

A vibrant underwater scene featuring a coral reef with various species of coral, including large purple and green anemones, and numerous small fish swimming in the clear blue water.

BIODIVERSITY & ECOSYSTEMS
CHALLENGES AND OPPORTUNITIES OF POSITIVE IMPACT IN BIODIVERSITY

Antje Biber, FERI AG

We depend on Nature !

Economy

Ecosystems

Dependencies

Impact

- Soil quality
- Erosion control
- Water quality
- Filtration
- Disease control
- Climate regulation
- Erosion control
- Raw materials
- Disruption protection
- Pollination

- Changes in land and sea use
- Climate Change
- Pollution
- Overexploitation of organisms
- Invasive Alien Species

We depend on the ocean

€2.5tn
economy

350mln
employed

50%
of O₂ created

€220bn
aquaculture

€275bn
fishing

25%
of CO₂ absorbed

3bn
People fed

90%
of global heat absorbed

99%
of all living space

The Nature Emergency

83 %

of
**wild mammals
wiped out**
by humanity.

**420 million
hectares**

of
**forest
converted**
to other land uses
(10 x Germany)

75 %

of
**terrestrial
environment
damaged**
(marine 66%)

300 % increase

in
**food crop
production**
since 1970

69 % decline

in
**animal
populations**
since 1970

