

Guest editors

**Andrew J. Hoffman
and Nicholas Poggioli**

Contributing authors

Pratima Bansal
Kevin Brennan
Maurie J. Cohen
Paul Dewick
Cigdem Z. Gurgur
Joerg S. Hofstetter

Ju Young Lee
Alice Mascena
Rohit Nishant
Saeed Rahman
Joseph Sarkis
Patrick Schröder

Himanshu Shekhar
Natalie Slawinski
P.J. Stephenson
Thompson S.H. Teo
Judith Walls
Monika Winn

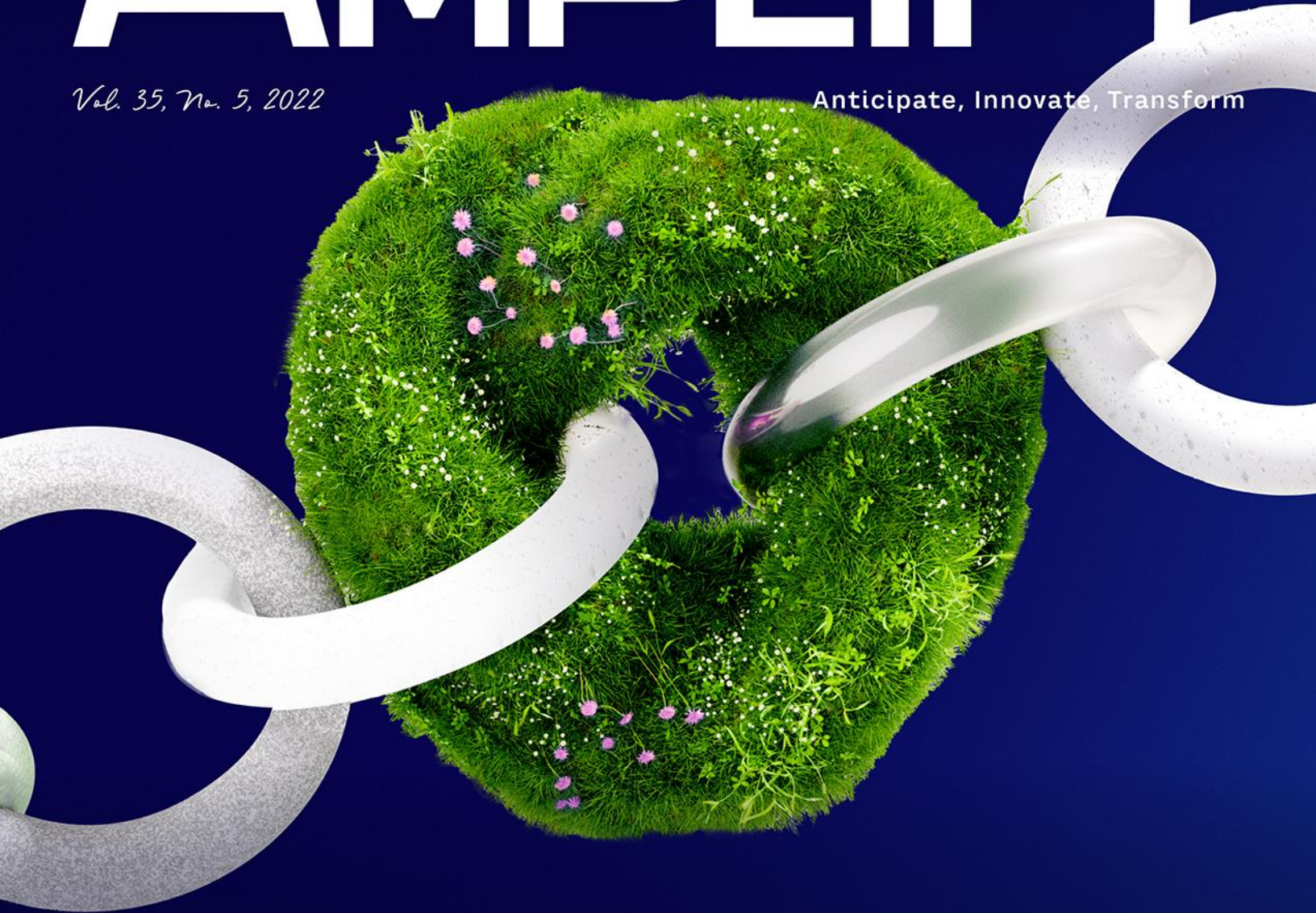
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Anticipate, Innovate, Transform



