Counting the Cost of Biodiversity Loss

Addressing the challenge of integrating biodiversity into investment analysis.

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KEY INSIGHTS

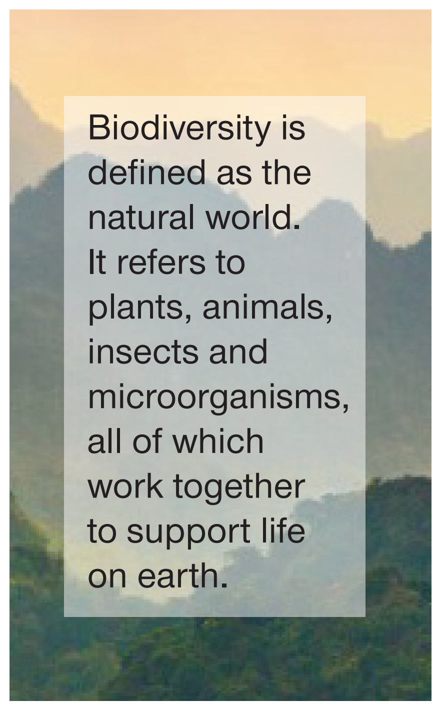
- Preserving biodiversity is essential to the long-term social and economic development of humanity.
- Data on biodiversity impact remain scarce with the universe of issuers sharing measurable data points on biodiversity outcomes limited.
- In the absence of data that measure the biodiversity impact of investments, proprietary research and analysis is essential.

The natural world is undergoing unprecedented, exponential deterioration,[1] with human activity being the principal driver.[2] Consequently, the rates of species loss are unparalleled in human history. Research shows that one million species are now threatened with extinction within the next few decades,[3] setting Earth on an alarming trajectory for what biologists warn could be the sixth mass extinction.[4]

The Importance of Preserving Biodiversity

We believe that preserving biodiversity is essential to the long-term social and economic development of humanity, and also that biodiversity loss and climate change are fundamentally interlinked twin crises.

Natural carbon sinks (both on land and underwater) play a key role as they absorb significant amounts of human-generated greenhouse gas (GHG) emissions. In turn, climate change, whether through changing rainfall patterns, extreme weather events, or ocean acidification, is having a materially negative impact on biodiversity. Furthermore, biodiversity is so vital to maintaining a sustainable future for humanity that its loss undermines 80% of the United Nations Sustainable Development Goals (SDG) targets relating to poverty (SDG 1), hunger (SDG 2), health (SDG 3), water (SDG 6), cities (SDG 11), climate (SDG 13), oceans (SDG 14), and land (SDG 15), whereas biodiversity preservation and restoration support the delivery of targets for the SDGs related to education (SDG 4), gender equality (SDG 5), reducing inequality (SDG 10), and peace and justice (SDG 16).



[1] WWF Living Planet Report 2022—Building a nature-positive society. Almond, R.E.A., Grooten, M., Juffe Bignoli, D. & Petersen, T. (Eds). WWF, Gland, Switzerland.
[2] Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), Models of drivers of biodiversity and ecosystem change.
[3] IPBES Global Assessment, 2019.
[4] A mass extinction is characterized as when Earth loses more than three-quarters of its species in a geologically short interval, as has happened only five times in the past 540 million years or so. Biologists suggest that a sixth mass extinction may be underway, given the known species losses over the past few centuries and millennia.

Natural Capital in Numbers

Biodiversity loss has distinct implications for many activities on which humans depend. While the ecological ramifications alone are alarming, calculating the impact in economic terms helps to emphasize the distinct opportunities and risks of investing (or not) to protect biodiversity and nature.

BIODIVERSITY AND THE GLOBAL ECONOMY

50%+

More than half of global GDP is highly or moderately dependent on natural ecosystems*

USD 598B–824B

Estimated global biodiversity financing gap (in USD)†

USD 10T

Estimated global annual investment required (in USD) for protecting nature over the next decade*

400M

Jobs could be created through protecting nature and increasing biodiversity*

* The World Economic Forum (WEF), September 2022.

† Paulson Institute, 2019.

FUNDING NEEDS FOR BIODIVERSITY CONSERVATION

Amounts needed in each sector to reverse the decline in biodiversity by 2030, according to the Paulson Institute (2019). Figures represent the upper limit of the funding need on an annual basis in USD.