**1 Million
species**

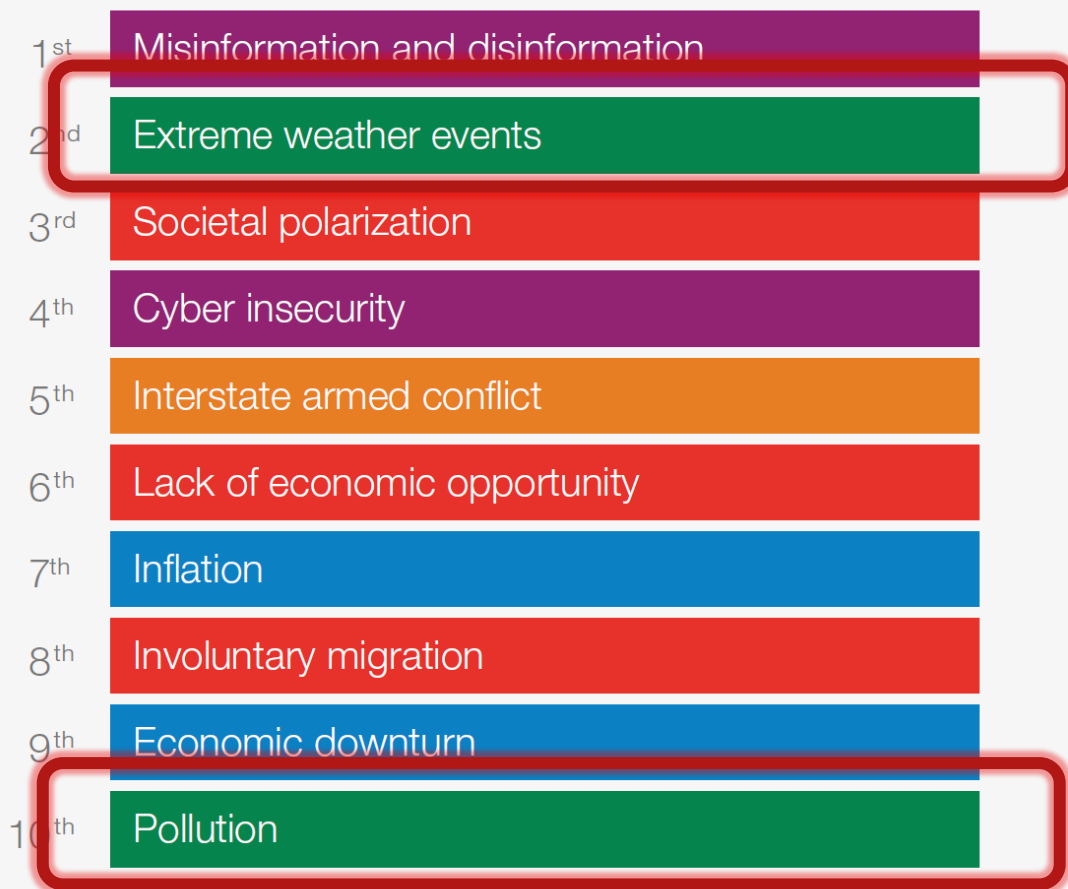
**are threatened
with extinction.**

44 Trillion US Dollar of economic value

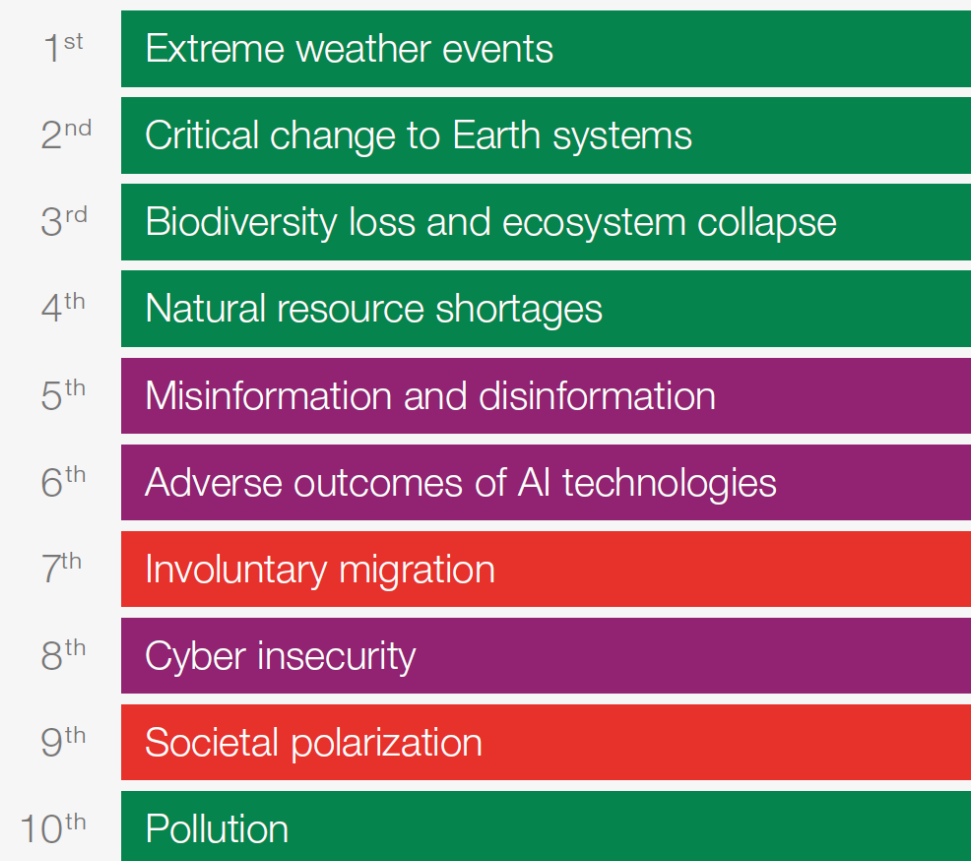
**more than 50% of the world's GDP
is moderately or highly dependent on nature and its services.**

The economic risks 2024

2 years



10 years



Risk categories | Economic | Environmental | Geopolitical | Societal | Technological

Source
World Economic Forum Global Risks
Perception Survey 2023-2024.

Drivers of Biodiversity Impact



Climate Change

Alterations in climate and weather patterns are influencing the **functioning of ecosystems**,

leading to the **migration** of species and entire ecosystems.

This phenomenon poses a threat to as many as one in six species worldwide and will affect all biomes.



Land/ Sea Use Change

Human influence on terrestrial habitats involves land cover conversion (**deforestation, mining**), changes in ecosystem management (**agro-intensification, forest harvesting**), and alterations in landscape configuration (habitat fragmentation). In marine habitats, human impact includes activities like **wind farms, aquaculture, and shipping routes**.