Defining Systems Change in Sustainable Business: Part II



A New Biodiversity Paradigm for Business

by P.J. Stephenson and Judith Walls

Biodiversity is an urgent grand challenge that businesses must address to manage risks, pursue nature-based opportunities, and contribute to the fight against climate change. Business activities are integral to addressing risks and solving challenges like anthropogenic climate change and biodiversity loss.¹ Biodiversity — the diversity of life in genes, species, and ecosystems — is declining at an unprecedented rate.² This trend is worrying: nature provides the foundation for life on Earth and contributes between US \$44 trillion and \$150 trillion to the world's economy.³

Biodiversity is inherently linked to business operations and supply chains. When businesses fail to address biodiversity, they expose themselves to substantial operational, legal, financial, and reputational risks that accumulate to our entire economic system.⁴ For example, 75% of agricultural crops, worth \$2.4 trillion, rely on insect pollination, and insect populations are rapidly declining, threatening not just the industry but our food security.^{5,6}

Biodiversity is inherently linked to business operations and supply chains.

Biodiversity is also an opportunity for business. More than 60% of cancer-fighting agents have natural origins, a market worth \$112 billion annually, with a human well-being value that is incalculable.^{7,8} Nature-based solutions can also address up to 30% of climate change mitigation.⁹ Businesses have strong reasons to focus on biodiversity.

In the last decade, the private sector has made significant contributions to reducing greenhouse gas emissions but only limited efforts to tackle the biodiversity crisis. Considering that 96% of business leaders are not well-informed about biodiversity, it is difficult for them to know how to embed biodiversity in

their sustainability governance practices and introduce necessary systems changes.¹⁰ Business leaders need ways to find nature-positive solutions and resources to help them make informed decisions about biodiversity.

Business & Biodiversity: Fundamental Issues

Several fundamental issues need to be resolved to connect biodiversity to business, as we explore below.

Biodiversity Is Daunting for Business & Poorly Understood

Although the connection to biodiversity is evident in sectors like agriculture, fisheries, forestry, and mining, companies in other sectors may not see an immediate link, especially if they have multiple product lines with long supply chains. Food cultivation and resource extraction sectors account for 63% of the total share of pressure on biodiversity. However, when the entire supply chain is taken into account, 90% of the pressure on biodiversity is linked to food and beverage (including packaging), infrastructure and mobility, energy, and fashion.¹¹ The fashion industry, for example, relies on exploitation of land, plants, and fresh water to produce raw materials for fibers while creating pollution across its value chain.

These types of links can be difficult for companies to map out, especially if their supply chains are geographically dispersed. In turn, finance and insurance institutions struggle to become enablers of nature-based solutions. Part of the difficulty is that biodiversity terminology is often new and confusing to business leaders, a problem compounded by the use of varied definitions and approaches. The growing array of tools, standards, best practices, metrics, and platforms designed for business can be difficult to navigate and prioritize.

Businesses Aren't Focused on Long-Term Biodiversity-Related Risks

Positive ecosystem impacts can take many years to realize, so biodiversity solutions require long-term vision. Executive turnover and shareholder pressure to produce immediate results can make businesses myopic, leading them to favor what benefits them now over what would benefit them later.¹²

Flooding, droughts, storms, and sea-level rise make climate change risks evident; the many serious risks of biodiversity loss (transitional, physical, legal, and systemic) are less well understood.¹³ So, while some companies reap the reputational benefits of investing in natural capital, most struggle to find holistic solutions, tackling biodiversity issues unilaterally or with a small circle of colleagues or consultants. This compounds the impression that biodiversity is daunting and increases the urgency for clear biodiversity decision-making tools for business.

