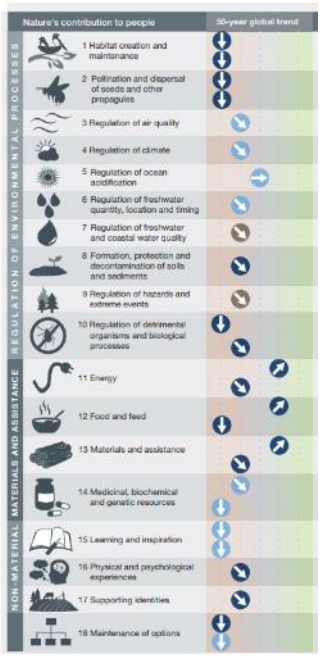
Source: Living Planet Report 2020, WWF

-68% on average in monitored populations (mammals, birds, fish, reptiles and amphibians worldwide) **between 1970 and 2016.**

Same ongoing trend for the

Red List Index
Biodiversity Intactness Index
Species Habitat Index

… causing an inevitable decline of nature's contribution



Source: IPBES 7 report, 2019

Since 1970**, 4 categories have increased** - agricultural production, fish harvest, bioenergy production and harvest of materials …

…but **14 of the 18 categories have declined**…

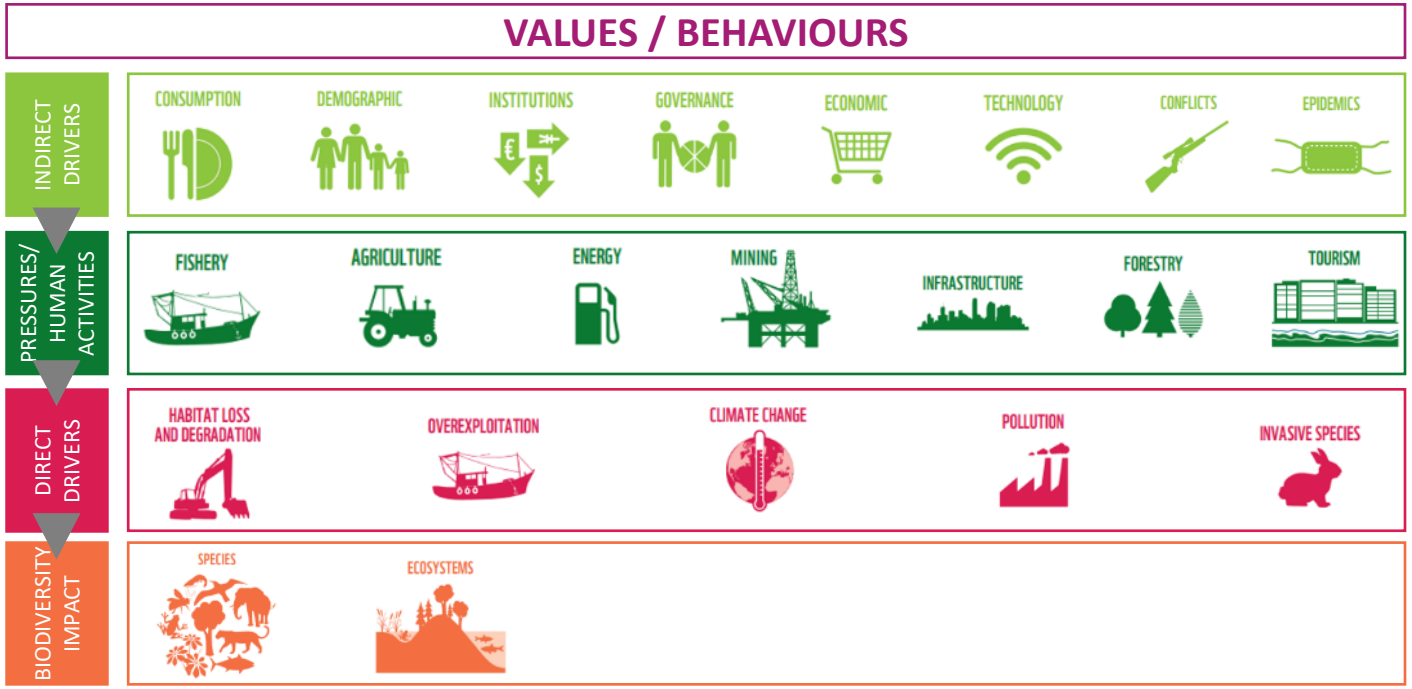
…indicating that **gains in material contributions are often not sustainable**.

Most of nature's contributions are not fully replaceable, yet **some contributions of nature are irreplaceable**

What are the causes of this unprecedented decline ?