Resource Use

Human utilization of resources affects biodiversity through various practices, such as the extraction of natural resources (**mining, logging**), alterations in resource management (**intensive agriculture, overfishing**), and changes in landscape use (**urbanization, habitat destruction**). These activities contribute to a significant impact on biodiversity and ecosystem health.



Pollution

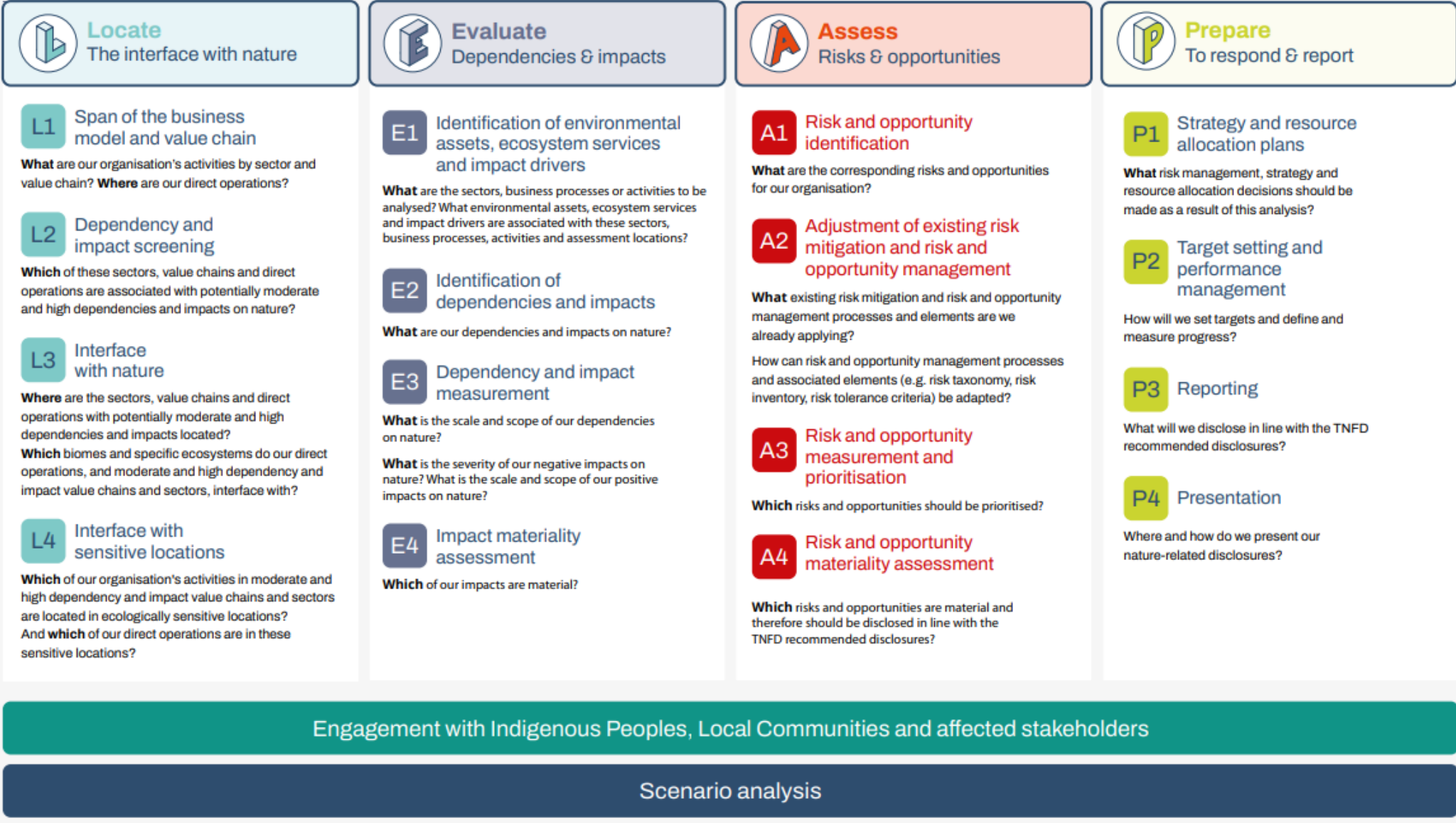
The introduction of substances into the environment (air, water, soil) serves as a catalyst for ecosystem changes across all biomes, inflicting notably **severe direct consequences on freshwater and marine habitats**. This encompasses issues like eutrophication, acidification, ecotoxicity, and ozone formation, as well as the impacts of noise, light, and disturbances.