Businesses Don't View Biodiversity as an Interdependent System

Businesses typically interact with biodiversity on a piecemeal basis and are rarely charged with governing entire ecosystems. A corporation usually sources from a relatively small portion of land with the purpose of maximizing the utility of that space. Furthermore, economic models tend to assume natural resources are

replaceable — if a tree is used as a raw material, it can be replaced. But this approach overlooks the adverse effects of replacing old trees with young ones, the interactions with the rest of the ecosystem, and the incompatibility of replacing one species with another (or natural capital with other sources of capital).¹⁴

Figure 1 shows the Mitigation Hierarchy, a tool to help companies limit their negative impacts on biodiversity by considering four actions in setting no-net-loss or net-gain targets.¹⁵ Although the first two steps in the hierarchy encourage the avoidance or minimization of negative biodiversity impacts through appropriate site selection or operational planning, the other two perpetuate the idea that biodiversity can either be restored or its destruction offset by restoring elsewhere.

In reality, the restore and offset steps are complex, expensive, and difficult to measure and achieve. Environmental impact assessments (EIAs) promote the idea that business pressures on nature can be easily predicted and replaced, but EIAs often fall short of adequately addressing biodiversity impacts.¹⁶

Biodiversity Measures for Business Are Inadequate

Numerous biodiversity-related indicators have been developed for corporations, many striving to find a single metric — an animal or plant equivalent of carbon dioxide units (see Table 1). These indicator frameworks

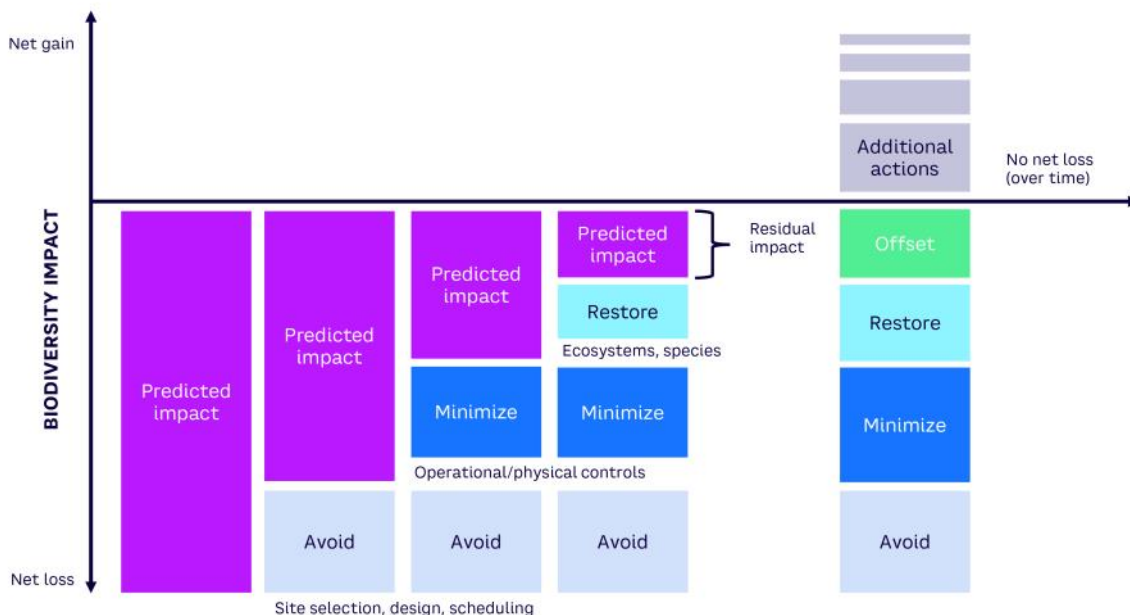


Figure 1. The Mitigation Hierarchy (adapted from Mitchell)