Our values and behaviours are at the root of direct and indirect drivers of change on nature

Values and behaviors underpin changes in societies, which lead to the way human activities are undertaken defining the drivers of change on nature



Source: Living Planet Report 2020, WWF

Comments

- **Economic incentives** have generally favored expanding economic activity, and often environmental harm, over conservation or restoration.
- **Land- and sea-use change** and **overexploitation** are responsible for more than 50 % of the global impact on land, fresh water and sea
- **Climate change** is already having an impact on nature: accelerating the pace of change and interactions with other direct drivers

Therefore, our societies and economies are not only directly responsible for the declining state of biodiversity, but also at risk from future consequences of this dynamic

Our social and economic model, as we know it today, is at risk

Recently, a series of catastrophic events have shown that biodiversity conservation is a non-negotiable and strategic investment to preserve our health, wealth and security

Our economies are embedded within nature…

Examples of ecosystem services economic valuation

Scale	Good or service	Estimated annual value
Global	Seagrass nutrient cycling	USD 1.9 trillion
Global	Annual market value of animal pollinated crops	USD 235-577 billion
Global	First sale value of fisheries and aquaculture	USD 362 billion
Global	Coral reef tourism	USD 36 billion
Europe	Ecosystem services from Natura 2000 protected area network	EUR 223-314 billion

Source: Biodiversity: Finance and the Economic and Business Case for Action, OECD, 2019

US$44 trillion – more than half the world's GDP – is highly or moderately **dependent on nature and its services**

US$ 2.5 trillion - the annual value of **goods and services provided by the ocean**

US$50 billion The shortfall each year due to the global overexploitation of fishing resources

Source: New Nature Economy, WEF, 2020

… and, the erosion threatens our social and health security

Food Security

- 75% of cultivated plants are pollinised by animals
- Degradation of lands: reduced agricultural productivity on 23% of terrestrial surfaces
- Risks of pollinisation: between $235 and $577 billion estimated losses in terms of agricultural production

Health

- 70% of drugs used for cancer are natural or are synthetic products inspired by nature
- Increasing rate of infectious disease in the last 80 years, with zoonosis disease causing 2.5 billion cases of illness, and nearly 3 million deaths /year

Natural Catastrophes

Increasing life and property risks from floods and hurricanes for 100 million to 300 million people living in coastal areas, due to loss of coastal habitats and coral reefs

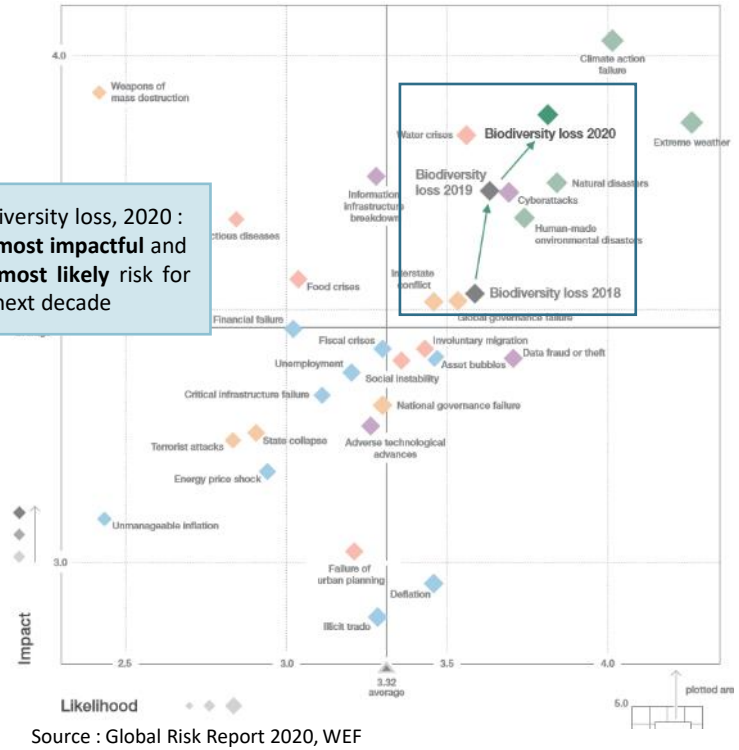
What are the implications for businesses ?

Companies are facing hidden risks

Companies from all sectors will increasingly be facing different types of nature-related risks

Global Risks Landscape 2020

Biodiversity loss, 2020 : **3rd most impactful** and **4th most likely** risk for the next decade



Source : Global Risk Report 2020, WEF

5 out of 5 of the global risks in terms of likelihood are **environmental risks**

3 manners how biodiversity loss creates risks for businesses

1. Dependency of business on biodiversity

When businesses depend directly on nature for operations, supply chain performance, real estate asset values, physical security and business continuity

Example: *the 3 largest sectors highly dependent on nature – construction, agriculture, food & beverages – generate c. $8 trillion of gross value added, twice the German economy*

2. Fallout of business impacts on biodiversity

When the direct and indirect impacts of business activities on nature loss trigger negative consequences, such as losing customers or entire markets, costly legal action and adverse regulatory changes

Example: *intensifying environmental regulations could lead to increasing stranded assets*

3. Impacts of nature loss on society

When nature loss aggravates the disruption of the society in which businesses operate, which in turn can create physical and market risks

Example: *biodiversity loss can be a risk to global health, impacting the global economy and thus businesses, e.g. Covid-19*

Source: New Nature Economy, WEF, 2020

What about the re/insurance industry ?