Invasive Alien Species

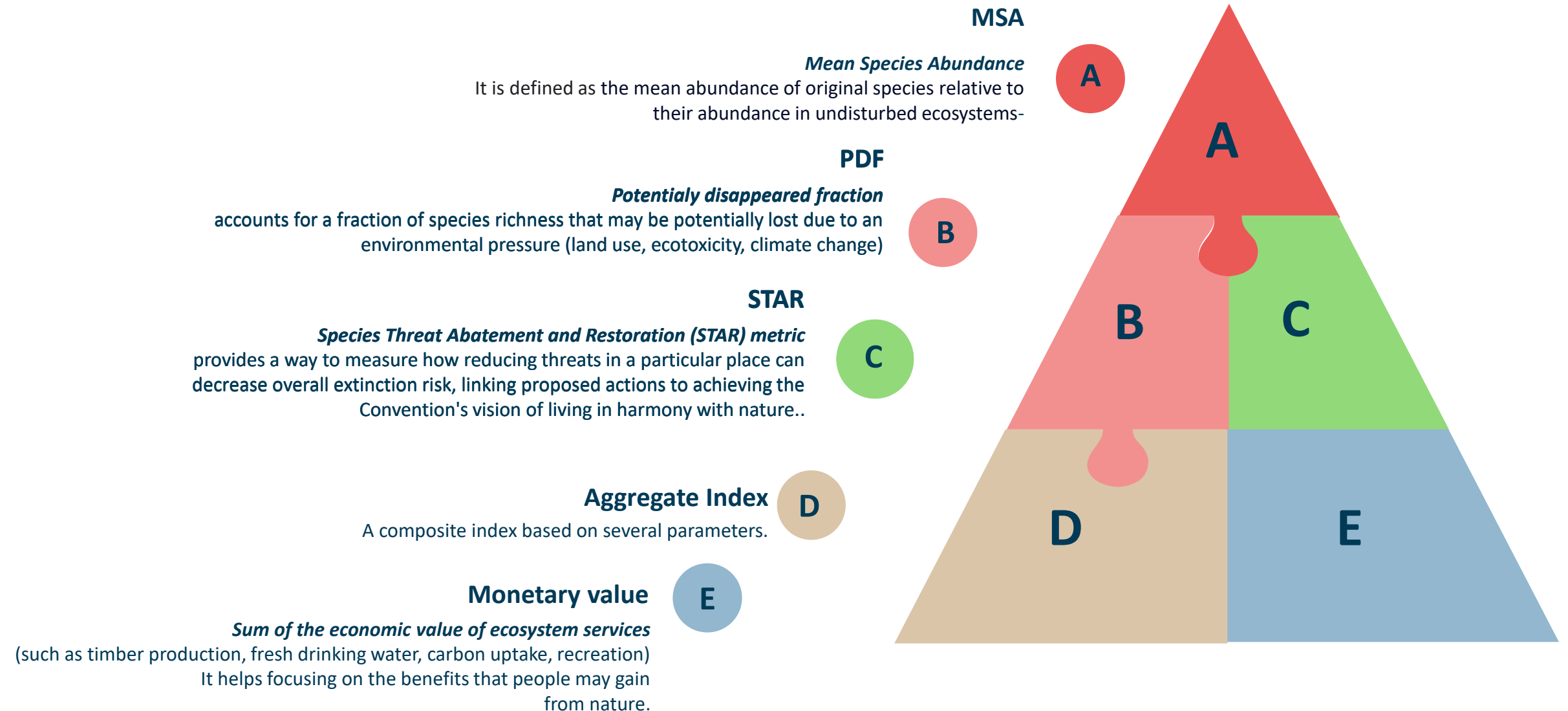
Non-native or 'alien' species in terrestrial and aquatic ecosystems **disrupt the ecological balance of natural systems** by outcompeting local and indigenous species for resources. This has adverse implications for biodiversity at both local and regional scales, leading to significant economic damage.