INDICATORS/Frameworks	LEADS (SECTORS)
Cross-sectoral	
Biodiversity Estimated Impact Value	LIFE Institute
Biodiversity Footprint Calculator	Plans Up et al.
Biodiversity Impact Metric	Cambridge Institute for Sustainable Leadership (CISL), Cambridge University
Biodiversity Indicators for Site-Based Impacts	United Nations Environment Programme World Conservation Monitoring Centre (UNEP-WCMC)
Biodiversity Net Gain Calculator	Arcadis
Bioscope	Platform BEE, Dutch government, et al.
CDSB Framework for Biodiversity-Related Disclosures	Climate Disclosure Standards Board
Earth Dividend	Earth Capital
ENCORE (Exploring Natural Capital Opportunities, Risks, and Exposure)	Natural Capital Finance Alliance
Global Biodiversity Score	CDC Biodiversité
Global Reporting Initiative	Global Sustainability Standards Board
GloBio	PBL Netherlands Environmental Assessment Agency
Healthy Ecosystem Metric Framework	CISL, Cambridge University
Product Biodiversity Footprint	I CARE
Species Threat Abatement and Restoration Metric	IUCN, Newcastle University, Biodiversity Consultancy et al.
Sector-specific	
Agrobiodiversity Index	Bioversity International (agriculture/food)
Biodiversity Ecosystem Services Index	Swiss Re Institute (insurance industry)
Biodiversity Footprint Approach	ASN Bank (finance sector)
Biodiversity Indicator and Reporting System	IUCN (cement and aggregates)
Biodiversity indicators for companies	UNEP-WCMC (extractives)

Table 1. Examples of biodiversity indicators and monitoring and disclosure frameworks developed specifically for business

are generally rigorous, replicable, and consistent, but none of them cover all business applications in all biomes. Most are still under development, and many use one blunt metric (e.g., mean species abundance) that does not reflect the complex differences between ecosystems and species.¹⁷

More importantly, the indicators developed for businesses are different from those used by governments,

environmental nongovernmental organizations (NGOs), and conservation experts. This reflects a difference in framing goals:

- The draft goals, targets, and indicators of the Post-2020 Global Biodiversity Framework of the Convention on Biological Diversity (CBD) focus on species and habitats in terrestrial, marine, and freshwater ecosystems.

- The draft Taskforce on Nature-Related Financial Disclosures (TNFD) framework focuses on a confusing mix of realms (land, freshwater, ocean atmosphere), biomes, environmental assets, and ecosystem services.
- The Science Based Targets Network (SBTN) guidance for business separates biodiversity from other aspects of nature (climate, freshwater, land, and ocean).

Since climate change and biodiversity loss are inherently linked and self-reinforcing, it is a false dichotomy to treat them separately. If the private sector continues to treat biodiversity planning and monitoring differently from public and civil society sectors, understanding will be hindered, and opportunities for cross-sectoral lessons learned and data sharing will be significantly reduced.

Business indicators for biodiversity mostly rely on secondary data and modeling rather than direct measurement, using assumptions that may not be accurate.

Biodiversity Data Is Not Accessed or Used

Accurate, reliable, timely data is essential for corporate biodiversity governance. Nevertheless, companies face challenges accessing existing data or collecting new data, especially geo-referenced data that links activities to specific sites, supply chains, species, and habitats. This may be the reason only 3%-12% of European and US companies report anything on biodiversity.¹⁸ Even when companies do report, the information is often not specific, measurable, or time-bound, making it difficult to determine business impacts.¹⁹

Business indicators for biodiversity mostly rely on secondary data and modeling rather than direct measurement, using assumptions that may not be accurate. Companies do not know how to collect their own data or where to source existing data. Thus, there is an urgent need to develop biodiversity decision-making tools to help companies access the biodiversity data and methods needed for successful monitoring and governance.

Signs of Change: Shifting Toward a New Paradigm

In spite of the ongoing challenges, there are signs of a paradigm shift in the corporate sector.

