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Biodiversity on the brink

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We believe investors should be turning their attention to tackling global biodiversity loss. Global biodiversity loss is estimated to be 100 to 1,000 times higher than the (naturally occurring) background extinction rate, faster than at any other time in human history (or, indeed, in the last 66 million years).[1] This loss is already affecting food security, livelihoods, health and quality of life worldwide, and in economic terms, more than half of the world's GDP is at moderate to severe risk.[2] This article aims to provide a high-level introduction to biodiversity for investors; we will continue our work in this space and further develop our thinking both as we research asset managers and meeting client demand.

Apart from an absolute moral obligation to conserve nature, recognized by secular ethicists[3] and religious creeds alike, humanity's prospects are indelibly tied to it. We know, for example, that human well-being is linked to green space,[4] that the human body is entirely dependent on bacteria and other microbes (approximately half of the cells in our bodies are nonhuman)[5] that the human body is entirely dependent on photosynthesizing species for oxygen, and that the human body relies almost exclusively on organic matter for nourishment. Moreover, not only are we dependent on natural foodstuffs, but these foodstuffs also rely on a wide array of species: pollinators, such as insects, and organisms in the soil, such as bacteria, earthworms and mycorrhizal fungi.

[1] See Wikipedia Biodiversity Loss (11/5/21) at https://en.wikipedia.org/wiki/Biodiversity_loss.

[2] Business for Nature Coalition, 2021, available at https://www.businessfornature.org/.

[3] For further reading, see Taylor PW. "The Ethics of Respect for Nature," *Environmental Ethics*, Volume 3, Issue 3 (1981), pp. 197–218.

[4] Houlden V, Weich S, de Albuquerque JP, Jarvis S, Rees K. "The Relationship Between Greenspace and the Mental Wellbeing of Adults: A Systematic Review," *PLOS One*, Volume 13, Issue 9 (2018).

[5] Sender R, Fuchs S, Milo R. "Revised Estimates for the Number of Human and Bacteria Cells in the Body," *PLOS Biology* , Volume 14, Issue 8 (2016).

This obligation to conserve has been neglected, as alarming losses of biodiversity are widely evidenced. The following are a few examples:

- A study in Germany found there was a 76% fall in insect levels over a 27-year period (in nature reserves, where insecticides are not commonly applied).[6]
- Thirty-three percent of Earth's soil is already degraded, with estimates that up to 90% could be degraded by 2050.[7]
- Global freshwater fish stocks declined by 76% in the period 1970 to 2016.[8]

As we have demonstrated, humanity is not separate from the natural world but dependent upon it. The continuation of this loss in biodiversity may represent the most significant risk to the long-term sustainability of society and economic activity. For investors who finance the economic activities linked to the destruction of ecosystems, biodiversity loss is a source of financial risk.[9] At a higher level, the new economics of biodiversity raises fundamental questions about the capacity for long-term economic growth. There are potentially dramatic implications for long-term asset returns as well as inflation.

Yet the consideration of biodiversity in the investor landscape is still nascent across the majority of asset owners and asset managers.[10] The scale of private investment in ventures designed to restore biodiversity remains low.[11] A material problem for investors is the lack of data on which to assess the effects their investments have on "natural capital" and the risks these pose, but this is starting to change, as is government regulation to protect the natural world. Biodiversity preservation also links in with the net-zero ambition: We cannot reach net-zero emissions without fully considering nature-based approaches.

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[6] Hallmann CA, Sorg M, Jongejans E, Siepel H, Hofland N, Schwan H, et al. "More Than 75 Percent Decline Over 27 Years in Total Flying Insect Biomass in Protected Areas," *PLOS One*, Volume 12, Issue 10 (2017).

[7] Food and Agriculture Organization of the United Nations, available at http://www.fao.org/about/meetings/soil-erosion-symposium/key-messages/en/.

[8] World Fish Migration Foundation. "The Living Planet Index (LPI) for Migratory Freshwater Fish," 2020, available at https://worldfishmigrationfoundation.com/wp-content/uploads/2020/07/LPI_report_2020.pdf.

[9] De Nederlandsche Bank and PBL Netherlands Environmental Assessment Agency. *Indebted to Nature: Exploring Biodiversity Risks for the Dutch Financial Sector*, June 2020, available at https://www.pbl.nl/sites/default/files/downloads/4215-indebted_to_nature_-_exploring_biodiversity_risks_for_the_dutch_financial_sector_0.pdf.