FORESTS
USD 32B

FISHERIES
USD 47B

URBAN ENVIRONMENTS
USD 73B

RANGELANDS
USD 81B

INVASIVE SPECIES
USD 84B

COASTAL
USD 84B

PROTECTED AREAS
USD 192B

CROPLANDS
USD 420B

> Like many of our investee companies, we are looking to the development of frameworks like the Taskforce on Nature-Related Financial Disclosures (TNFD) for guidance to enhance our measurement of nature-related risks, opportunities, and financial implications.

To contextualize the cost of biodiversity decline in economic terms, the World Economic Forum (WEF) states that over 50% of global gross domestic product is highly or moderately dependent on natural ecosystems.[5] This is unsurprising since biodiversity is an implicit enabler asset that underpins many human activities.[6] For example, pollination by bees and other pollinators is vital to global food security—75% of the world's food crops rely on it.[7] According to the WEF, investing in opportunities that directly address the threats to biodiversity has the potential to generate up to USD 10.1 trillion in annual business value and 395 million jobs by 2030.[8]

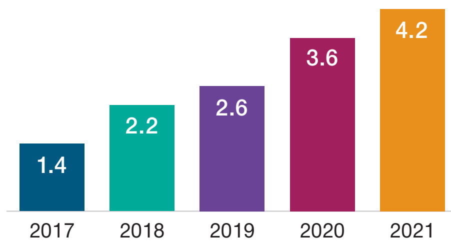
Integrating Biodiversity in Investment Analysis

With this in mind, we believe that a diligent, long-term investment strategy should consider biodiversity risks and opportunities. This does, however, present a variety of challenges to investors. For one, most investors are inherently reliant on quantitative data to inform the relative performance of corporate, sovereign, or municipal issuers. Data on biodiversity impact remain scarce, and while we are seeing a major uptick in corporate, sovereign, and municipal issuers setting goals concerning regenerative agriculture, climate, and deforestation (all factors that directly impact biodiversity), the universe of issuers sharing measurable data points on their actual biodiversity outcomes (such as Mean Species Abundance or Species Threat Abatement and Restoration) is limited. Moreover, third-party data sets for biodiversity remain relatively nascent, and where available, they are often very reliant on significant assumptions to deal with data gaps. Like many of our investee companies, we are looking to the development of frameworks like the Taskforce on Nature-Related Financial Disclosures (TNFD) for guidance to enhance our measurement of nature-related risks, opportunities, and financial implications. Comparable and consistent reporting will be a cornerstone for engagement and accountability in the space.

Indeed, we can look at the trend for climate disclosures for clues on how quickly we might expect more formalized nature-related information from corporates (Figure 1).

Average Number of TNFD-aligned Disclosures per Company by Fiscal Year

(Fig. 1) Average annual growth rate of 32%



As of October 2022.
Source: Taskforce on Climate-related Financial Disclosures 2022 Status Report, based on 1,370 companies surveyed.

With TNFD recommendations only released in 2023, it could be several years before investors have sufficient information on biodiversity impact for a wider investment universe—time that the natural world simply does not have.

