July 27, 2021

Valuing biodiversity: the tools at our disposal

We discuss an investor's perspective of the current tools, incentives, and initiatives available to value biodiversity.

Key takeaways

- The troubling fall in the biodiversity among earth's vital ecosystems is appreciated by investors.
- This leaves these same investors exposed to a multitude of risks—and unsure how to mitigate these risks.

- Our sustainability experts argue that the solutions to some of our most pressing biodiversity challenges may be closer than we think.

The unaffordable risk

In recent years, biodiversity loss has been consistently identified as one of the top risks to global business. The World Economic Forum's "Global Risks Report 2020" warns that biodiversity loss has come to "threaten the foundations of our economy" and rates biodiversity loss as the most impactful risk for the next decade, with critical implications for food and health systems and the disruption of entire supply chains. The report states that biodiversity is declining faster than at any other time in human history, with humanity already responsible for the loss of 83% of all wild mammals and half of all plants.[1]

"The Dasgupta Review," a seminal global review of the economics of biodiversity, produced a sober analysis of the devastating cost to nature caused by humans' relatively recent—and immense—advances in prosperity, and declared that nature is a "blind spot" in economics that can no longer be ignored by economic decision makers.

Investors have taken notice. In a recent investor survey of 327 asset managers and asset owners in 35 countries, 84% of survey respondents were "very concerned" about biodiversity loss.[2]

The investment community is becoming aware of the scale of the problem, yet a knowledge gap exists about *how* to manage the risks and opportunities associated with biodiversity. The same study noted that 72% of investors haven't assessed the impact of their investments on biodiversity, and that "70% believe a lack of available data is a key barrier to making investments supporting biodiversity."

This leaves investors, including those who already integrate sustainability issues into their investment decisions, vulnerable to a multitude of risks. And COVID-19 has brought into fine focus the risks of the sorts of behavior that create the ideal environment for zoonotic diseases to spill over to pandemic events—essentially, deforestation and habitat destruction.

Navigating biodiversity data

Nature houses separate and overlapping ecosystems of extreme complexity—physical systems of the land, water, soil, minerals, and air, as well as all resident organisms that science can name and classify. Within nature, biodiversity—the diversity of living things—is a vast and yet increasingly fragile web of multitudes, from the earth's largest mammals to teeming microorganisms. Supporting nature's biodiversity means protecting it from harm—and that, first and foremost, means tread *lightly* or tread *not at all*.

For investors, if it was clearer how to avoid so-called no-go zones and activities to eliminate further degrading biodiversity, that would be quite a good start. The do no significant harm ethic enshrined in the new EU taxonomy for sustainable finance can then be bolstered by the mitigation hierarchy, which is used in disciplines in health and safety. First, avoid negative outcomes; if avoidance isn't possible, minimize them—or only go forward if you can restore the harm you do. But policymakers, in many cases, still need to determine what these no-go zones and activities are, and investors need to assess what allocations may best support the preservation of ecological balance.

As a group, asset managers are accustomed to applying these negative screening criteria even though they can be blunt instruments whose ultimate benefit is questionable; however, when it comes to biodiversity, the idea of a no-go zone represents low-hanging fruit with enormous potential. Unlike negative screening in values-based investing, negative screening for biodiversity is scientifically driven and location specific.

Investing should warm to science as a form of biodiversity risk management

It's critical to understand that we need to preserve biodiversity where we can and ensure we draw on its resources without disrupting its regenerative capacity. That's why the language of science is so important when it comes to managing the scope of our impact.

In business speak, what gets measured, gets managed. Many investors acknowledge this and are increasingly embracing the concept that science should be the foundational language for thinking and communicating about sustainability. But according to the UN's Principles for Responsible Investment (PRI), access to the necessary data on biodiversity is limited.[3]

The PRI's findings demonstrate that the investment community knows biodiversity is important and understands that business is fundamentally reliant on it to produce its goods and services—more than half the world's GDP (US$44 trillion) is moderately or highly dependent on nature and its services.[1] But we have no consensus on how to make decisions that protect biodiversity, let alone improve it. Here we'd say that just because you think you can't measure biodiversity *perfectly* doesn't mean you can't measure it or manage it *at all*—or worse, claim it's not *worth* managing.