TNFD - the LEAP Approach



Metrics of Biodiversity

Biodiversity metrics measure different things (species, ecosystem intactness, ecosystem benefits)



Guide on Biodiversity Measurement Approaches

Comparison of different Biodiversity Measurement Approaches

Biodiversity Footprinting tools: similar LCA-based approach to quantitatively model companies' potential biodiversity impact

1. **BFFI** – Biodiversity Footprint Financial Institutions (CREM and PRé Sustainability, together with ASN Bank)
2. **BIA-GBS** – Biodiversity Impact Analytics powered by the Global Biodiversity Score (Carbon4Finance and CDC Biodiversité)
3. **CBF** – Corporate Biodiversity Footprint (Iceberg Datalab and I Care Consult as scientific partner)
4. **GBSFI** – Global Biodiversity Score for Financial Institutions (CDC Biodiversité)
5. **GID** – Global Impact Database, Biodiversity Impact Data (Impact Institute)

ENCORE – Exploring Natural Capital Opportunities, Risks and Exposure (UNEP-WCMC, UNEP FI & NCFA) offers insight into impacts and dependencies at the subsector level.

IBAT – Integrated Biodiversity Assessment Tool (BirdLife International, Conservation International, IUCN, UNEP-WCMC) offers geolocated data on important sites for biodiversity (including protected areas, key biodiversity areas and IUCN Red list species) as well as information on opportunities for conservation

High Risk Sectors: Impact and Dependency Materialities



Analysis of Materialities based on ENCORE and GICS Industries

	Direct impacts dark orange = very high materiality light orange = high materiality					Direct dependencies dark green = very high materiality light green = high materiality			
	Land/ sea use change	Ressource exploitation	Climate Change	Pollution	Invasive species/ other	Direct physical impact	Enabling production	Mitigating direct impacts	Protecting from disruption
Agriculture, forestry & fisheries	Dark Orange	Dark Orange	Light Orange	Light Orange	Light Orange	Dark Green	Dark Green	White	Dark Green
Energy	Dark Orange	Dark Orange	Light Orange	Light Orange	Light Orange	Dark Green	Dark Green	White	Dark Green
Mining	Dark Orange	Dark Orange	Light Orange	Light Orange	Light Orange	Light Green	Light Green	White	Dark Green
Transportation	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Green	White	White	Dark Green
Food and Beverages	White	Light Orange	Light Orange	Light Orange	White	Dark Green	White	White	White
Apparel	Light Orange	Dark Orange	Light Orange	Light Orange	White	Dark Green	White	White	White
Utilities	Light Orange	Light Orange	Light Orange	White	White	Dark Green	Dark Green	White	Dark Green
Chemicals	Light Orange	Dark Orange	Light Orange	Light Orange	White	Light Green	White	White	White
Manufacturing	White	Light Orange	Light Orange	Light Orange	White	Dark Green	White	White	White
Construction	Dark Orange	Light Orange	Light Orange	Light Orange	White	Dark Green	White	White	Light Green

Source: UN Environment Programme (2022). Prioritising nature-related disclosures. Considerations for high-risk sectors. UNEP-WCMC, Cambridge, UK

Measurement Example 1 - BESS



BESS (Battery Energy Storage System) Project in Lessines, Belgium

- 40x Tesla Megapack Batteries
 - Largest BESS Project in Europe
 - Goal: Offsetting volatility of renewable energy sources, while also regulating the networks frequency
-
- Area covered: 0,86ha
 - Ecoregion: European Atlantic mixed forests
 - Biomes: Temperate Broadleaf & Mixed Forests
 - Human modification: 1

Dependencies

Low Materiality:

- **Mass Stabilization and Erosion Control**

Very Low Materiality:

