

# Biodiversity Primer

Q1 2022

## BIODIVERSITY DEFINED

### What is biodiversity?

Biodiversity includes three components:

1. Species diversity: variety of living organisms
2. Genetic diversity: variety in genetic characteristics and traits of populations
3. Ecosystem diversity: variety of species in a region

### Primary drivers of biodiversity loss

Figure 1: The five drivers of biodiversity decline



Source: Barclays Research

### Measuring biodiversity

- Valuation requires data and measurement. While pollution, water, and GHGs can be measured for climate change, biodiversity is more complex to distill down to a single metric.
- Mean Species Abundance (MSA) is increasingly talked about as a possible comparable metric for biodiversity.
  - MSA is an indicator of the extent to which biodiversity is intact in a given area.
  - It is defined as the mean abundance of original species in the area in question relative to their abundance in undisturbed ecosystems.
  - MSA scores are expressed in  $MSA.km^2$  and range from 0 to 1, with a score of 1 indicating fully intact biodiversity and 0 indicating that all original species are extinct; i.e., the closer the score is to 1, the less the company's impact on biodiversity.

- MSA has its flaws as a single metric:
  - Difficult to calculate and isolate to a specific company;
  - Many underlying assumptions that diminish overall accuracy;
  - Does not consider other aspects of biodiversity such as genetic biodiversity;
  - Industry-specific metrics are more relevant for individual companies;
  - ‘Abundance’ itself is not necessarily always a ‘good’ thing for biodiversity, introducing new species into an ecosystem can also have negative impacts on overall biodiversity

## WHY DOES BIODIVERSITY MATTER?

### Society

Biodiversity performs several critical functions for society:

1. Regulating: natural regulation of global cycle; e.g., clean air/water, fertile soil, climate patterns, barriers to extreme weather
2. Material: physical needs; e.g., food, energy, materials to build homes and infrastructure
3. Non-material: emotional needs; e.g., inspiration for art or culture, recreation

There is increasing concern over the rate of biodiversity loss:

- Humans – making up just 0.01% of all living creatures, have caused the loss of 83% of known wild animals, and 50% of plants
- Continued rates of ecosystem decline could cost US\$9.87 trillion over 2011-2050 (WWF)
- The World Economic Forum’s Global Risk survey report places biodiversity loss as the fourth most significant global risk over the next decade, after climate change and extreme events, but ahead of the debt crises, infectious diseases and geo-economic confrontation

### Investors

Biodiversity is increasingly an issue of focus for the investment community. Reasons include the connection between biodiversity and climate change, as well as societal pressure to address biodiversity loss. However, the inability to easily measure and therefore accurately value biodiversity has made it challenging for investors to consider. We feel it may be more helpful to think about this issue at the industry level.

## SECTOR CONSIDERATIONS

Some sectors face financial risk resulting from their dependence on biodiversity and ecosystem services; others face regulatory and reputational risk because of their significant impact on biodiversity. While it is easier to conceptualize the financial risk for the latter, it is not clear that regulation will be a leading indicator of risk. For example, while EU and US authorities have been exploring regulation of PFAS in drinking water, the chemical industry has moved on and adapted its business models. In such a situation, sudden reputational damage is more likely than sudden regulatory change.

It may be helpful to think about two aspects of financial risk:

1. **Short-term:** risk drivers that are more immediately financially material to shareholders
2. **Long-term:** societal/regulatory drivers of risk that can become financially material over time

Sector	Biodiversity dependent	Impacting biodiversity	Drivers of short-term financial risk	Drivers of long-term financial risk
Agriculture	✓	✓	Buyer commitments to deforestation-free supply chains	Regulation to reduce use of pesticides and fertilizers which could reduce crop yields. EU action is expected this year (see appendix). Medium to long-term risk could increase, but is more than offset by strong commodity prices.  Reputational damage from unsustainable production practices (e.g., palm oil, soy, cattle)
Chemicals		✓	Reputational events such as chemical spills, water pollution, product side-effects; e.g., Bayer/Monsanto	Regulation to reduce use of pesticides and fertilizers. EU action is expected this year (see appendix). Medium to long-term risk could increase.
Forestry		✓	Buyer commitments to deforestation-free supply chains	Reputational damage from unsustainable logging practices  Potential for increased regulation
Fisheries		✓	Governments raising the costs of salmon farming to protect against gene disruption and disease among native salmon stock	Reputational damage from unsustainable fishing practices
Metals & Mining		✓	Reputational events (e.g., tailings/ mine collapse)	Increasing land permitting restrictions
Oil & Gas E&P		✓	Reputational events (e.g., BP Deepwater Horizon)	Regulation of the physical impacts of drilling/fracking
Oil Services			Liability risk from micro seismic events in TX and NM  Liability risk from abandoned wells leaching materials	Increasing land permitting restrictions limiting availability of land to drill
Retail (Apparel)		✓	Possibility of product boycotts (e.g., fur)	Reputational damage from sourcing materials such as cotton (water intensity, pesticide use)
Supermarkets	✓	✓	Consumers are price elastic; potential to impact sales if product costs increase (due to pest outbreaks, for example)  Negative reputational events may lead to product boycotts.	Reputational damage associated with crop monoculture/offseason farming that destroys the native biome

