XPS Investment

Biodiversity

A practical guide to incorporating biodiversity into investment decision making

May 2023

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Overview

When the term biodiversity is mentioned we often think of spectacular footage of wildlife in their unique natural habit from the far corners of the world. We are also likely to have a strong appreciation for the delicate balance and interdependence of these ecosystems and the effects of human activity. However, the connection between biodiversity and investment decision making is far less well understood.

In this paper, Camilla O'Brien explains what biodiversity is in the context of investment decisions, why it is becoming increasingly relevant, methods that can be employed to measure biodiversity impact and the practical steps trustees can take to better manage this source of increasing investment risk.

Background

In March 2023, the UN members signed the High Seas Treaty – the first ever treaty to protect the world's oceans that lie outside national boundaries. This follows other landmark global commitments made on biodiversity at Conference of the Parties (COP) 15 in November 2022. After several years of focus on addressing climate change from the financial markets and media, it's clear that broader issues around biodiversity have more recently been gaining more attention. Therefore, now more than ever it's important for investors to start thinking about the risks and opportunities related to natural capital within their portfolios.

In brief

- **Biodiversity** refers to the variety of nature in a given area of land. Many societies and business depend on natural capital for resources and services, and so negative impacts on biodiversity is putting value at risk.
- **Key financial risks** arise from physical damage to assets and supply chains from disrupted natural capital, and also transition risks i.e. higher costs or loss of market share from failing to adapt to more sustainable operations.
- **Increased regulations** are expected following significant global commitments from COP15 in 2022 and regulation including the High Seas Treaty and Taskforce for nature related financial disclosures (TFND) reporting framework mean there will be growing focus on the impact of companies on biodiversity.
- **Opportunities are likely to emerge** given the huge amount investment required to support solutions and mitigate ongoing negative impacts on the environment.
- **Trustees can act now** by beginning to consider the implications of biodiversity factors on their portfolio, including their current exposure to sources of risks, and whether moving to sustainable funds may help to better manage these.

Now more than ever it's important for investors to start thinking about the risks and opportunities related to natural capital within their portfolios.

Camilla O'Brien, Investment Associate

What is biodiversity?

Biodiversity is the variety of animals, plants, fungi, and other organisms in an area, and how they interact. Many societies and businesses depend on natural capital for resources and services – good biodiversity means that the quality, resilience, and quantity of those ecosystem assets is maintained.

There are five main drivers of biodiversity loss:

Change in land and sea use	Direct exploitation of organisms	Climate change	Pollution	Invasive alien species

Where are we today?

Four realms are involved in biodiversity. We set out below how these have been affected over time.

Land

75% of the Earth's land surface has been significantly altered by human actions, e.g. 35% of the world's forest area has been destroyed, and 82% of those that have survived have been compromised.

Source: UNEP, Discover magazine, Sept 2022

Ocean

Almost 90% of the world's marine fish stocks are fully exploited, overexploited or depleted.

Source: UNEP

Freshwater

There has been an 84% population decline across freshwater species since 1970.

One third of all freshwater species are at threat of extinction.

Source: WWF

Atmosphere

Critical loads for nitrogen deposition were exceeded in 75% of EU member states as of 2020.

Nitrogen deposition has many effects on biodiversity, including water and soil acidification.

Source: EEA

Financial risks

The World Economic Forum indicates that biodiversity loss is the 3rd most severe global risk in the next ten years, and this therefore represents a significant risk to economic outcomes, company performance as well as human health and wellbeing.

Industries that are highly dependent on nature generate 15% of global GDP, or $13tn (McKinsey and NielsenIQ research Feb 2023). The forestry sector in particular contributes more than $1.52tn to global GDP and employs 33 million people (source: UN).

Furthermore, loss of biodiversity has significant social implications, such as on human rights, working conditions, access to water and food, proper hygiene and sanitation, security and health risks, and associated population movements. Promoting improvements in biodiversity is key to successfully meeting a number of the UN's Sustainable Development Goals (SDGs). There are risks of fines, regulatory intervention, social unrest or changes in consumer preferences where companies negatively impact biodiversity, with knock-on consequences for associated communities.