Businesses Are More Engaged & Working with Others to Address Biodiversity

Businesses are more engaged with, and integrated into, global biodiversity processes than they were a decade ago.²⁰ There was a *Business and Biodiversity Forum* at the 2018 *CBD Conference of the Parties*, and the CBD's draft Post-2020 "Target 15" specifically commits businesses to increase positive impacts. The trend for increased business engagement is also reflected in biodiversity monitoring and reporting. Disclosure to the CDP (previously the Carbon Disclosure Project) on the topics of water and forestry increased dramatically from 2010 to 2020 (see Figure 2). (Note: About half of the disclosures are not made public. In 2021, water and forest disclosure represented 25% and 7% of total disclosures, respectively. By comparison, more than 99% of companies disclosed on climate change.²¹)

These trends indicate an ongoing transformation, although the impact is varied. For example, although a third of companies disclose on forests, commodity-related deforestation continues.²² The gap between disclosure and positive impact is commonly referred to as greenwashing. However, relationships between the private sector and civil society have improved, with many partnerships and initiatives helping companies become more accountable to rigorous, meaningful biodiversity targets (see Table 2). Many companies are also making unilateral commitments to enhance sustainability. Between 2001 and 2016, 66 companies from around the world made no-net-loss or net-positive impact commitments, with half of the companies specifying their biodiversity goals.²³

Small Steps & Legislation Encourage Businesses to Act on Biodiversity

Reservations about biodiversity and complicated action options persist, but some recent guidelines encourage companies to begin with small steps, planning change for one specific raw material, process, or product rather than all company activities.²⁴ Companies can also break

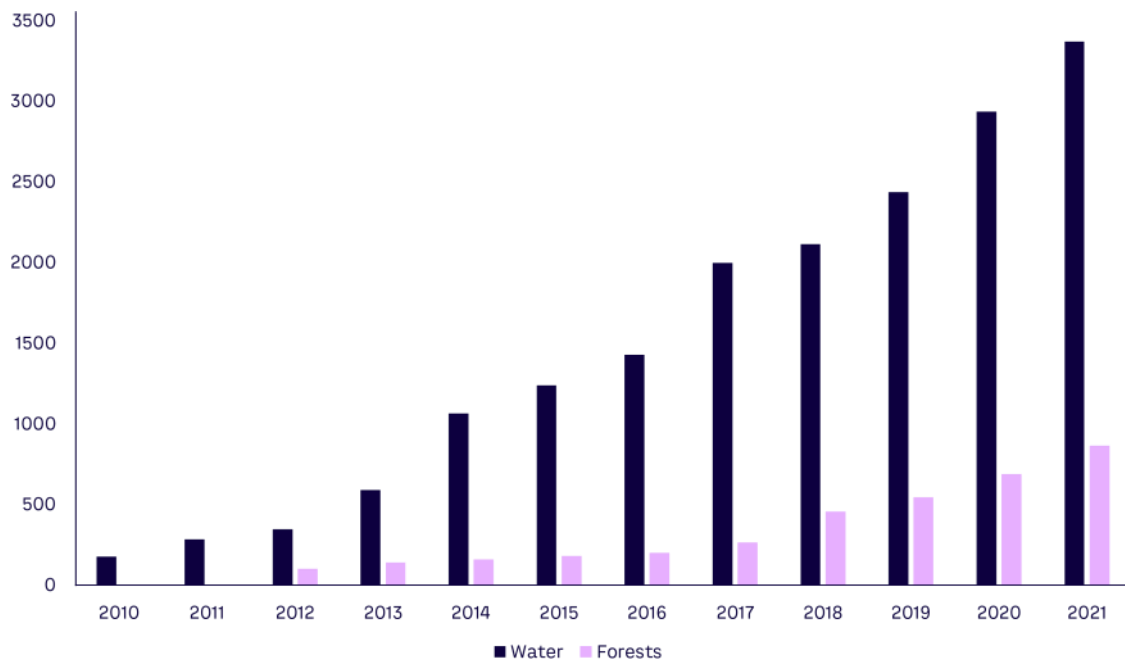


Figure 2. The number of companies disclosing information on water and forest biodiversity to the CDP from 2010 to 2021

down activities into more manageable units and define and monitor biodiversity goals at a level of granularity relevant to their operations (e.g., product line, raw material, supplier, type of operation, asset type, asset location).