# ENGAGEMENT FRAMEWORK

## Governance

1. Integration of biodiversity into company strategy
2. Policies and procedures for operating responsibly in areas of biodiversity (should include supply chain as relevant and go beyond compliance with local laws)
3. Organizational accountability (e.g., operations personnel or regional business head)
4. Transparency of disclosure (resource management and assessment of any controversies)
5. Evidence of collaboration with peers/industry organizations

## Risk Identification

1. Framework for assessing biodiversity impacts when evaluating projects
2. Direct and indirect sensitivity analysis for products/divisions dependent on biodiversity
3. Monitoring changing regulations (e.g., EU biodiversity action plan), including assessment of need for alternative ingredients/source regions
4. Assessment of consumer awareness/focus and impact on earnings
5. Supplier assessments (e.g., standards, audits, site visits), including going beyond Tier 1 suppliers and taking supplier action in cases of transgressions (e.g., deforestation)

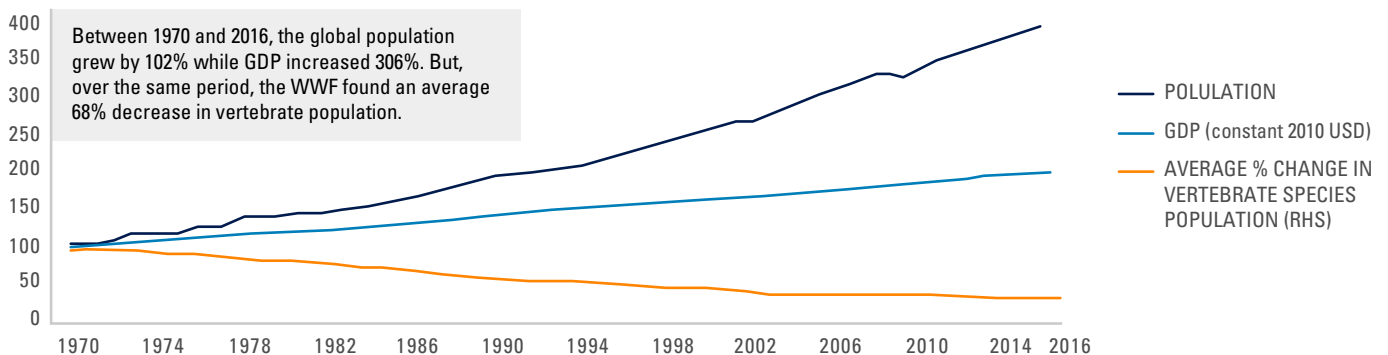
## Risk Mitigation

1. Full supply chain traceability including commodity sourcing (e.g., use of blockchain)
2. Use of sustainable sourcing/certification practices (e.g., Palm Oil certified to RSPO criteria)
3. Documented KPIs (e.g., tracking MSA as relevant)
4. Detailed diligence and remediation processes
5. Third-party verification of site audits/policy compliance

# APPENDIX

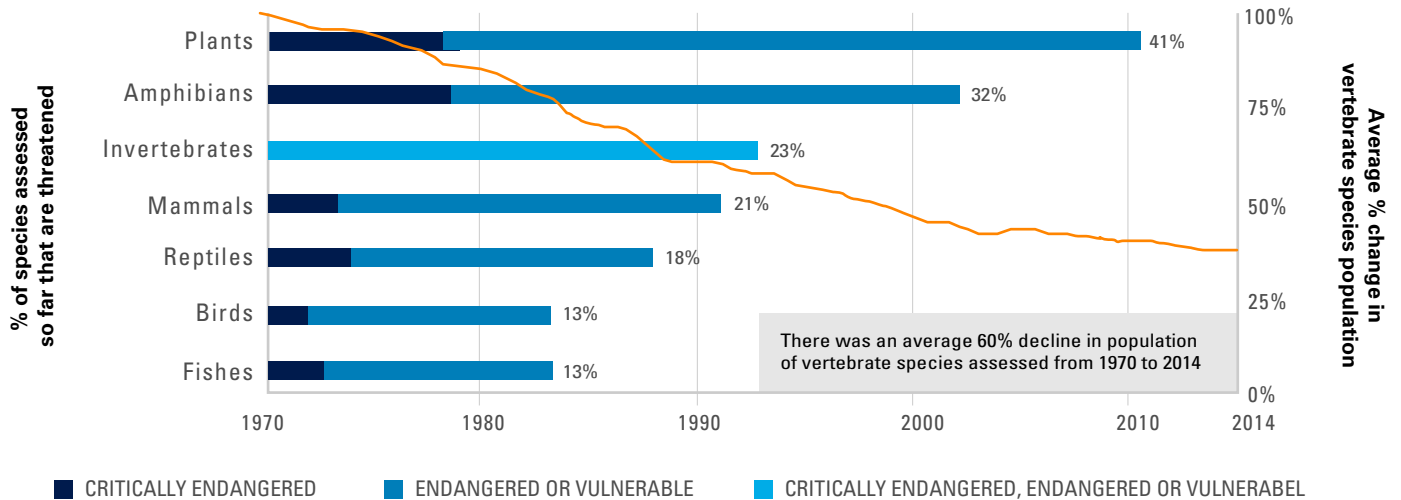
## Appendix 1: Rate of biodiversity loss