- **Bio Remediation**

Impacts

High Materiality:

- **Soil Pollutants**
- **Water Pollutants**
- **Water Use**

Measurement Example 1 – BESS – IBAT Analysis

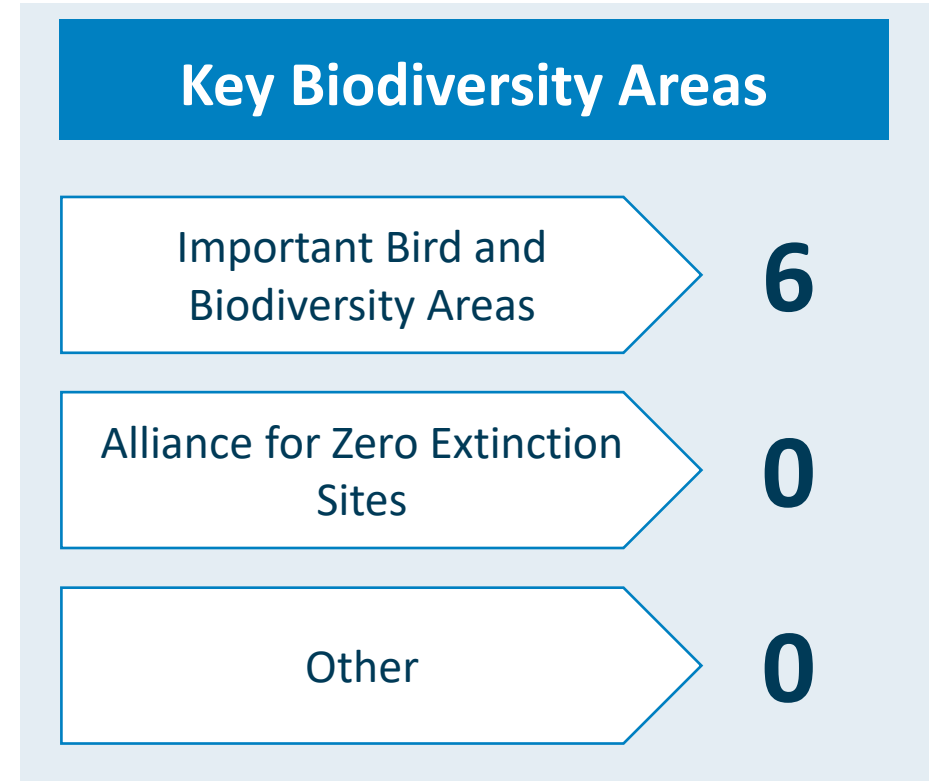


Number of species critically endangered and endangered potentially living in a radius of 50km

Protected Areas

National:	365
Natura200:	71
Regional Seas:	0
World Heritage:	1
Ramsar:	1
MAB:	0
Emerald Network:	0

Number of protected areas of different categories located within a 50km radius



Number of key biodiversity areas of different classification within a 50km radius

Measurement Example 2 – Aeroporto Trieste

Data from restor.org



Area covered: 241ha

Estimated biodiversity:

- 2643 plant species
- 14 amphibian species
- 65 mammal species
- 174 bird species

Ecoregions:

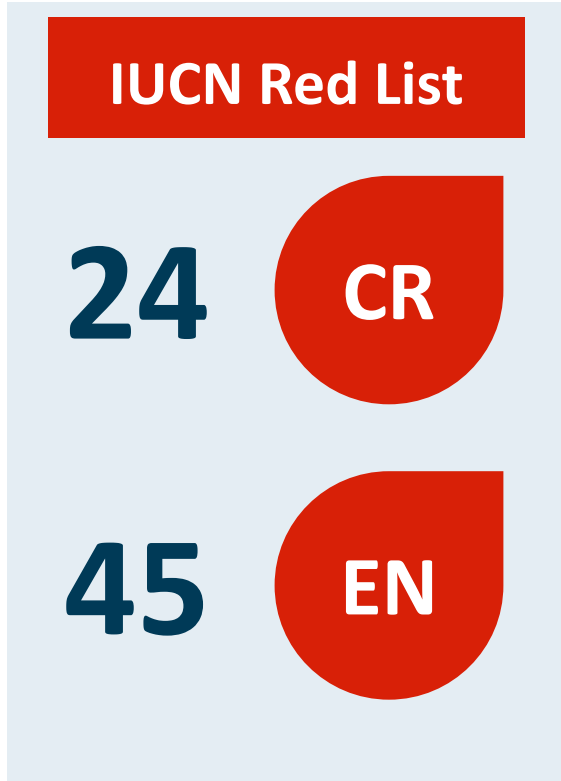
- 13.3% Po basin mixed forests
- 86.7% Illyrian deciduous forests