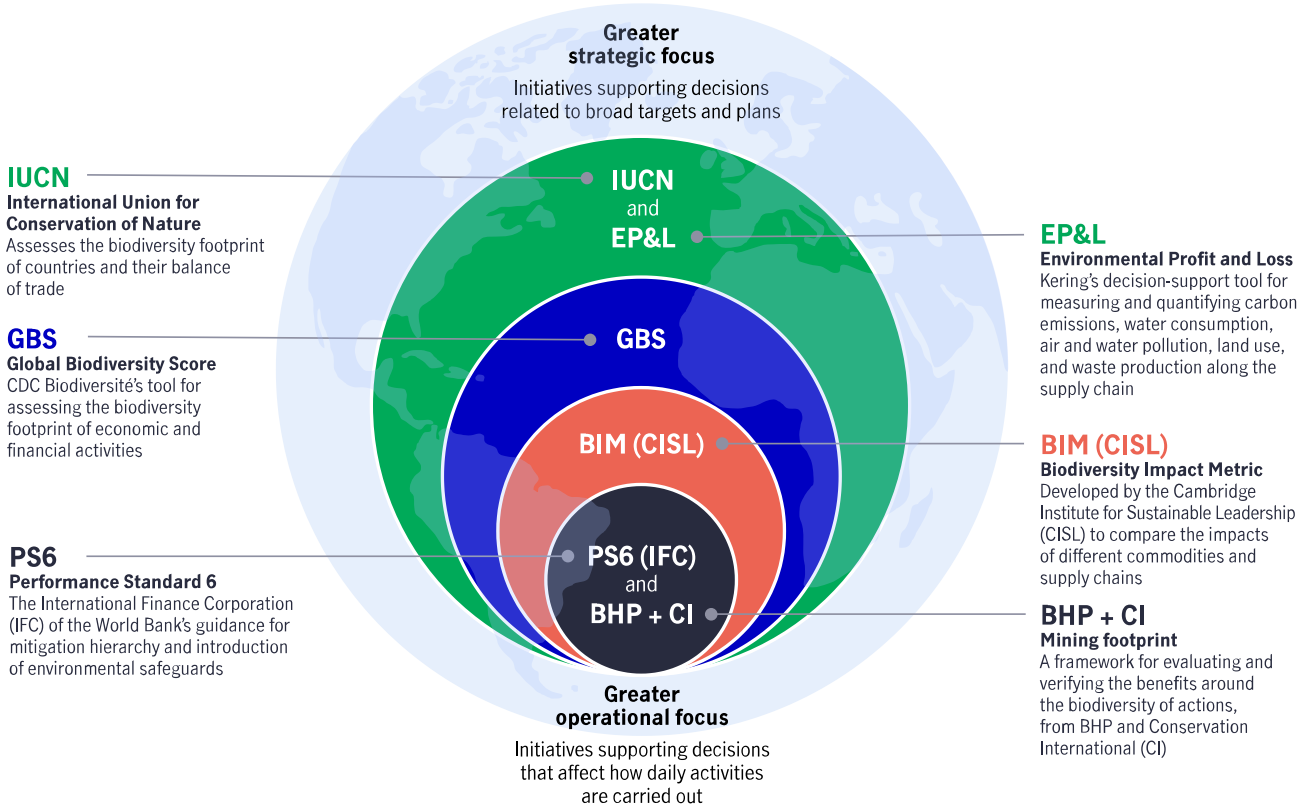
Our intellectual capital about natural capital may be greater than we think

The truth is, the financial sector *excels* at measuring the value of diversity; we do it all the time in quantitative analysis when we measure volatility and credit spreads. We're learning how to combine climate data with financial modeling, so how do we combine the science of biodiversity—including measurements of mean species abundance, water quality, and soil carbon—with the financial expertise we already possess?