**Chart 1: Financial and human capital coming at a cost to natural capital**



Source: World Bank, Living Planet Index, WWF

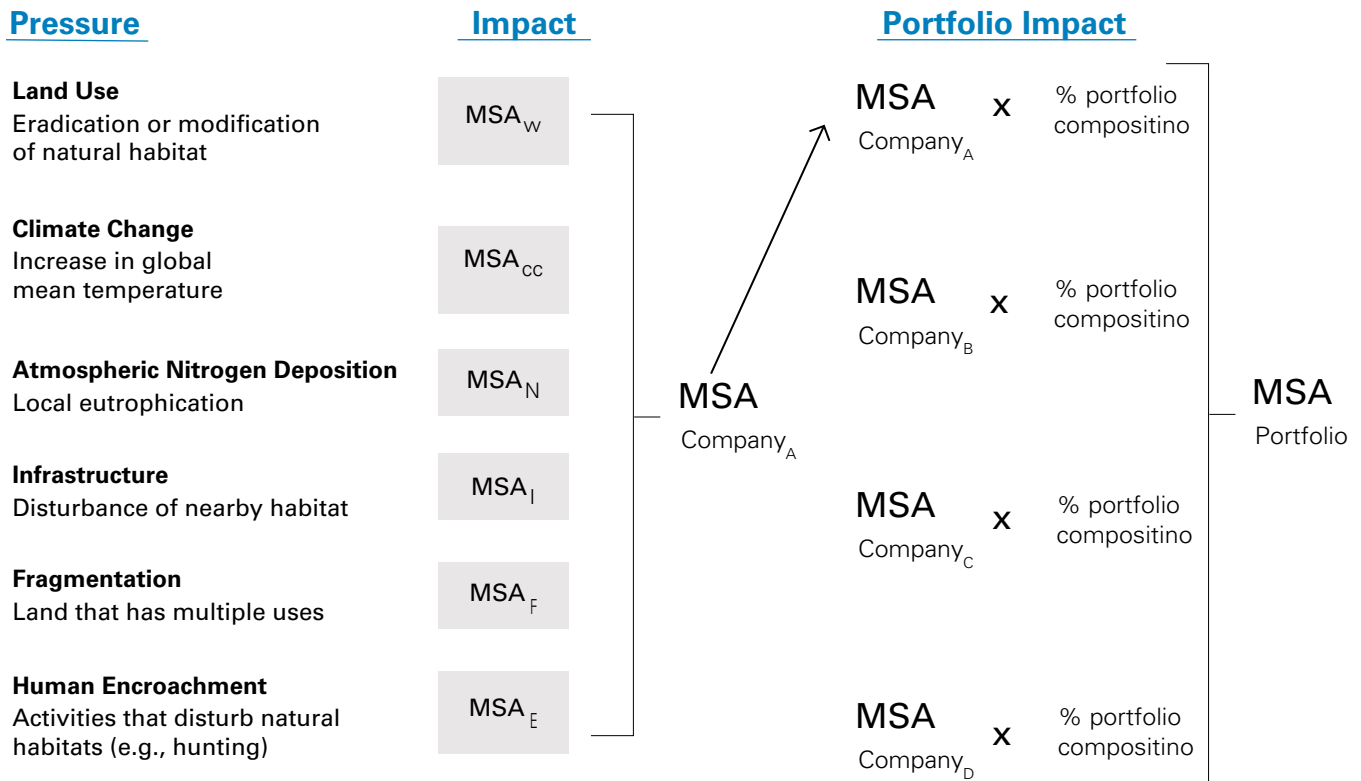
**Chart 2: Global biodiversity in decline...**