Stakeholder engagement is key and, given that biodiversity is not the core business of most companies, working with external experts (e.g., international organizations, NGOs, academic institutions, consultants) will remain important.

In Europe, legislative frameworks are shifting toward more non-financial disclosures, as demonstrated by the EU’s Non-Financial Reporting Directive and the proposed Corporate Sustainability Reporting Directive. In parallel, the Platform for Sustainable Finance (including private sector representatives) is developing details on which company operations can be considered sustainable as part of a new green taxonomy.

An International Sustainability Standards Board is being set up to work with investor-focused initiatives such as the Climate Disclosure Standards Board and the TNFD. This combination of growing interest and engagement and increasing policy and legislation incentives will facilitate a significant upsurge in corporate biodiversity commitments in coming years, with Europe as a key hub.

Biodiversity Guidelines & Tools for Business Are Being Improved & Harmonized

New guidelines, tools, and standards are being developed to help businesses navigate biodiversity, some taking lessons from conservation science and practice, applying them to the business context²⁵ and removing the divergence between sectoral approaches.

Companies, international organizations, NGOs, and consultancies are starting to collaborate and develop linkages and synergies on biodiversity, coalescing around the concept of nature positive and moving toward improving biodiversity and the biomes it’s found in by 2030 (see Figure 3).²⁶ The faster we can harmonize business biodiversity guidelines and build and test decision-making tools in business settings, the sooner we can ramp up business interaction with biodiversity governance and deliver impact.

Opportunities Are Emerging for Enhanced Data Availability & Sharing

Conservationists have learned that strong planning is a prerequisite of successful biodiversity monitoring. Business can learn from this experience to develop indicators set against goals and objectives to provide meaningful management information.²⁷ Data can be

Program/Lead Developers	Goal
Guidelines	
Business & Biodiversity Offsets Programme Roadmap for Planning for Biodiversity Forest Trends, Wildlife Conservation Society	To develop goals around biodiversity net gain and the broader mitigation hierarchy
Biodiversity Targets and Finance UN Environment Programme, UNEP Finance Initiative and Global Canopy	To help finance companies identify suitable goals
Cross-Sector Guide for Implementing Mitigation Hierarchy Biodiversity Consultancy	To plan in the context of the mitigation hierarchy
IUCN Guidelines for Planning and Monitoring Corporate Biodiversity Performance	To develop a corporate biodiversity strategic plan with goals, objectives, and core linked indicators of performance
Natural Capital Protocol Capitals Coalition	To conduct natural capital assessments as part of biodiversity planning
Science-Based Targets for Nature Initial Guidance for Business Science-Based Targets Network	To set targets on nature (biodiversity, climate, freshwater, land and ocean)
What Does Nature Positive Mean for Business? Practitioner Guide World Business Council for Sustainable Development	To navigate actions, tools, and other resources across different value chains and guide business to credibly contribute to nature-positive outcomes
Tools	
Aligning Biodiversity Measures for Business collaboration UNEP-WCMC et al.	To improve clarity and build consensus on how businesses and financial institutions can measure and report on performance
Biological Diversity Protocol Biodiversity Disclosure Project, hosted by Endangered Wildlife Trust	To identify, measure, manage, and report on biodiversity impacts
ENCORE tool (Exploring Natural Capital Opportunities, Risks, and Exposure) Natural Capital Finance Alliance	To assess environmental risks (for financial institutions such as banks, investors, and insurance firms)
The Equator Principles The Equator Principles Association	To determine, assess, and manage environmental and social risk
TNFD Nature-Related Risk & Opportunity Management and Disclosure Framework Task Force on Nature-Related Financial Disclosures	To understand risks, dependencies, and impacts on nature to support reporting, metrics, and data needs
Standards	
IUCN Global Standard for Nature-Based Solutions IUCN	To design and verify nature-based solutions to yield the desired human wellbeing and biodiversity outcomes
Performance Standards on Biodiversity Conservation and Sustainable Management of Living Natural Resources International Finance Corporation	To avoid or mitigate threats to biodiversity arising from operations as well as sustainably manage renewable natural resources