As biodiversity is a global trend with global consequences, the financial sector and the insurance industry could be impacted, thus the growing concern of these actors.

From the specificities of the re/insurance industry…

Re/Insurance's **primary role in the society** as a risk manager, providing financial support in economic and social life, enabling economic and social development in our societies.

Protecting companies and people from hazards is the essence of insurance

Working with companies from **all industries** and with individuals

Knowledge industry, with an expertise in risk modelling

… to the problematics on biodiversity erosion.

Biodiversity & Re/insurance : Does the biodiversity crisis matter to the re/insurance business ?

1. **What does the scientific community know about biodiversity erosion and its potential consequences ?**

2. **Does biodiversity loss matter to the re/insurance industry ?**

3 The Study:

A public-private partnership to explore biodiversity and re/insurance interactions

A partnership between a research centre and a reinsurer

Creating a dialogue between the scientific community and the re/insurance industry to build a crucial expertise on an emerging risk

Three actors

Global reinsurance company, with LIFE and P&C **underwriting**, and **investing** activities

Corporate Foundation supporting scientific research and the dissemination of risk-related knowledge.

Museum and research center with a clear objective: to make knowledge about the natural world accessible to everyone

One study

Joint study between SCOR and the MNHN on re/insurance activities and biodiversity.

Leveraging on **SCOR's experience** of the re/insurance industry and on the **Museum's scientific community** to answer the growing concern and interest of the re/insurance industry on biodiversity erosion and its consequences on society and businesses.

A global approach to frame and structure the topic for companies

2 key questions leading to a 2-step approach to support re/insurance players to understand and address biodiversity

Biodiversity and the Re/Insurance Industry: from uncertainty to risk

1. **What does the scientific community know about biodiversity erosion and its potential consequences ?**