Biomes:

- 13.3% Temperate deciduous and mixed forests
- 86.7% Mediterranean forests, woodlands and scrublands

Human modification: 0.76

Measurement Example 2 – Aeroport Trieste

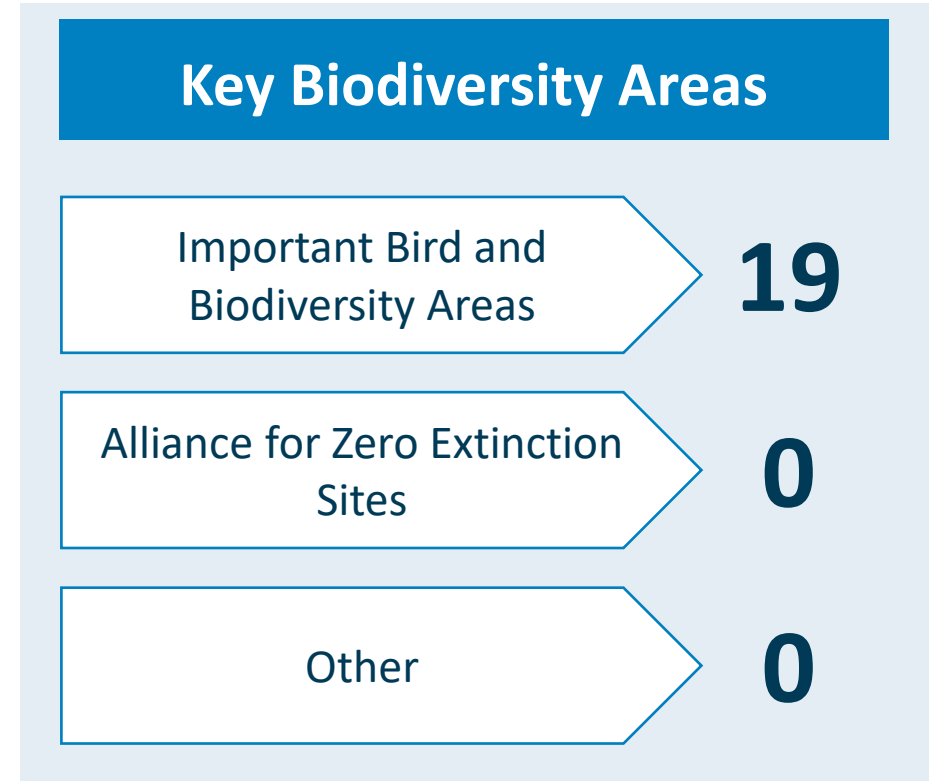


Number of species critically endangered and endangered potentially living in a radius of 50km

Protected Areas

National:	262
Natura200:	111
Regional Seas:	1
World Heritage:	1
Ramsar:	4
MAB:	3
Emerald Network:	0