Source: IUCN, WWF Living Planet Index

## Appendix 2: Understanding MSA

**Chart 3: Computing Mean Species Abundance (MSA)**



Source: Barclays Research. Note: The specific pressures used may vary by data provider

## Appendix 3: Biodiversity Regulation

### United Nations

#### ***Kunming Declaration 2021***

- 2021 agreement (over 100 countries) to put biodiversity and ecosystem protection at the core of political decision-making, and to pave the way for a global biodiversity framework
- Investors may now incorporate the nexus between biodiversity and social risks in their engagement strategies

#### ***Cop15 (Kunming April-May 2022)***

- Countries expected to adopt the global biodiversity framework in May 2022
- Aims to agree on new 10-year targets as part of the UN's biodiversity framework
- Expected to include a commitment to protect 30% of land and seas
- Other possible targets are:
  - 2/3 reduction in pesticides
  - Halving food waste
  - \$500Bn reduction in biodiversity-harmful industry subsidies (primarily agriculture)

### Europe

#### ***EU Biodiversity Strategy:***

- Specific 2030 goals:
  - Reduce pesticides use by 50%, fertilizer use by 20%, and antibiotics used in agriculture by 50%
  - Increase the proportion of agricultural land that is organic to 25% (vs. current 75%)
  - Convert 10% of agricultural land to 'high diversity landscape' to provide space for wild animals, pollinators, and natural pest regulators
  - Transform 30% of Europe's lands and seas into effectively managed protected areas by 2030

#### ***EU Deforestation Proposal:***

- 2021 draft legislation proposed to require companies to have deforestation-free supply chains for 6 commodities: beef, cocoa, coffee, palm oil, soy, and wood

### UK

#### ***UK Environment Bill:***

- Legally binding target to halt species decline by 2030, described as "the net zero equivalent for nature"

## Asia

- In China's 14th Five Year Plan, biodiversity is referred to via targets to strengthen forestry and wetland protection, increasing wetland protection rates to 55%
- In the NDCs for Nepal, the Philippines, and Bangladesh, forestry management is mentioned
- Philippines mentions focusing on the protection of coastal and marine ecosystems and biodiversity

## Appendix 4: Biodiversity Reporting

### ***TNFD (Taskforce for Nature-related Financial Disclosures):***

- In the process of development, to steer global financial flows away from nature-negative and into nature-positive outcomes through more robust disclosure requirements
- Akin to the Task Force on Climate Related Financial Disclosures (TCFD), reporting relates to the same four pillars: governance, strategy, risk management, and metrics & targets
- Outputs to be integrated into existing frameworks and standards; not a stand-alone framework
- Will allow for varying levels of disclosure sophistication: basic, intermediary and comprehensive
- Prioritization for reporting
  1. Industries with the most significant impacts and dependencies on nature
  2. Within priority industries, most significant nature-related risks and where sufficient data quality is readily available
- Timeline
  - June 4, 2021: Taskforce is launched.
  - 2022: Plans to test and refine the framework.
  - 2023: Official launch of framework.
- Work to date has identified the following key biodiversity risks
  - Physical risks: Natural systems are compromised (e.g., degraded soil quality and marine ecology); could drive rating downgrades and share-price losses or impact balance sheets through direct operations or indirectly through supply chains.
  - Litigation risks: Emerging legal cases related to nature losses, if parties that suffer losses or damages from environmental change seek compensation from those they hold responsible.
  - Transition risks: As policies emerge to protect nature, so do transition risks. Regulatory or market efforts could include abrupt or disorderly introduction of public policies, technological changes, shifts in consumer or investor sentiment and disruptive business model innovation. Investees could face losses due to sanctions, stranded assets, damages, or inability to secure project financing.

- Systemic risks: Risks to the economy as a whole. These risks go beyond nature-related risks for only one sector, such as agriculture, to consider nature-loss risks that could essentially cause a cascade of reactions and economic impacts to which investors and lenders are exposed.

**SBTN:**

- Building on progress of SBTi to develop company science-based targets for nature
- 2022: Undertaking corporate engagement to help with the design phase
- 2023: Realistic to assume first targets could be set

**EU SFDR: PAIs for Article 8+ include some biodiversity-related metrics**

- Activities negatively affecting biodiversity-sensitive areas
- Many other voluntary metrics (of which we would have to pick 2)

**SDGs: Specific SDGs that relate to biodiversity**

- SDG 2: Zero hunger
- SDG 14: Life below water
- SDG 15: Life on land

**Nature Action 100:** A proposal for a Climate Action 100+ for nature; i.e., a collaborative engagement organization for nature



## FURTHER INFORMATION

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