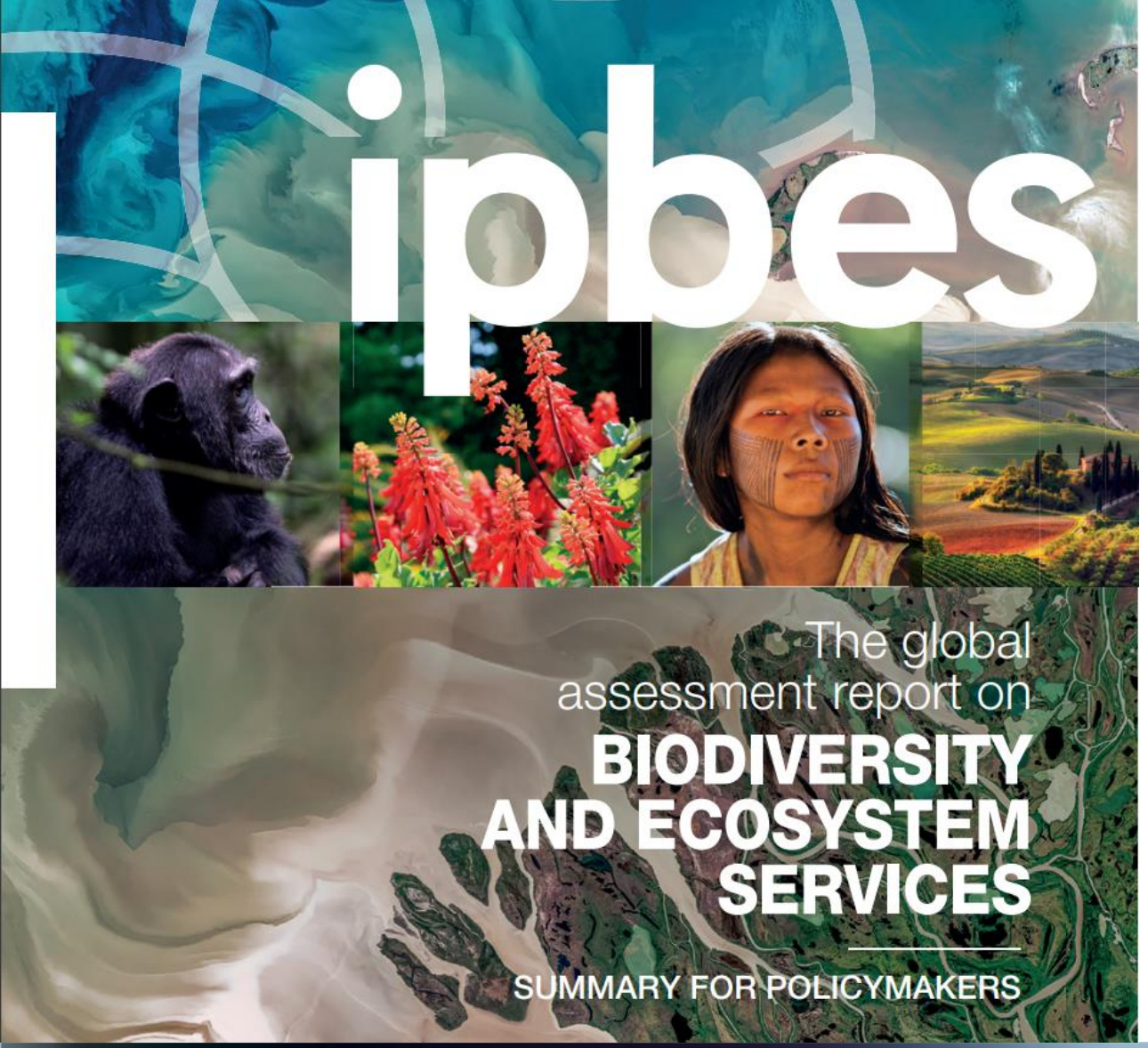
RAISING AWARENESS

Biodiversity knowledge

2. **Does biodiversity loss matter to the re/insurance industry ?**

BUILDING BRIDGES

Biodiversity & Re/insurance interactions
Risk and impact analysis



Part 1. Raising Awareness

A scientific review of biodiversity knowledge and human activities interdependencies

1. **Introduction to biodiversity & nature's contribution to people concepts and dynamics**
    a. Definitions of biodiversity & ecosystem services
    b. State of biodiversity loss
    c. Indirect and direct drivers of change on biodiversity

2. **Biodiversity & human activities: a changing risk environment** c.f. slide 18
    a. What will a world with decreasing biodiversity look like ?
    b. Consequences on humans & society
    c. Consequences on the economy
    d. Consequences on businesses

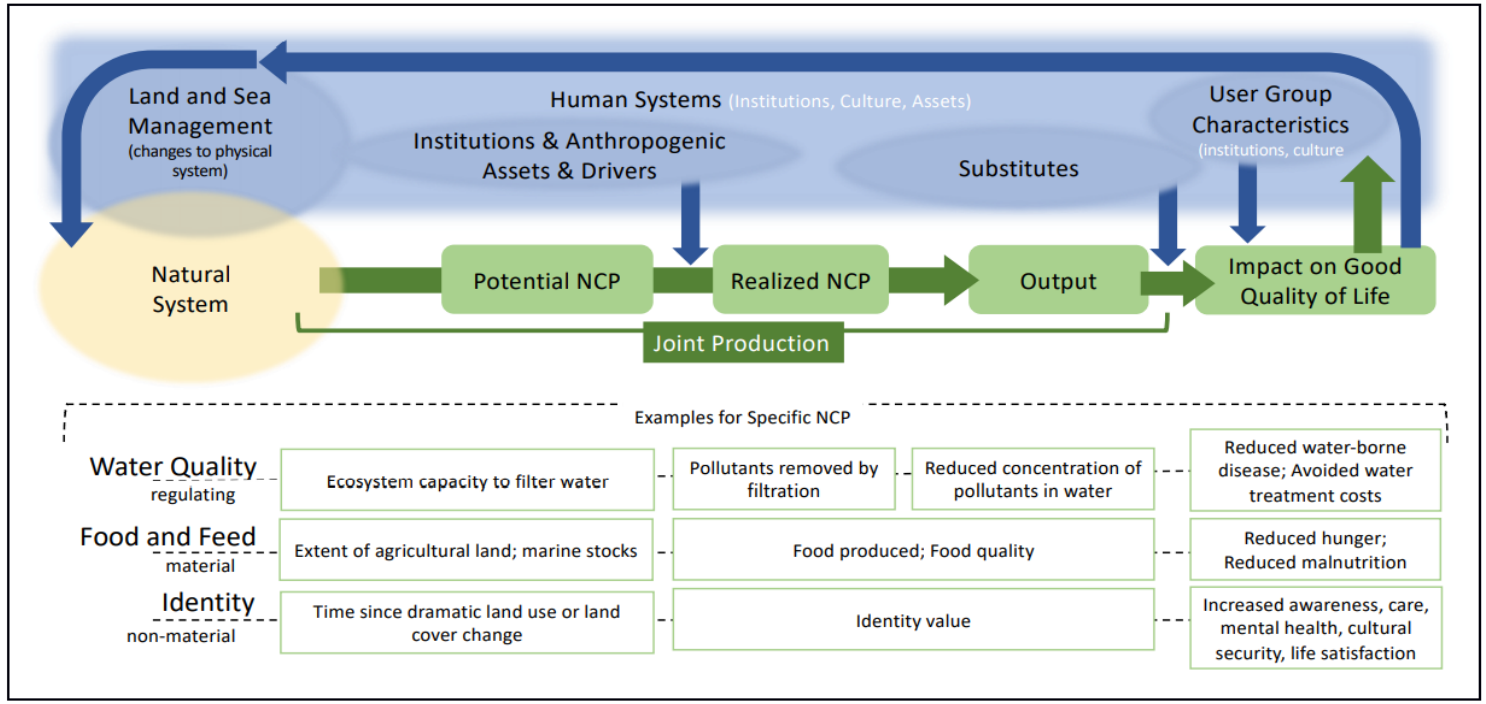
3. **Research perspectives on biodiversity and human activities** c.f. slide 20