Table 2. Summary of the main cross-sectoral and finance sector guidelines, tools, and standards developed or under development to help businesses address biodiversity

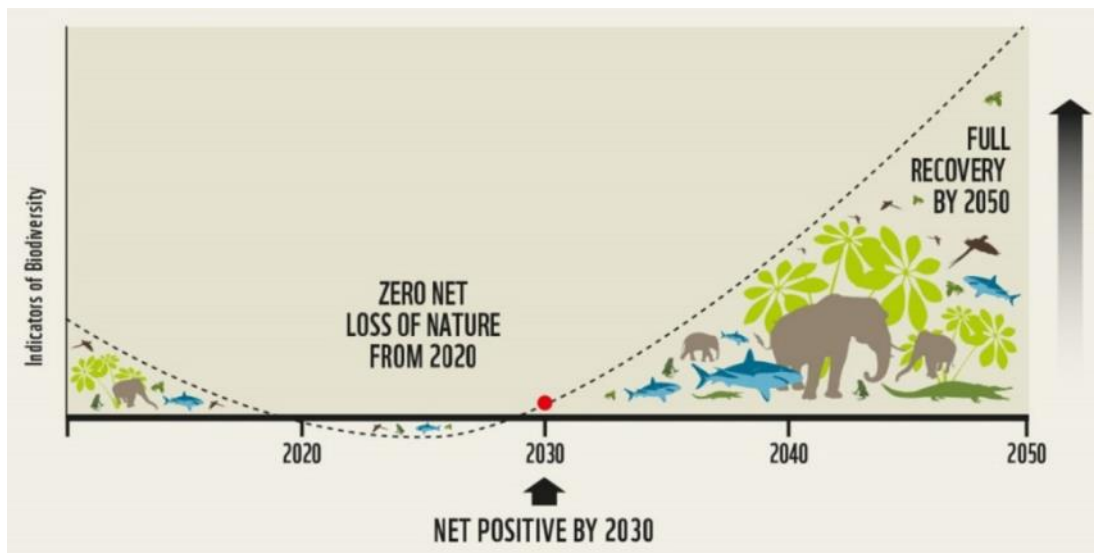


Figure 3. A graphical representation of a global goal for nature positive (source: Locke et al.)

aggregated from local to global levels and presented in formats that facilitate decision making (dashboards, graphs, maps), using terminology understood by business.

This is best achieved by using a set of common key performance indicators (KPIs) across a company's scope of influence, preferably harmonized with indicators used by conservationists. Large, global biodiversity data sets and guidance on how companies can monitor biodiversity are increasingly accessible.^{28, 29} For example, satellite-based remote sensing data is readily available to measure land use, and ground-based and water-based sensors (from camera traps to acoustic recording devices) are improving the ease of monitoring species and habitats, as are environmental DNA analyses.

There is also global growth in national policies for private sector biodiversity monitoring.³⁰ Making biodiversity data open access, and therefore shareable, will be key. For instance, many companies are collecting biodiversity data when they conduct EIAs. Making that data freely available will make it possible to build a global picture, assess cumulative impacts, and allow more efficient use of data for decision making.³¹

How Businesses Can Shape a Future Centered on Biodiversity

To drive systemic change and embed the economic sector into ecological systems, a new corporate biodiversity paradigm is needed, with the same scope

and scale we recently witnessed for climate change governance. We believe several trends are needed to support this process:

- **Science-informed biodiversity goals and targets for business are critical to successful action.** Goals must be based on scientific data and set in collaboration with other sectors, government agencies, and NGOs. More companies should make public commitments on biodiversity, based on risk assessments across space (location) and time (long-term horizons). Corporate goals must be harmonized with CBD's Post-2020 Global Biodiversity Framework and UN Sustainable Development Goals.
- **Companies need to move toward a nature-positive agenda linking biodiversity and climate change.** No-net-loss is becoming a concept of the past as the corporate sector steps up to join governments and civil society in going beyond avoidance and mitigation to proactively protect and restore species and natural habitats. As such, committing to a nature-positive agenda may even represent a rethink of what defines ethical business practice. Business investment in nature-based solutions must become more prominent, especially through solutions tackling both climate and biodiversity, like the restoration of mangrove forests, which can conserve species while sequestering four times more carbon than rainforests.³²
- **Reporting frameworks must be improved.** These frameworks should be harmonized and standardized to avoid confusion within and between companies

and better link monitoring to goals and targets, enhancing data and lesson sharing. The most successful indicators will likely be those based on conservation science and practice and include not only measures of responses and pressures, but also impacts on the state of biodiversity.

- **Companies must leverage new forms of data and technology.** The increased use of remote sensing combined with artificial intelligence can help companies move away from inaccurate modeling with out-of-date secondary data toward near-real-time collection of primary data. Financial institutions and data organizations must increasingly embed spatial data to connect company assets and sites to biodiversity indicators.

If we are to witness such transformative change, companies must adopt a long-term, embedded perspective of nature rather than focusing on short-term financial growth metrics. Many investors and stakeholders (including banks and insurance companies) are increasingly aware of the potential downsides of businesses that fail to address climate change and biodiversity. Companies will find it easier to raise capital and insure assets if they consider their overall, long-term impact on nature — a genuine win-win for business and the planet.

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P.J. Stephenson is Research Project Manager at the University of Lausanne, Switzerland; Chair of the IUCN SSC Species Monitoring Specialist Group; and an independent conservation and sustainability consultant. Since 2017, he has focused much of his work and research on tackling business sustainability issues. Dr. Stephenson has worked in biodiversity conservation for Scottish Natural Heritage in the Cairngorms, WWF in the Democratic Republic of Congo and Tanzania, and Conservation International in Côte d'Ivoire. He also

managed WWF programs for elephants, great apes, and rhinos across Africa. Dr. Stephenson served as WWF International's Director of Conservation Strategy & Performance, where he drove results-based management across the global network; Senior Advisor, Monitoring, at the International Union for Conservation of Nature; and Senior Research Fellow at ETH Zürich. He is coauthor of the "IUCN Guidelines on Planning and Monitoring Corporate Biodiversity Performance" and has worked with companies such as Alcoa, Boskalis, Earthly, Enel, Jan de Nul, and Nespresso. Dr. Stephenson's current research is funded by the Swiss Network for International Studies. He earned a PhD in zoology from the University of Aberdeen. He can be reached at stephensonpj@gmail.com.

Judith Walls is Full Professor and Chair of Sustainability Management at the Institute for Economy and the Environment, University of St.Gallen, Switzerland. Prior to academia, she worked in investor relations as Head of Research, Consulting and Business Development for Technometrics (later Thomson Reuters) in Europe and Asia-Pacific. Dr. Walls also spent many years working with conservation organizations regarding the human-wildlife conflict and how best to manage this through entrepreneurial solutions in locations like Namibia, Botswana, and Mongolia. Her research focuses on the nexus of corporate governance and environmental sustainability. Dr. Walls's work has examined the role of CEOs, top management teams, boards of directors, shareholders, and stakeholders in driving corporate transformation for sustainability. She has a special interest in the topic of biodiversity and land use and the (emotional) dynamics of contested industries, such as mining and trophy hunting. Dr. Walls has been awarded and published in top-tier academic journals. She earned a master's of science degree in wildlife, biodiversity, and ecosystem health from the University of Edinburgh, Scotland; a PhD in management from Rensselaer Polytechnic Institute; and has pursued a post-doctoral research fellowship at the Erb Institute for Global Sustainable Enterprise, University of Michigan. She can be reached at judith.walls@unisg.ch.