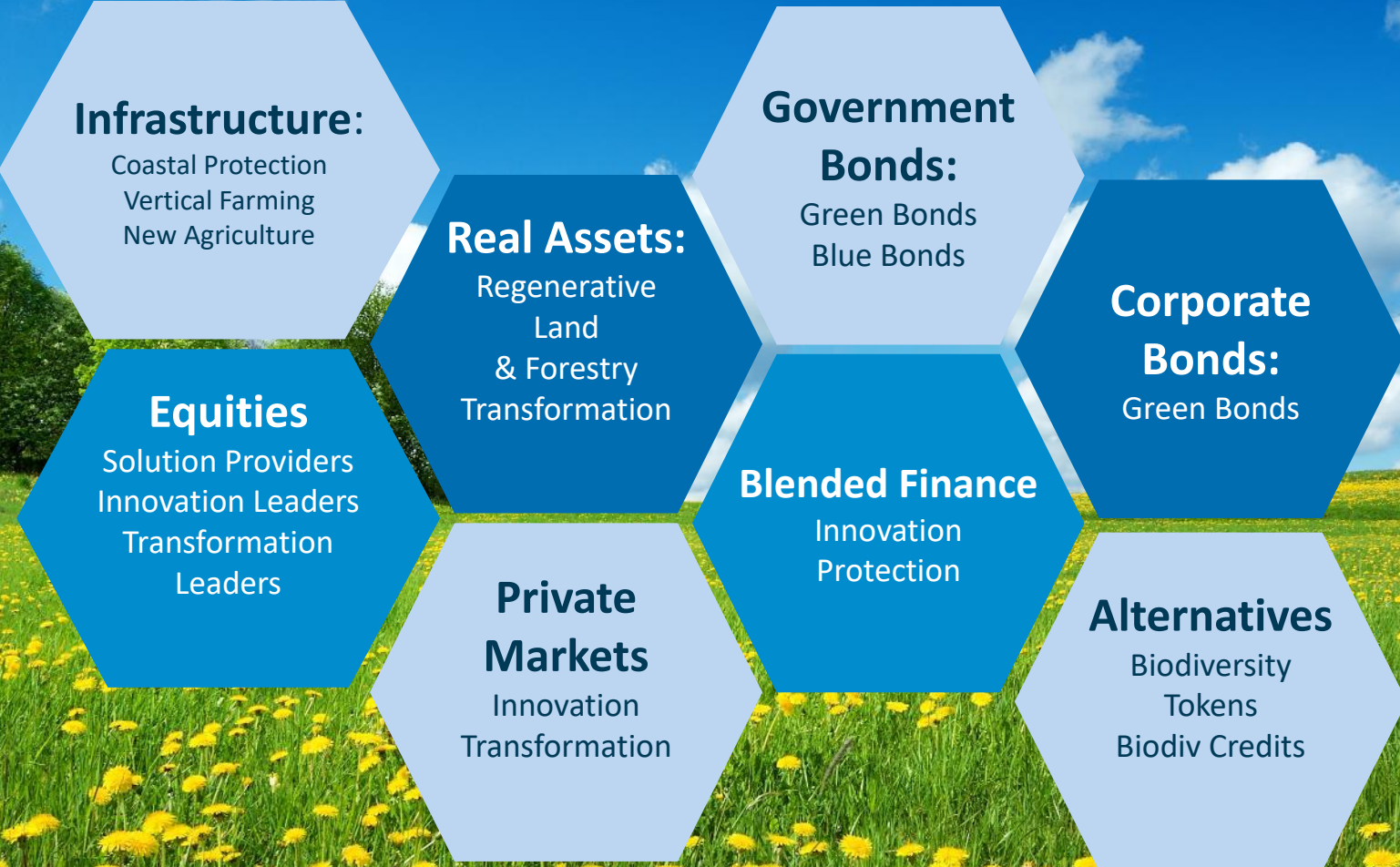
Number of protected areas of different categories located within a 50km radius



Number of key biodiversity areas of different classification within a 50km radius

Multi Asset Investment Opportunities

Asset Class specific solutions



1 Biodiversity is essential

Human survival is depending on ecosystem services

2

Economic dependencies & impact

The economy is impacting nature massively

At the same time the economy is highly dependant on ecosystem service

5

The Investment Opportunity

Dependencies result in increasing risks

Integration & solutions for ecosystem services is

the new

investment Imperativ

4

Measurement is key

„We can only manage, what we can measure“

More effort is needed

Real data by companies is required (Taxonomy)

3

Action is required

Transparency of mitigation efforts

Transformation of the economy

Creation of innovative investment approaches

Thank you for your attention

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