4. **Rising initiatives in the corporate world** c.f. slide 21

Status and Trends - Nature's Contributions to People (NCP)

Illustration

Differentiation of Potential NCP, Realized NCP, Output, and Impact on Good Quality of Life



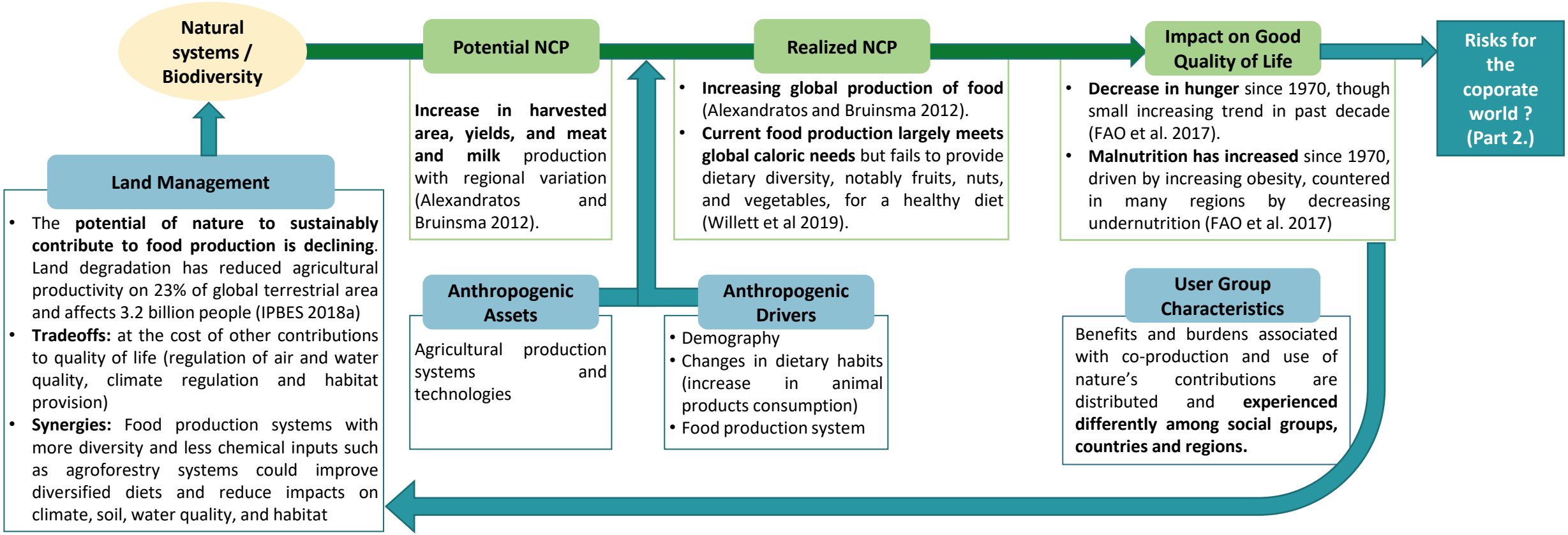
Source: Figure 2.3.1, Chapter 2.3., IPBES Global Assessment on Biodiversity and Ecosystem Services, 2019

The figure illustrates the relationship between **potential NCP, realized NCP, output, and impact on good quality of life**. Ecosystems, as altered by human management, lead to co-production of potential NCP. The combination of potential NCP along with human inputs leads to realized NCP. For some NCP, there is a difference between realized NCP and output, either because of differences between what the NCP measures and what people care about, or because of substitutes. Outputs as modulated by substitutes, institutions, and culture, impact good quality life. Information about how NCP impact on good quality of life can be used to modify human management and inputs, shown by the arrow from impact on good quality of life to the blue region that represents human systems and on the yellow region representing natural systems.

Status and Trends - Nature's Contributions to People (NCP)

Illustration

Illustration: Food production



Source: Figure 2.3.1, Chapter 2.3., IPBES Global Assessment on Biodiversity and Ecosystem Services, 2019

Further scientific research are required to continue filling the knowledge gap

Illustration

From genes to policy making, research perspectives are emerging to always better understand our link to biodiversity and how to live in harmony

Biodiversity

Data, inventories and monitoring on nature and the drivers of change
E.g., data on extinction risks and population trends

Gaps on biomes and units of analysis
E.g., inventories on under-studied ecosystems

Taxonomic gaps
E.g., basic data on many taxa

Human activities – biodiversity interactions

NCP-related gaps:
e.g., data on the status of species and nature's contributions to people linked to specific ecosystem functions

Links between nature, nature's contributions to people and drivers with respect to targets and goals
E.g., need for indicators and better quantitative data