We summarise below 3 key areas of financial risk for investors:

Physical risks

Physical damage to assets and supply chains. Covers acute impacts (for example flood damage following loss of natural coastal protection from marshes) and chronic impacts over the longer term (including lower crop yield due to loss of pollinators).

A good example is record-breaking drought in 2022 leading to the Yangtze river drying up, affecting hydropower, halting shipping and forcing a range companies that relied on the river to suspend operations.

With biodiversity it's critical to consider **dual materiality**, that is dependence on nature by companies and the impact of companies on biodiversity. The Aral sea, case study overleaf, is a clear example of this.

Transition risk

Transition risk arises through the following channels:

- **Policy and regulation** changes leading to litigation and higher costs,
- Changes in **market dynamics and reputational damage** as consumer preferences shift towards more sustainable products, for example soap manufacturers facing loss of market share due to associations with palm oil production and associated deforestation. 60% of consumers said they would pay more for a product with sustainable packaging (McKinsey and NielsenIQ research Feb 2023).
- **Higher costs** from adapting to regulatory requirements and reducing dependence on the natural environment (e.g. transport companies switching to an electric fleet or airlines using more sustainable fuel).

Systemic risk

Possible ecosystem collapse when natural systems no longer function leading to **wholesale geographic or sectoral losses**.

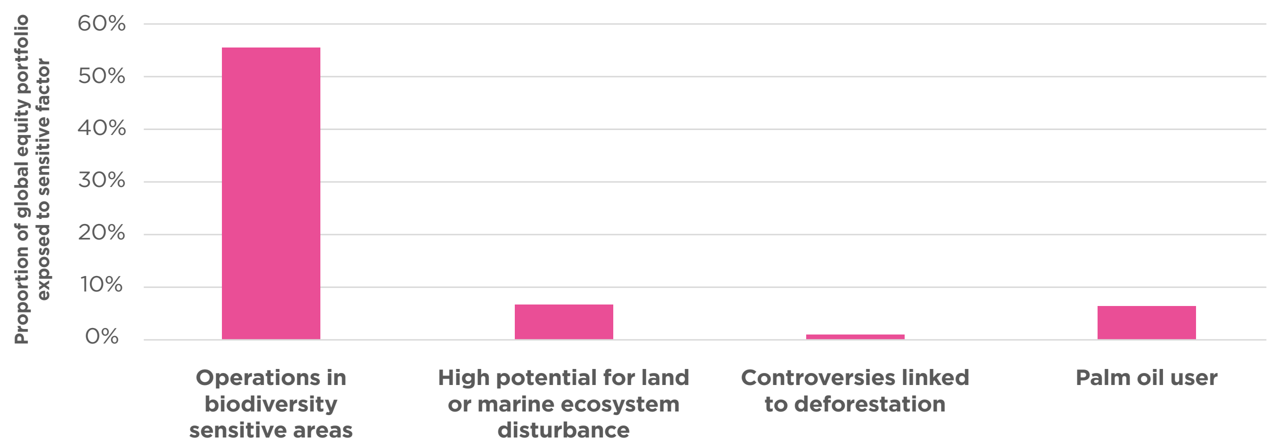
For example, water shortages following the desertification of the Amazon rainforest, or pollution from spillage, caused loss of value in Southern American agricultural sectors.

There is also dual materiality between climate change and biodiversity. Human-caused climate change is increasingly threatening nature, including its ability to help mitigate climate change. Changes in biodiversity, in turn, affects the climate, especially through impacts on nitrogen, carbon, and water cycles. So given there is a clear link between climate change and financial performance, worsening biodiversity contributes to these financial risks.

Case study

The Aral Sea, once the world's fourth largest lake, has now shrunk by more than 90% of its size over fifty years ago, mainly because of the re-routing of its source rivers to support farming in the desert. According to the UN, 3.5 million people who live in the region have seen their health, jobs and living conditions detrimentally impacted, and a once thriving fishing and canning industry has disappeared, replaced by high infant mortality and debilitating respiratory ailments.