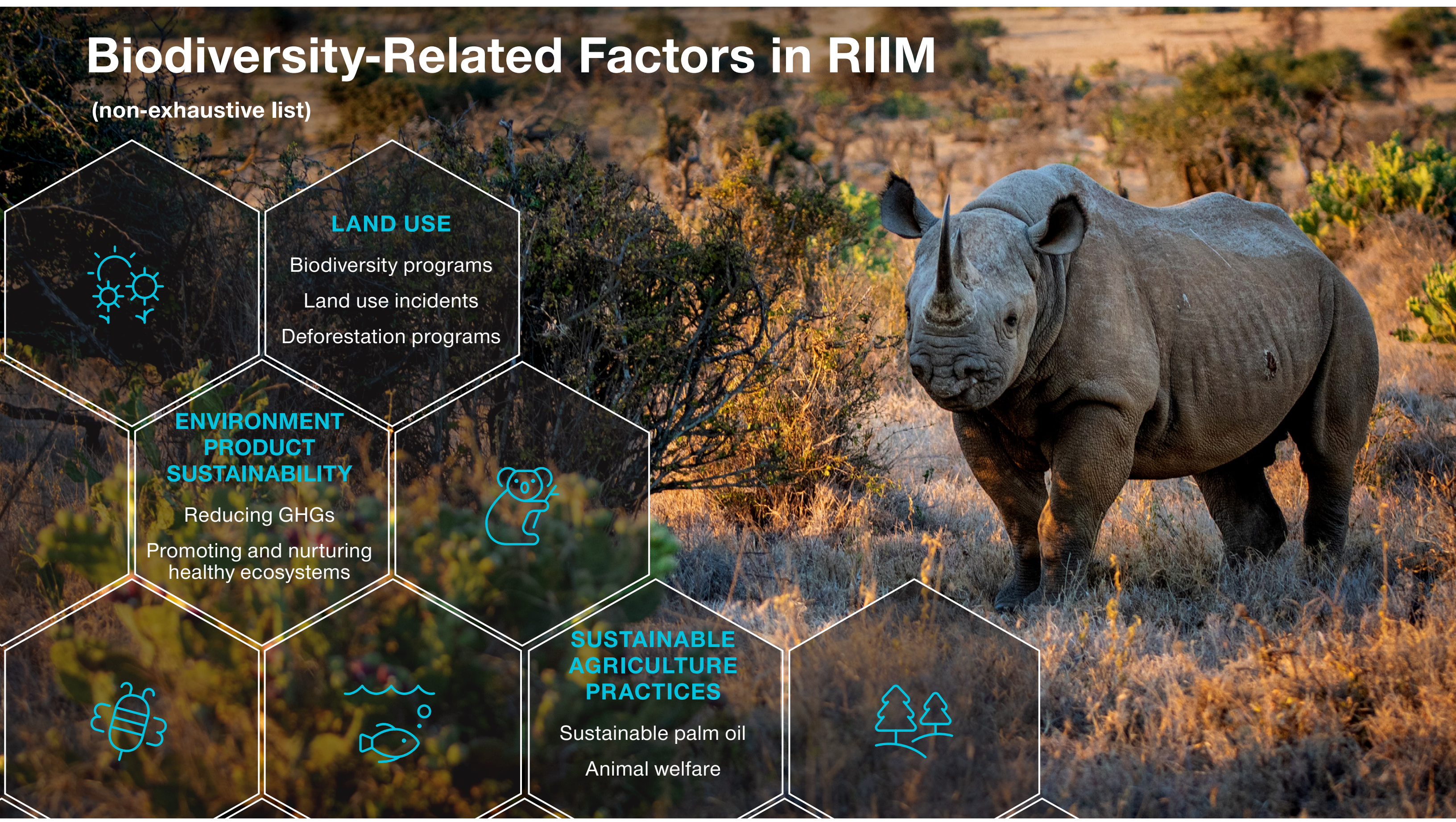
In the absence of data that measure the biodiversity impact of investments, what can investors do? We leverage quantitative and qualitative inputs that are drivers of biodiversity in our proprietary Responsible Investing Indicator Model (RIIM). Key parameters in sovereign RIIM include terrestrial biome protection, protected areas, and species

[5] The World Economic Forum, September 2022.
[6] The Economics of Biodiversity: The Dasgupta Review, August 2021.
[7] United Nations, 2022.
[8] World Economic Forum, The Future of Nature and Business, July 2020.

habitat—all of which are inextricably linked to biodiversity outcomes. Our responsible investing analysts undertake in-depth research into corporates, which includes consideration of sectors and business activities that are either highly dependent or heavily impactful on biodiversity. This evaluation, alongside a variety of other fundamental, technical, and ESG metrics, are inputs that may be used by our investment teams in their capital allocation decisions. Also, as part of our wide range of investment products, T. Rowe Price offers products with specific ESG objectives and/or characteristics.

During 2022, the TRPA responsible investment team undertook analysis at the corporate level that included assessments of biodiversity risks and opportunities. Among them was an analysis of Brazil's listed meat producers and the impact they have on Amazonian deforestation. Further, we engaged with a variety of sovereign, supranational, and agency issuers and corporates on biodiversity.