Indigenous peoples and local communities
E.g., syntheses of indigenous and local knowledge

Modelling and actions

Integrated scenarios and modelling studies
E.g., assessment of nature's contributions to people across scenario archetypes

Potential policy approaches

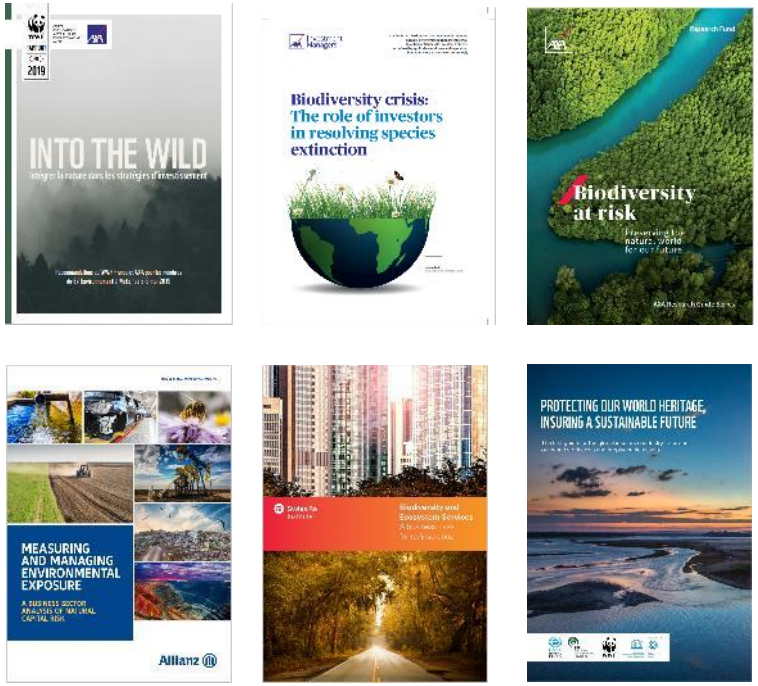
- Data to analyze the effectiveness of many policy options and interventions
- Indicators on the impacts of environmentally harmful subsidies and trends and effectiveness of their removal at the global level
- Data on the impacts of mainstreaming biodiversity across sectors
- Better data to develop biodiversity and environmental quality standards

Source: IPBES 7 report, 2019

A growing interest and concern of the insurance industry

Illustration

Reports on biodiversity from the insurance industry



Other examples of rising initiatives

Call for action

- Insuring a sustainable future : **protecting UNESCO World Heritage Sites** proactively through insurance

Task force on biodiversity

- FFA (French Federation of Insurers) **Biodiversity task force**

Funding initiatives

- Ten-year **'Climate & Biodiversity' Fund**: AXA €200 million to invest in projects that protect natural habitats and deliver economic and social benefits to local communities
- **AXA Research fund** : supports over 60 Projects related to biodiversity for a total of €10million.

Tool development:

- Allianz: **Natural capital exposure tool** for economic sectors
- Swiss Re Institute **Biodiversity & Ecosystem Index**

Part 2. Building bridges

Understanding if re/insured activities impact biodiversity and if they face biodiversity loss related risks and/or opportunities

1. Mapping biodiversity & re/insurance interactions

a. P&C c.f. slide 23
b. LIFE
c. Investment

2. Impacts of re/insured activities on biodiversity c.f. slide 24

a. Priority industries in terms of negative or positive impacts
b. Priority re/insurance activities in terms of negative or positive impacts

3. Understanding biodiversity loss impacts for re/insurers c.f. slide 25

a. Direct risks analysis: operational risks related to the changing risk environment
   - Companies: P&C and Investments
   - Individuals: LIFE
b. Indirect risks analysis
   - Transition risks
   - Reputation risks