A typical global equity portfolio has high exposure to biodiversity sensitive areas



Source: MSCI ESG Screener, analysis on global equity fund of 1505 companies

Increasing regulation

In March 2023, the UN reached a historic agreement to legally protect marine life known as the 'High Seas Treaty'. Although this must be ratified in the coming months, it will likely increase the cost of fishing activities and deep-sea mining and generally signals much greater regulatory focus on preserving nature.

Furthermore, the EU's Six Taxonomy Objectives provide a classification system for economic activities to be considered 'sustainable', and 'Protection and restoration of biodiversity and ecosystems' is included in the list. Therefore, companies and investment funds must explain how they do not do harm in this area, and whether they contribute to the issue.

COP15 — Kunming-Montreal Global Biodiversity Framework (GBF)

When global representatives met for COP15 in Montreal, Canada in December 2022, a key theme of the conference was 'nature positivity' – in other words, reversing biodiversity loss and moving towards nature recovery and regeneration. COP15 introduced global commitments around biodiversity and is likely to drive reporting requirements, which will in turn drive behaviour.

Most notably, the GBF was passed at the summit with 4 goals and 23 targets, all with the overarching aim to halt and reverse destruction of nature by 2030 and achieve full recovery of a resilient biosphere by 2050.

The 4 broad goals are:

1	2	3	4
To substantially increase the area of natural ecosystems, increase abundance of species, and reduce the extinction rate of all species.	Ensure nature's contributions to people are valued, maintained and enhanced.	Share the monetary and non-monetary benefits and knowledge of utilisation of genetic resources with indigenous people.	Ensure all parties (specifically developing countries) have adequate means to implement the GBF (meaning financial resources, technical cooperation).

Specifically, the framework included the '30x30 pledge' – an agreement to safeguard 30% of land and water by 2030 to halt and prevent biodiversity loss. This has been regarded by many as comparable in significance to the 2015 Paris Agreement on climate change.

Among other targets agreed were to cut global food waste by half, and reduce waste generation, mobilise at least $200bn per year by 2030 in biodiversity-related funding, and raise international flows towards developing countries to at least $20bn per year by 2025.

Taskforce on Nature-related Financial Disclosures (TNFD)

To aid in global efforts towards nature positivity, the TNFD is developing a framework for managing and disclosing risks related to nature. The next iteration of the framework will be released March 2023, with the final iteration of the taskforce recommendation is expected in September 2023.

It is not yet clear how this framework will be applied for institutional investors, however as with the Taskforce for Climate Related Financial Disclosures, it is reasonable to assume pensions schemes will be expected to report along these lines in future. The table below summarises the key aspects of the indicative framework.

Pillars	7 Principles of TNFD	The LEAP approach
These are the same as the pillars of TCFD: • **Governance** • **Strategy** • **Risk management** • **Metrics and targets** Notably within Strategy, entities will be expected to describe resilience of operations to nature-based scenarios, and describe the interaction with low integrity ecosystems, or other areas of stress.	• Nature-related risks • Market usability • Science-based • Globally inclusive • Purpose-driven • Integrated & adaptive • Climate-nature nexus	To support entities with understanding their material risks and opportunities: **Locate** the company's interface with nature. **Evaluate** the company's dependencies and impacts. **Assess** the company's risks and opportunities. **Prepare** to respond to nature-related risks and opportunities, and report to investors.

It is reasonable to assume pension schemes will be expected to report against the TNFD framework in the future.

Measuring the impact

Measuring a given company / portfolio's impact on biodiversity is key to identifying and managing this key source of risk. One of the key aspects coming out of the finalised TNFD framework later in 2023 will be guidance on how entities can effectively measure and report on the impact they have on biodiversity.

This is more complex than measuring carbon emissions (which are the primary metric in climate change risk reporting) and there are various methods in development for measuring biodiversity impact.