[10] ShareAction. *Point of No Returns, Part IV — Biodiversity: An Assessment of Asset Managers' Approaches to Biodiversity*, June 2020, available at https://shareaction.org/wp-content/uploads/2020/06/ShareAction-Biodiversity-Report-Final.pdf.

[11] OECD, 2020, available at https://www.oecd.org/environment/resources/biodiversity/report-a-comprehensive-overview-of-global-biodiversity-finance.pdf.

Defining biodiversity and natural capital

Simply put, biodiversity is the natural variety of species present within and across ecosystems and the natural genetic variation within species. It is a critical element in what has become known as "natural capital," which can be defined as the "renewable and nonrenewable resources" that combine to yield benefits to humans, including not just plants and animals but also air, water, soils and minerals.[12] Biodiversity encompasses three main types of diversity, as set out in Figure 1.

Figure 1. The three main types of diversity

Ecological diversity	Species diversity	Genetic diversity
The network of species in an ecosystem as well as the abiotic (nonliving) matter on which they rely	The number of species living within any given ecosystem	The diversity of genetic material or the foundations required for species to respond to change

How big is the problem?

The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) is the international scientific body empowered by governments to assess the state of global biodiversity and ecosystem services. The IPBES 2019 *Global Assessment Report*[13] found, among numerous other findings, that biodiversity is under severe threat:

- "Human activities have already severely altered 75% of terrestrial and 66% of marine environments, threatening the survival of around 25% of the assessed animal and plant species."
- "Nature and its vital contributions to people, through biodiversity and ecosystem services, are deteriorating worldwide."
- "Current goals for conserving and sustainably using nature [to 2030 and beyond] cannot currently be met under current trajectories."

[12] Natural Capital Coalition, 2021, available at https://naturalcapitalcoalition.org/natural-capital-2/.

[13] IPBES. *The Global Assessment Report on Biodiversity and Ecosystem Services*, 2019, available at https://ipbes.net/sites/default/files/2020-02/ipbes_global_assessment_report_summary_for_policymakers_en.pdf.

The urgency of transforming the way humans interact with nature cannot be overstated. Ecologists have observed that we are already living during the Earth's sixth mass extinction event,[14] with approximately one million species currently at risk from extinction and an accelerating rate of species extinction.[15]

The biodiversity policy landscape is complex. We have detailed several key policy and international agreements on biodiversity in the Appendix.

From an investor perspective, this loss in biodiversity will affect the capacity for long-term economic growth and is likely to have potentially dramatic implications for long-term asset returns. This has been highlighted through the *Dasgupta Review on the Economics of Biodiversity*,[16] an independent review commissioned by the UK government and launched earlier this year. The review sought to understand the sustainability of our interaction with nature and prioritize efforts to enhance nature and prosperity through applying finance and economic principles. Some key takeaways from this review include:

- "Nature is an asset, and we have failed to manage our natural capital in a manner that maintains resilience and productivity. According to the Global Footprint Network,[17] we need 1.6 Earths to be able to continue current living standards."
- "Our economies are embedded within nature, not external to it. As nature is only capable of producing a finite flow of goods and services (upon which we rely), the economic model of growth is bounded. If capital markets are to function more effectively, we must account fully for the impact of our interactions with nature and rebalance our demand on its capacity to supply." This is a significant challenge to the typical assumption of perpetual growth built into many long-term asset models. It has substantial implications for achievable long-term asset returns.
- "Management and mitigation of nature-related financial risks can lead to increased resilience of balance sheets for financial institutions. … By channeling credit and investments toward projects that enhance, rather than degrade, natural capital and ecosystem services, financial institutions are exposed to investments with relatively lower risk and greater certainty around yields."[18]

[14] National Geographic. "Extinct Species, Explained," February 5, 2019, available at https://www.nationalgeographic.com/animals/reference/extinct-species/.

[15] IPBES. *The Global Assessment Report on Biodiversity and Ecosystem Services*, 2019, available at https://ipbes.net/sites/default/files/2020-02/ipbes_global_assessment_report_summary_for_policymakers_en.pdf.

[16] UK Government. *The Dasgupta Review — Independent Review on the Economics of Biodiversity*, April 2020, available at https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/882222/The_Economics_of_Biodiversity_The_Dasgupta_Review_Interim_Report.pdf.

[17] Global Footprint Network, available at https://www.footprintnetwork.org/.