When it comes to biodiversity, there's a place for scientists in investing—to measure, track, monitor, and verify the impacts and dependencies of investments. We need scientific measurements of species abundance, water quality, soil carbon—these aren't beyond our skills to map and model. At Manulife Investment Management, for instance, our timber group employs wildlife biologists who prepare biodiversity indexes for the forests we manage. It's why we have wildlife and biodiversity guidelines and policies that inform our research processes and how we build our portfolios.

A number of international initiatives are already dedicated to measuring the impact of various forms of economic activity on biodiversity and creating qualitative assessments to analyze and address this activity, covering a variety of different characteristics and application areas.

Frameworks for measuring and managing biodiversity risks and opportunities are expanding



Source: "Common ground in biodiversity footprint methodologies for the financial sector," October 3, 2018. For illustrative purposes only.

The question is, how do we harness large data sets and analytical tools to invest in companies, projects, and assets that can mitigate biodiversity-related risks? How can investors actively seek to bolster the ecosystems that we all depend on?

Next steps: the tools at our disposal

We know that the socioeconomic costs of production aren't fully reflected in the market prices of goods, from food to fossil fuels, and that we undervalue the natural capital that food production relies on.

But helpful tools already exist. We can consider the concept of use value—which computes how the tangible features of a commodity satisfy a useful purpose—and

the exchange value—the price at which the commodity is sold and bought in the market—of natural capital. In fact, natural capital accounting helps companies track stocks and flows of different forms of capital in the same way that traditional accounting does.

Companies can calculate a biodiversity footprint the same way they can calculate a carbon footprint, and there are a host of ways—qualitative and quantitative—to do this. At Manulife Investment Management, we consider biodiversity in the lifecycle of our research, operations, and ongoing risk management where we own and operate assets. Examples include:

- **Agriculture—**Honeybee health and pollinator habitats we manage in California consist of 16 acres of supplemental food to improve honeybee health. Large numbers of bee colonies are lost due to numerous factors; planting bee forage improves overall colony strength, as well as the productiveness of neighboring orchards.