Some securities we evaluate also feature specific biodiversity factors. In 2022, these included Uruguay sovereign bonds, which explicitly tie cost of capital to biodiversity targets, and International Bank for Reconstruction and Development/World Bank supranational bonds that promote wildlife conservation. The World Bank's Wildlife Conservation Bond, often referred to as the Rhino Bond, is an innovative, outcome-driven fixed income instrument that channels funds to biodiversity conservation.[9]



[9] The specific securities identified and described are for informational purposes only and do not represent recommendations.

ENGAGING WITH THE WORLD BANK ON ITS RHINO BOND

In 2022 we undertook an evaluation of the World Bank's Wildlife Conservation Bond, often referred to as the Rhino Bond. TRPA's emerging market debt, global impact credit, and responsible investing teams collaborated on an ESG engagement with the World Bank to request and encourage continued impact reporting, with tangible and quantifiable metrics related to the security.

The objective of our engagement was to reiterate our support for nature-based contingent capital instruments, as well as our desire to partner with the World Bank across its dual mandates of ending extreme poverty and promoting shared prosperity and greater equity.

We provided very specific feedback on impact metrics for the Rhino Bond, and the World Bank recommitted to reporting these, with credible third-party verification. T. Rowe Price will look to track progress based on ongoing public disclosure.

T. Rowe Price communicated why we felt it was imperative that the World Bank set the tone with the Rhino Bond and similar issuance. Specifically, the credible, tangible quantification and third-party verification elements of, in this instance, black rhino population growth were key for T. Rowe Price from a biodiversity perspective. Additionally, we believe there is a co-benefit around employment creation and education.

The World Bank welcomed the feedback and recommitted to public disclosure of the impact metrics we asked for, which we aim to track.

Following the engagement, we will continue to evaluate the World Bank's use of its capital market presence and activities to address its twin mandates.

URUGUAY'S SUSTAINABILITY-LINKED BOND

In 2022, our responsible investing team partnered with our emerging market debt investment team to meet with representatives of the Uruguayan government regarding its inaugural Sustainability-Linked Bond (SLB). The engagement focused on biodiversity and GHG reduction. We believe these twin crises are interlinked and that sovereigns are a key part of the solution.

In October 2022, Uruguay brought to market a first of its kind SLB, which had two key performance indicators focused on GHG reduction and native forestry.

We leveraged our engagement(s) and a variety of proprietary ESG integration tools, including our sovereign RIIM framework and separate ESG-labeled bond assessment models, in assessing the SLB.

Our assessment of Uruguay's credit and sustainability fundamentals; its ambition in setting stretching, yet impactful, sustainability targets; and elements of the post-issuance reporting (which we believe enhance credibility and transparency) was favorable. In our opinion, actively tying a sovereign's cost of capital to relevant sustainability metrics, which over time could impact creditworthiness, aids in promoting well-functioning capital markets.

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> ...COP15 has certainly put biodiversity firmly in the spotlight—and has gone some way towards raising awareness of the issue among governments, corporates, municipal issuers, and investors alike.

Biodiversity to Remain in the Spotlight

Looking ahead, we are encouraged by the outcome of the Kunming-Montreal COP15, namely a new Global Biodiversity Framework (GBF) that includes objectives for conservation, sustainable use, access, and benefits sharing and covers all the main drivers of biodiversity loss (land and sea-use change, exploitation of organisms, climate change, pollution, and invasive species). While it was notable that the framework did not ultimately include the term "nature positive,[10]" the headline "30 by 30" target[11] aims to ensure that by 2030 at least 30% of areas of degraded terrestrial, inland water, and coastal and marine ecosystems are under effective restoration. Much of the GBF is open to interpretation and is by no means all-encompassing, yet COP15 has certainly put biodiversity firmly in the spotlight—and has gone some way towards raising awareness of the issue among governments, corporates, municipal issuers, and investors alike.

[10] Nature positive (also referred to as "nature net positive") is a term increasingly used in the biodiversity sphere. It measures biodiversity outcomes beyond the prevention of the decline in nature (species and ecosystems) to include nature restoration. In relation to a rainforest, for example, it goes beyond prevention of deforestation to include the restoration of already degraded areas.

[11] Kunming-Montreal COP15, Final Text, 2022.

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