[18] World Business Council for Sustainable Development (WBCSD). *Extract From the Economics of Biodiversity: The Dasgupta Review (2021) — Summary Brief for Business*, available at https://www.wbcsd.org/download/file/11278.

Transformative change is required in the relationship of societies and economies with nature through the implementation of new policy and technology.[19] Measures to restore biodiversity can also be part of the solution for many of the climate-related challenges we face since, in many cases, land and marine habitat restoration will sequester carbon emissions from the atmosphere.

Key industry initiatives

In light of growing scientific concerns and policy requirements, a growing body of investors is urging stronger consideration of biodiversity by the global investment community. The challenge of addressing biodiversity risks in investments is complex, and, as in the early stages of climate-change considerations, several significant collaborative initiatives have been created to address the problem.

Of note, the **Taskforce on Nature-Related Financial Disclosures (TNFD)**, a similar concept to the Taskforce for Climate-Related Financial Disclosure (TCFD), aims to provide a framework for corporates and financial institutions to manage and report on nature-related risks.[20] However, the lack of data and the complexity of monitoring biodiversity make this a far more significant exercise than that undertaken by the TCFD. Despite the difficulties, a framework for financial disclosures on natural capital is necessary for enabling investors to take action, and the TNFD will be vital in providing investors with a consistent basis for reporting their biodiversity-related risks (as well as opportunities).

Other key collaborative initiatives include:

- **Business for Nature Coalition**, influencing the Post-2020 Global Biodiversity Framework[21]
- **Natural Capital Finance Alliance**, pioneering natural capital tools and methodologies[22]
- **Finance for Biodiversity Pledge** to restore and protect biodiversity through finance[23]
- **Partnership for Biodiversity Accounting Financials**, disclosing biodiversity-related impacts[24]
- **Act4Nature Alliance**, for understanding the direct and indirect impacts on biodiversity[25]

[19] IPBES. *The Global Assessment Report on Biodiversity and Ecosystem Services*, 2019, available at https://ipbes.net/sites/default/files/2020-02/ipbes_global_assessment_report_summary_for_policymakers_en.pdf.

[20] Taskforce on Nature-related Financial Disclosures (TNFD), 2021, available at https://tnfd.info/.

[21] Business for Nature. "Nature Is Everyone's Business," available at https://www.businessfornature.org/.

[22] Natural Capital Finance Alliance, available at https://naturalcapital.finance/.

[23] Finance for Biodiversity Pledge, available at https://www.financeforbiodiversity.org/.

[24] Partnership for Biodiversity Accounting Financials, available at https://pbafglobal.com/.

[25] Act4Nature International, available at http://www.act4nature.com/en/.

Investing to support biodiversity

Investors have dedicated relatively limited time to biodiversity risk compared to the work they have completed on climate-change risk — or any other financial risks. A ShareAction report[26] that assessed 75 of the world's largest asset managers on, among other aspects, their biodiversity approaches, deemed only two to have a robust approach (high score). A recent study by Responsible Investor Research and Credit Suisse surveying 327 investors from 35 countries[27] identified the following key business risks associated with biodiversity loss (in order of perceived importance):

1. Reduced productivity of natural systems
2. Supply chain risk
3. Reduced quotas/reduced access to land and resources
4. Reputational risk
5. Risk of litigation/regulation
6. Changing consumer preferences
7. Sustainability requirements and labels
8. Financing risk

The food and beverages, healthcare, and consumer goods sectors were identified as most at risk from biodiversity loss. However, no sector will be able to escape the long-term impacts of biodiversity exploitation.

The top three barriers to investing to support biodiversity identified in this study were:

1. Lack of availability of data and metrics
2. No way to value natural capital adequately
3. No internal expertise

Arguably, despite these challenges, there are opportunities for investors actively focused on addressing these risks. Most investors would likely consider, as a starting point, undertaking a baseline biodiversity impact assessment of their current portfolios. The lack of data in this area is therefore a significant hurdle that needs to be addressed. The EU green taxonomy (which is currently being drafted) will expand to include biodiversity. This should improve the data available to investors and ensure consistency (as suggested in *The Dasgupta Review*).[28] There are several actions investors may take to support biodiversity, with examples provided in Figure 2.

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[26] ShareAction. *Point of No Returns, Part IV — Biodiversity: An Assessment of Asset Managers' Approaches to Biodiversity*, June 2020, available at https://shareaction.org/wp-content/uploads/2020/06/ShareAction-Biodiversity-Report-Final.pdf.