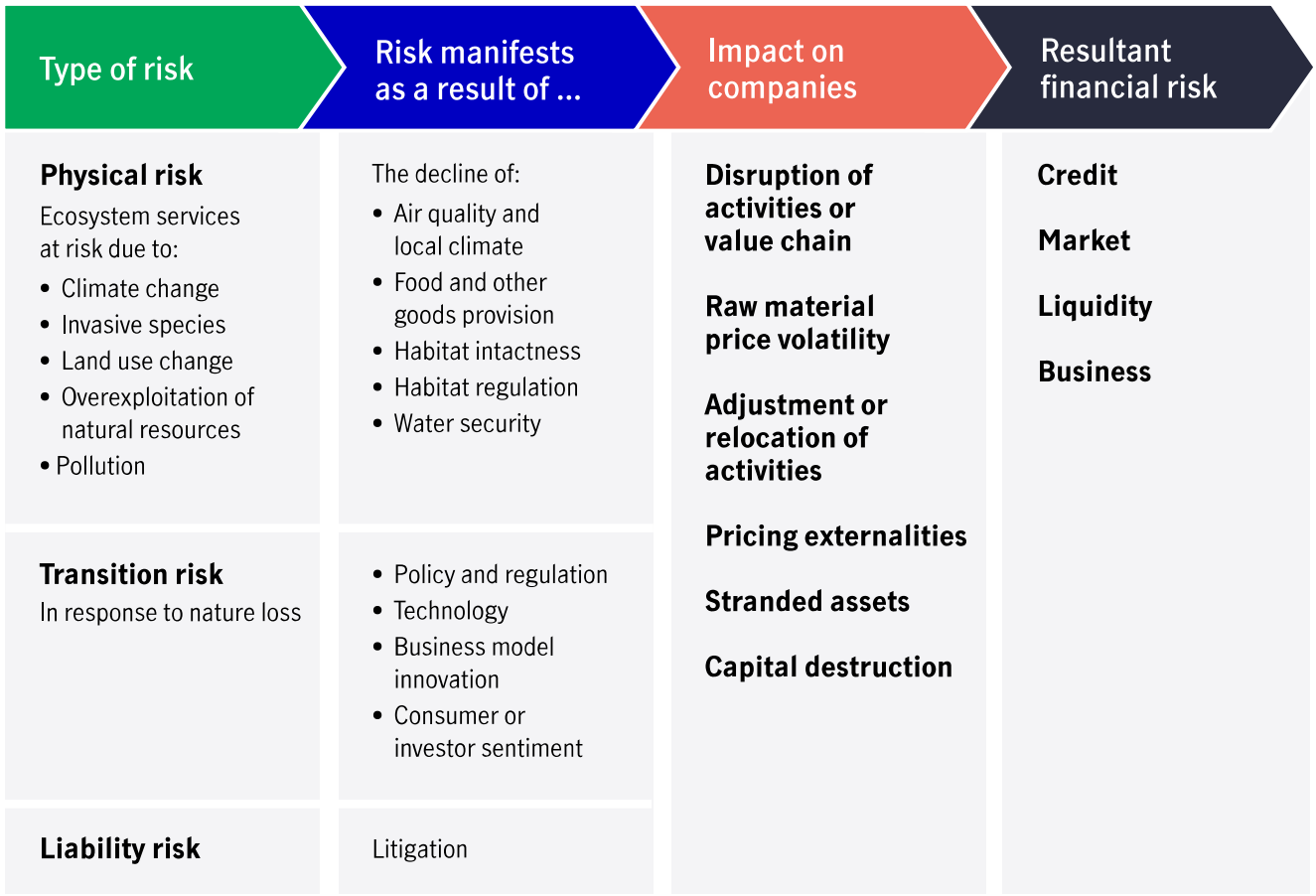
- **Timberland—**In line with our first principle—we have a zero-deforestation policy that ensures that the investments we make don't directly, or indirectly, contribute to deforestation. In addition, our species and communities of concern program consists of different combinations of action plans, awareness, modeling, and surveying, all under the auspices of adaptive management to develop a biodiversity index for each property. Rather than managing for each wildlife or plant species, we take a systems approach to promoting biodiversity, maintaining the habitats of various species through ecosystem management approaches that create and maintain a diversity of forest structure types.

- **Real estate—**In our global real estate portfolio, we review land use, green space, and biodiversity impact, and we use a variety of strategies for mitigating biodiversity loss, including limiting the use of chemical pest controls, operating green rooftop environments with native plant species and urban vegetable gardens, maintaining beehives, and protecting the environment for birds.

Tools are being developed for investors to better understand the connection between their portfolio and nature. For example, the University of Cambridge Institute for Sustainability Leadership recently published a handbook for understanding and

identifying nature-related financial risks, which we support through our membership of the Investment Leaders Group. Drawing from industry collaboration and deep research, the guide helps investors to think about nature in their investment process.

Framework for identifying nature-related financial risks



Source: "Handbook for Nature-Related Financial Risks: Key concepts and a framework for identification," University of Cambridge Institute for Sustainability Leadership, 2021.

The transparency of green bonds may be a game changer

Investors have other tools for supporting biodiversity, such as green bonds. At the sovereign level, they can capture the economic benefits or incentivize the pricing of environmental externalities in a way that a green bond framework for corporates can't.

and they can provide investors with a meaningful way to support biodiversity by viewing the use of proceeds and applying their criteria for ruling investments in—or out of—their portfolios.