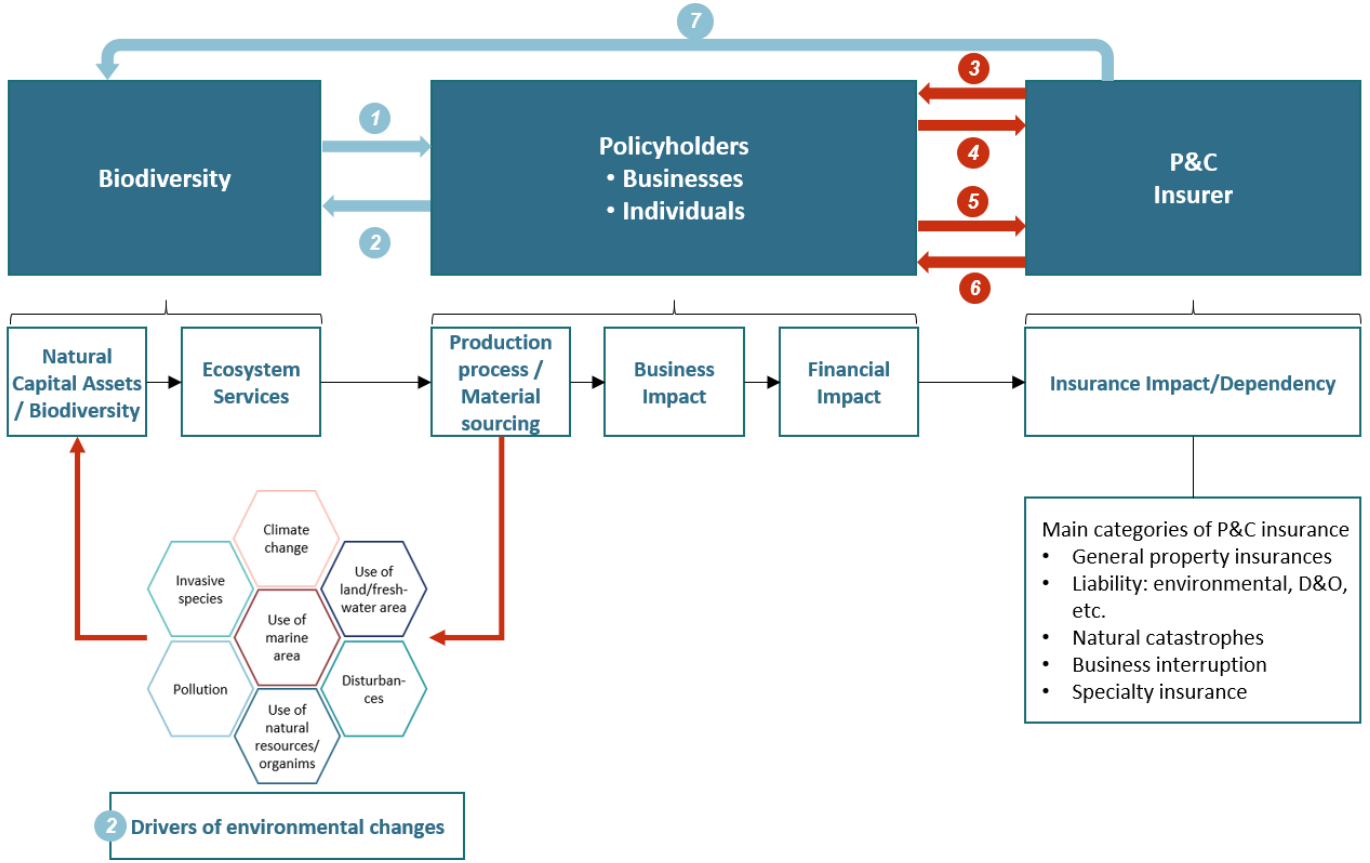
4. Opportunities for the re/insurance industry

a. Business opportunities
b. Leadership opportunity: standards and regulations settings
c. Interconnecting existing ESG initiatives

Biodiversity and re/insurance interactions: illustration

Illustration

Mapping interactions - illustration



Legend

1. Direct interactions with biodiversity

1. Benefits (D)
2. Impacts (I +/-)
7. Direct protection solutions (I+)

2. Indirect interactions with biodiversity

a. Before a damage

3. • Risk modelling & assessment (D)
   • Actuarial risk pricing (D)
   • Risk prevention (D/I)
4. • Premium payment
   • Risk transfer

b. Following a damage

5. Claims (D)
6. • Financial compensations (D)
   • Repairs (I +/-)

Adapted from: Beyond 'Business as Usual': Biodiversity Targets and Finance Managing biodiversity risks across business sectors, UNEP

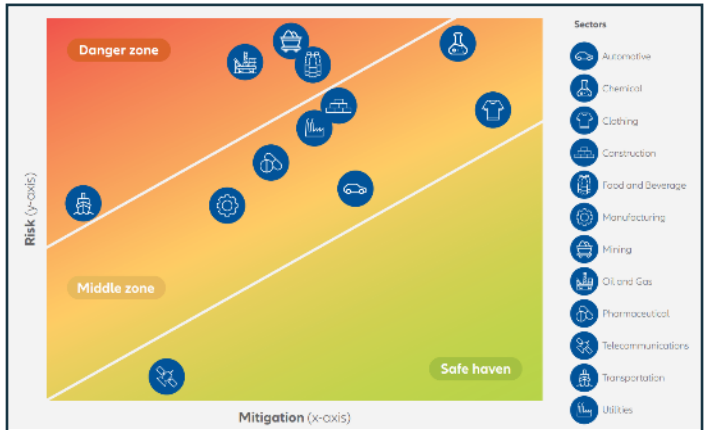
Biodiversity footprint of economic sectors

Illustration

Ranking the dependencies & impacts to prioritize action

Different methodologies to assess business sectors' exposition to biodiversity-related dependencies and impacts

Allianz



12 sectors allocated regarding their overall **risk** (related to impact and dependencies) and **mitigation** (awareness and preparedness of the sector) on seven researched risks relating to **five natural capital factors**: biodiversity, greenhouse gas emission, non-GHG emissions, waste, water.