[27] Responsible Investor Research and Credit Suisse. *Unearthing Investor Action on Biodiversity*, January 2021, available at https://www.esg-data.com/copy-of-age-of-extinction.

[28] UK Government. *The Dasgupta Review*, 2020, available at https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/882222/The_Economics_of_Biodiversity_The_Dasgupta_Review_Interim_Report.pdf.

Figure 2. Mercer's four-pillar framework for initiating action on biodiversity

	Integration	Stewardship	Investment	Exclusions
Headline	Include biodiversity risk in investment analysis and investment decision-making.	Engage in active dialogue with companies failing to address biodiversity. See to tackle risks through voting and engagement.	Allocate to thematic investments that will help support restoration of biodiversity.	Screen out sectors or companies deemed harmful to biodiversity and/or not acceptable to profit from.
Objective	Broader perspective on risk/opportunity	Company/market improvements	Long-term growth and positive "impact"	Alignment of mission and values
Potential action	• Advocate for improvements in biodiversity-related data, both locally and through global networks. • Begin to integrate biodiversity into net-zero commitments. • Promote integration of biodiversity considerations with managers and internal investment teams.	• Participate in public policy engagement. • Establish proxy-voting guidelines on biodiversity loss. • Increase targeted engagement and shareholder resolution exercises focused on companies within key sectors involved in biodiversity loss (for example, food and agriculture). • Participate in collaborative initiatives (see key industry initiatives above).	• Identify opportunities to invest in solutions to biodiversity loss and the regeneration of biodiversity. • Report on metrics, including mapping to biodiversity-linked United Nations Sustainable Development Goals[29] (SDGs) (for example, SDGs 11 and 12 and SDGs 14 and 15).	• Following engagement, consider divestment from sectors/companies that may have a detrimental impact on biodiversity.

[29] United Nations Sustainable Development Goals, available at www.un.org/sustainabledevelopment/.

Undoing society's impact on biodiversity requires action now. With more than half of the world's GDP currently at moderate-to-severe risk from nature loss, addressing this issue now will likely be significantly less costly than delay. It will also help address other risks, such as climate change (itself a major driver of biodiversity loss). Although there are significant challenges to overcome, there are actions investors can start considering.

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Appendix

Key policy and international agreements

Notable examples of international bodies with remits related to biodiversity are as follows:

- The **United Nations Environment Programme (UNEP)** sets the global agenda on the environment.[30]
- The **Convention on Biological Diversity (CBD)** is the body responsible for major international agreements with an explicit focus on biodiversity.[31]
- The **Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)** aims to ensure that international trade in specimens of wild animals and plants does not threaten the survival of the species.[32]
- The **United Nations Framework Convention on Climate Change (UNFCCC)** also aims to keep global temperature rise to well below 2ºC and pursue efforts toward 1.5ºC, which requires nature-based approaches.[33]

Similarly, many international agreements cover both land and marine biodiversity, including conservation agreements (to preserve biodiversity), thematic agreements controlling the use of biodiversity for economic or financial purposes (for example, fisheries or endangered species trade), the fair sharing of benefits arising from the use of biodiversity, and reducing the human impact on nature (for example, emissions).

The post-2020 Global Biodiversity Framework[34] is one notable framework currently being drafted by the Convention on Biological Diversity. It builds on the Strategic Plan for Biodiversity 2011–2020 (including the Aichi Biodiversity Targets[35]). To 2050, the focus is on increasing the area, connectivity and integrity of natural ecosystems, reducing the number of threatened species, and promoting sustainable and equitable use of natural resources.

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[30] UNEP, 2021, available at https://www.unep.org/.

[31] CBD, 2021, available at https://www.cbd.int/.

[32] CITES, 2021, available at https://cites.org/eng.

[33] United Nations Climate Change, available at https://unfccc.int/.

[34] CBD. *Updated Zero Draft of the Post-2020 Global Biodiversity Framework*, August 2020, available at https://www.cbd.int/article/zero-draft-update-august-2020.

[35] The Aichi Biodiversity Targets (https://www.cbd.int/sp/targets/) were established by the CBD in 2011, comprising 20 biodiversity targets to 2020. The targets focused on raising awareness on the causes of biodiversity loss, reducing direct pressures on biodiversity and promoting sustainable use, as well as ensuring the equal sharing of benefits arising from biodiversity. Parties to the agreement, however, largely failed to deliver the Aichi targets, and, in some cases, moved further away from the target in question.

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