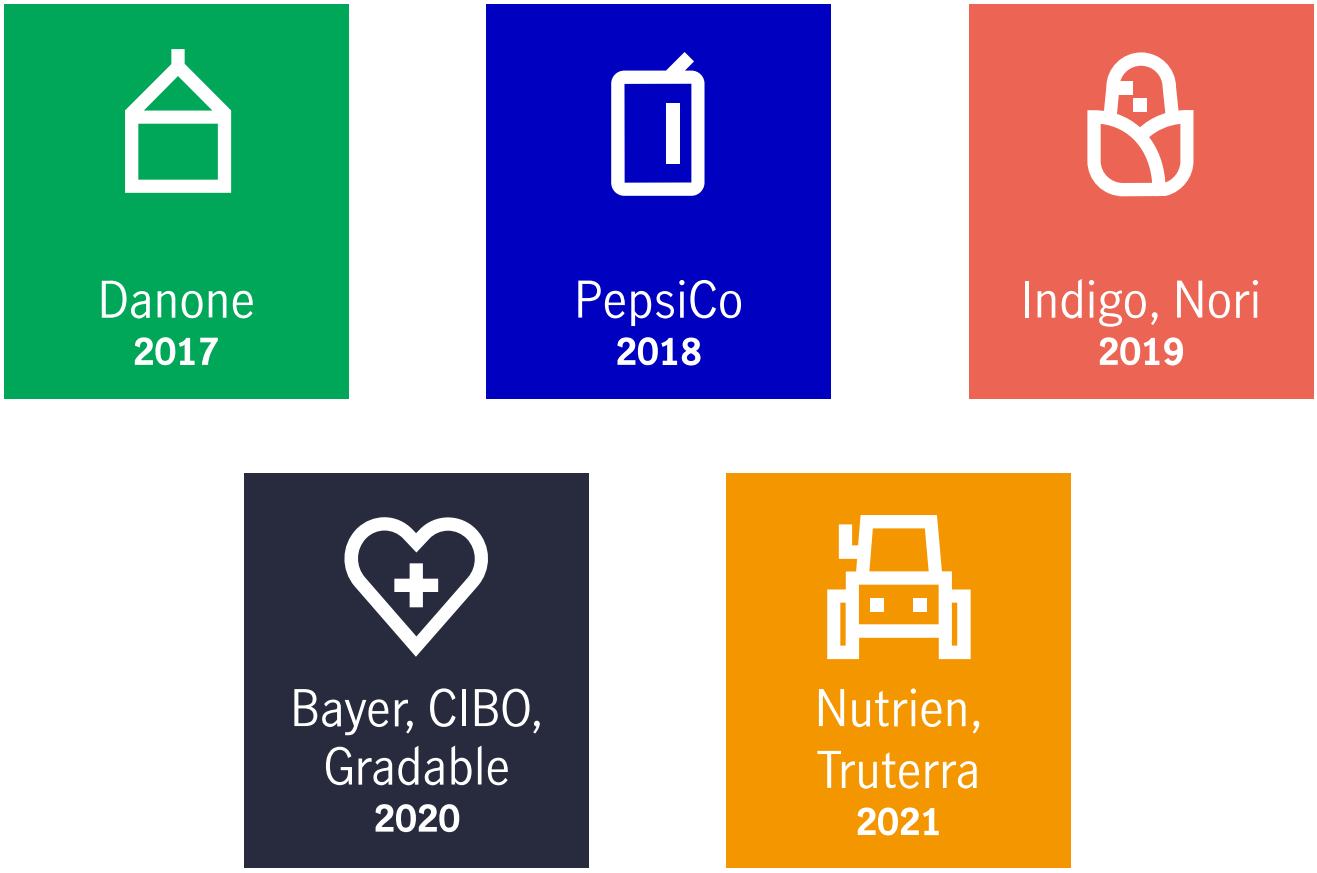
The transparency of green bonds may be a game changer for biodiversity. Being able to track environmental information on how money is used has fundamentally changed how people think about the debt market. In the third quarter of 2020, almost 14% of bonds issued in the European debt capital market were issued as use of proceeds instruments that support climate-related or environmental projects.[4] This significant improvement to transparency is serving investor demand to understand what happens to their investments.