Source: Measuring and managing environmental exposure, AGCS

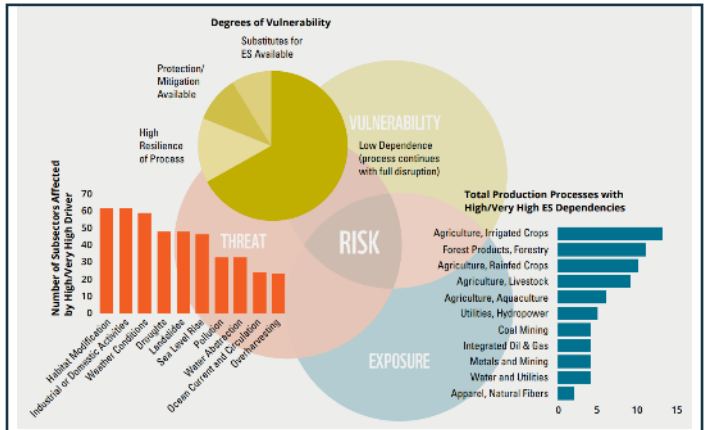
UNEP – Natural Capital Finance Alliance

Rank	Priority from dependencies perspective	Priority from impacts perspective
1	Agricultural Products	Marine Ports & Services
2	Apparel, Accessories & Luxury Goods	Agricultural Products
3	Brewers	Airport Services
4	Distillers & Vintners	Oil & Gas Exploration & Production
5	Electric Utilities	Mining[23]
6	Forest Products	Oil & Gas Storage & Transportation
7	Independent Power Producers & Energy Traders	Oil & Gas Drilling
8	Renewable Electricity	Distribution[24]
9	Textiles	
10	Water Utilities	

Highest priority sub-industries based on their potential dependencies and impacts on biodiversity.

Source: Beyond business-as-usual, UNEP

WWF, ENCORE data



Where businesses' dependencies on nature may lead to nature-related risk, based on:
Material threats
- Sectors with high exposure to nature-related risk,
- High vulnerability or low resilience of the production processes to disruption

Source: Nature of Risk, WWF

Example : Assessing biodiversity-loss related risk exposure of financial institutions

Illustration

De Nederlandsche Bank and PBL Netherlands Environmental Assessment Agency explore in this report how and to what extent financial institutions are exposed to risks from loss of biodiversity

Physical risk

"Dutch financial institutions have provided worldwide **EUR 510 billion** in finance to companies that are **highly or very highly dependent on one or more ecosystem services**."

Regulatory risk

"The three large Dutch banks have granted loans totalling **EUR 81 billion** to sectors with **nitrogen-emitting activities**."

Reputation risk

"The Dutch financial sector has worldwide **EUR 96 billion** of investments in, or loans to, **companies involved in environmental controversies** with negative consequences for ecosystem services or biodiversity."

Project Charter : biodiversity & re/insurance

10 months to present an overview of the incentives and challenges the re/insurance industry will face to address biodiversity in their business practices

Biodiversity & Re/insurance : from uncertainty to risk

Purpose

- Pushing back the **limits of insurability**
- Exploring the **knowledge gaps** between re/insurance & biodiversity

Scope

- **Indirect interaction** – underwriting & investing activities
- **Whole re/insurance ecosystem**
- From **short** to **long term**

Objective

1. Scientific review of **biodiversity knowledge and human activities interdependencies**
2. Understanding the **impacts of re/insured activities on biodiversity**
3. Understanding the **risks and opportunities of biodiversity loss on re/insured activities**

Project team

SCOR :
- SCOR Foundation: Philippe Trainar, Zeying Peuillet
- P&C: Julien Vincensini
- LIFE: Bruno Latourrette
- IP: Guillaume Levannier

Museum:
- Supervisor: Magali Gorce, Nirmala Seon-Massin
- Project lead: Jules Chandellier

Resources

Museum:
- Supervision by a **scientific council** composed of 6 scientist attached to the Museum
- Facilitated access **to scientific literature**
- Facilitated **interactions with scientists**

Re/insurance knowledge:
- Privileged **interactions with SCOR** employees of all business units to ensure business relevance of the study
- Easy access to other contacts within the **re/insurance sector**

Deliverables

- A **study report** in English
- A co-organised **symposium**

4 Next Steps

What’s next ?

Scoping and prioritizing the issues from the business perspective

- With SCOR P&C businesses to review the risks of biodiversity erosion and to discuss Environmental Insurance Lines, SCOR LIFE to understand the impact of biodiversity erosion on human health and life insurance, SCOR IP to engage discussion on ESG investment practices and metrics
- Insurance companies : AXA, Marsh
- Institutions: OECD, UNEP WCMW – ENCORE
- Biodiversity specialist companies: CDC Biodiversité, The Biodiversity Consultancy

Reviewing and analysing scientific knowledge and evidence

- With the MNHN project team and Scientific Advisory Board

MERCI

Presentation of the conclusions of the study: CRSE - 22.02.2021
Symposium: 09.03.2021