The table below sets out 3 well-regarded metrics:

Biodiversity Intactness Index (BII)	A baseline of the number and diversity of species at near-undisturbed sites is calculated from ecological studies conducted across the world, and the current number of species in an area is compared to this baseline. **Expressed as: %** **For example:** Canada has a BII of 89.3%, meaning that 89.3% of their biodiversity remains.
Mean Species Abundance (MSA)	The Mean Species Abundance (MSA) is a metric which expresses the mean abundance of original species in a habitat compared to their abundance in an undisturbed habitat, measuring the extent an ecosystem is intact. **Expressed as: number on a scale from 0 (all original species are locally extinct) to 1 (the species are fully intact)** **For example:** A particular region may have an MSA of 0.2, meaning that 20% of the original species are intact.
Corporate Biodiversity Footprint	This estimates the biodiversity impact of corporates throughout their value chain, factoring in the impact of a company's supply chain and of its products. This environmental impact is then allocated to the capital provided, which means the impact of each asset and therefore the overall impact at portfolio level can be computed. **Expressed as: MSA.km^2** **For example:** If a portfolio has a CBF of -4,000 MSA.km^2, its investments potentially contribute to a fully degraded area equivalent to 4,000km^2

Measuring biodiversity impacts is a developing area and there are general limitations to species richness metrics (such as BII and MSA). For example, analysis on broad areas over larger time periods is more reliable, but less useful for a given portfolio or company, than filtering for smaller areas and time periods. There are also a number of uncertainties around comparing species richness among locations. For Corporate Biodiversty Footprint, there is not always a link between corporate activity and the impact expressed in the MSA, and ultimately there is currently limited availability of data at a corporate level to document the most material impacts.

This is an area where we expect to see development of methodology and a build-up of reporting over time. However, it's important to note that the lack of perfect data needn't prevent action to identify risks and mitigate them.

Opportunities for investors

Biodiversity and consideration of natural capital is a growing source of risk for investors, and is financially material, so should be assessed as part of robust ongoing investment management.

There are now clear global commitments arising from COP15, regulation and reporting frameworks like TNFD being put in place for companies and investors which will lead to greater focus and ultimately change in behaviour. There could be benefit from taking time upfront to understand your current exposure and consider the implications for your investment strategy in the context of your broader objectives.

Considering impact on biodiversity is a key means to manage risk. However, looking to address biodiversity challenges also brings investment opportunities. It's estimated that protecting biodiversity could generate business opportunities worth $10tn a year (Source: UN).

The investments currently available that can have a direct role in promoting biodiversity are typically real assets and private market investments. Investing in sectors such as sustainable materials, land and animal preservation (including peatland restoration and woodland creation), water ecosystems including 'blue carbon' (the carbon stored in coastal and marine ecosystems), recycling, and recirculation. There are also biodiversity equity funds available, which consist of a portfolio of best-in-class companies whose businesses serve to help to preserve or replenish biodiversity. These funds may also generate science-based carbon offsets through the regeneration of nature and biodiversity, as an additional source of return. Green bonds linked to biodiversity may become common for pension schemes' portfolios where they act as a source of income and for liability matching, whilst also contributing to biodiversity projects.

More generally there is a growing realisation that biodiversity will have relevance for most investment portfolios. Those who seize opportunities early on in transition could potentially see the most advantage.

Protecting and regenerating biodiversity could generate business opportunities worth $10tn per year.

Key actions for investors

1	**Undertake training** on biodiversity and implications for financial outcomes
2	**Understand** how biodiversity risks are considered by your investment managers
3	**Analyse** your current exposure to key sources of biodiversity risk
4	**Engage** with your managers to understand what data is available
5	**Consider sustainable funds** which proactively address natural capital risks and opportunities, including opportunities in private capital and thematic equities

How XPS can help?

XPS can provide training to trustees on biodiversity risks as they pertain to your investments, as well as understanding what solutions may be available to deliver trustees' objectives whilst better managing these sustainability risks.

XPS can also assess your risk and review your investment portfolio to assess the biodiversity impact.

Camilla O'Brien
Investment Associate
t 0113 284 8036
e camilla.obrien@xpsgroup.com

Alex Quant
Head of ESG research
t 020 8059 7652
e alex.quant@xpsgroup.com

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UK Employee Experience Awards 20 – Silver Award Winner – Employee-centric Company

UK Stewardship Code

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