Nature-related disclosure at the issuer level

The contributions of nature to our global economy, through pollination, water quality, and basic materials, are fundamental. And industries that are particularly dependent on nature, such as construction, agriculture, and food and beverages, must begin to disclose the nature-related opportunities and risks that exist for their businesses.

Currently, investors can express a value for biodiversity by taking action through corporate engagement and escalation for a visible issue, such as deforestation. But investors are working with incomplete data: Once limits are placed on the use of nature, it will acquire a scarcity value that can be priced.

Recent corporate sustainability strategies



Source: danone-north-america-expands-the-most-comprehensive-regenerative-agriculture-program-in-the-dairy-industry," December 21, 2020; pepsico.com/sustainability/overview, 2021; https://www.indigoag.com/carbon/for-farmers, 2021; "Trey Hill and other farmers are hoping Joe Biden will pay them to lock carbon in their soil," the *Washington Post*, January 22, 2021; "Bayer takes steps to make carbon sequestration a farmer's newest crop opportunity," July 21, 2020; "CIBO Frequently Asked Questions," February 24, 2021; Gradable Carbon, February 23, 2021; Sustainable-Ag | Nutrien Ag Solutions, March 2, 2021; "Landolakes first-ever-farmer-owned-carbon-marketplace," February 4, 2021.

Some companies are incorporating both climate and biodiversity into their sustainability strategies, but while sustainable production practices exist, our food systems are currently the single biggest underlying source of the decline in nature—agriculture alone threatens 86% of the species at risk of extinction.[5] At the same time, food systems themselves are dependent on biodiversity and, therefore, are undermined by its loss, threatening food security just as the impacts of climate change on

biodiversity become more pronounced. On the farmlands we manage at Manulife Investment Management, we focus on the use of food systems that *promote* biodiversity by, for example, maintaining extensive honeybee health and pollinator habitats. And we're proud to have helped develop Leading Harvest's new standards for measuring food producers' adherence to sustainable farming practices.

The new task force steering finance toward nature-positive outcomes

As we learn more about the interaction between climate and nature, we're understanding that we need to look at these two issues together. Just as for the effects of climate change, investors need to understand nature-related dependencies, risks, and impacts. For this, they need robust, reliable information at the issuer level and disclosures that are standardized and comparable.

Regulators; governments; environmental, social, and governance rating agencies and data providers; nongovernmental organizations; and academics continue to ramp up investor action on biodiversity. Manulife Investment Management is among the signatories of the "Investor Letter on Biodiversity Metrics," calling for increased transparency and data collection of biodiversity metrics.

Now, the Task Force on Nature-related Financial Disclosures (TNFD) aims to create reporting standards for biodiversity and natural capital that "steer finance towards outcomes that are nature-positive." Manulife Investment Management is proud to be among the informal working group members of the TNFD, and we're excited to see the launch of an effective response to much-needed guidance in this space. We believe that nature-related disclosures will help financial institutions shift finance away from destructive activities and direct flows, at scale, toward nature-positive activities.

We do have a variety of powerful tools at our disposal that can help us mobilize the capital markets in support of biodiversity goals. And that's welcome news when we consider the fundamental importance of biodiversity—for the survival of earth and for our own survival as a species.

1 The Global Risks Report 2020, World Economic Forum, January 2021. **2** Unearthing investor action on biodiversity, Credit Suisse, January 2021. **3** "Investor action on biodiversity: discussion paper," PRI, September 2020. **4** "The role of the sustainable bond markets in promoting biodiversity," ICMA podcast, December 1, 2020. **5** "Our global food system is the primary driver of biodiversity loss," unep.org, February 3, 2021.

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