



# Nature Positive: The Next Horizon for Investors

Why and how the Private Equity sector  
is well positioned to drive positive change  
for biodiversity and natural ecosystems



Sustainable  
Markets  
Initiative

## Disclaimer

This Report is meant to serve as a resource for private equity firms at all stages of their biodiversity journey, and to facilitate conversation and learning. It provides information that may be useful in the process of developing and implementing a firm's own approach to biodiversity. This report is not intended to convey mandatory guidance or be construed as a framework against which to measure firms' policies or programs.

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# Sustainable Markets Initiative



## Background & Acknowledgements

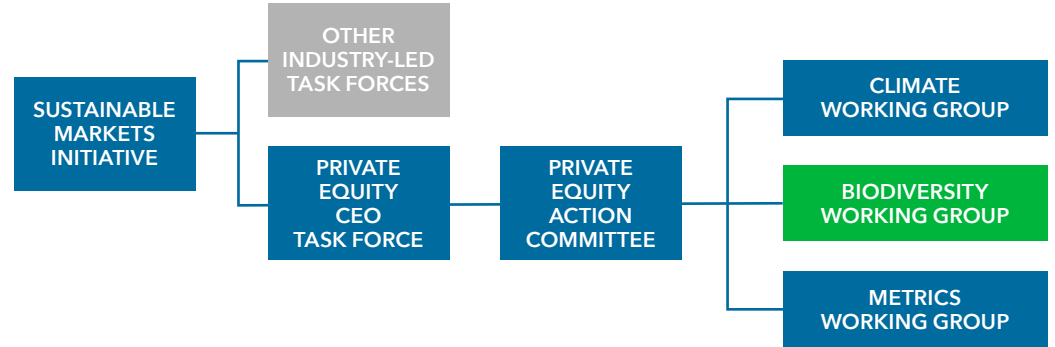
The Sustainable Markets Initiative (SMI) launched in 2020 at the World Economic Forum Annual Meeting in Davos by His Majesty King Charles III when he was The Prince of Wales. The SMI is a network of global CEOs across industries working together to build prosperous and sustainable economies that generate long-term value through the balanced integration of natural, social, human, and financial capital. These global CEOs see themselves as the 'Coalition of the Willing' helping to lead their industries onto a more ambitious, accelerated, and sustainable trajectory.

roadmap for acceleration towards an ambitious and sustainable future; one that will harness the power of Nature combined with the transformative power, innovation, and resources of the private sector.

The Private Equity Task Force was launched in 2021 and is the first ever CEO-level private equity working group established to align on ways the industry can effect change. It leverages expertise within each member firm across three current priority areas: climate change, biodiversity and sustainability-related metrics.

The SMI focus - for Nature, People and Planet - are at the heart of global value creation. This is evident through its Terra Carta, which serves as the mandate for the SMI and provides a practical

### Biodiversity Working Group



THIS DOCUMENT IS THE PRODUCT OF THE BIODIVERSITY WORKING GROUP, A SUBGROUP OF THE SMI PRIVATE EQUITY TASK FORCE

### CONTRIBUTORS AND THANKS

With guidance from

About this report	06
Executive Summary	07
Why the biodiversity crisis has thus far received less attention than the climate crisis	09
Why biodiversity joins climate at the top of the business agenda	11
The case for action for Private Equity	18
Integrating biodiversity into the PE investment cycle	21
The importance of biodiversity communication strategies	36
The PE industry agenda on nature and biodiversity	37

## Key Definitions:

- **Biodiversity** - The variability among living organisms from all sources including terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are a part. This definition includes variation in genetic, phenotypic, phylogenetic, and functional attributes, as well as changes in abundance and distribution over time and space within and among species, biological communities and ecosystems.<sup>1</sup>
- **Nature** - The term 'Nature' refers to the natural world with an emphasis on its living components. Within the context of western science, it includes categories such as biodiversity, ecosystems (both structure and functioning), evolution, the biosphere, humankind's shared evolutionary heritage, and biocultural diversity.<sup>2</sup>
- **Nature vs. Biodiversity** - There has been much discussion around whether businesses generally and PE firms specifically should aim to be biodiversity positive or nature positive, and what is implied by the difference between these two terms. As the similarity of the above definitions illustrates, nature positive and biodiversity

positive essentially amount to the same thing. However, due to commonplace misconceptions surrounding the meaning of 'biodiversity' (see section 3.1), we suggest the term nature-positive may better encompass the holistic approach to environmental issues that business may aspire to, better reflect the connections between our actions and nature loss, and better illustrate the importance of companies and investors incorporating climate and biodiversity into their environmental strategies. Throughout this report, we thus refer to nature and the aspiration to contribute to a nature positive economy to designate this integrated agenda.

- **Natural Capital** - The world's stocks of natural assets which include geology, soil, air, water and all living things. It is from this natural capital that humans derive a wide range of services, often called ecosystem services, which make human life possible.<sup>3</sup>
- **Ecosystem services** - The many and varied benefits to humans provided by the natural environment and from healthy ecosystems. The IPBES has categorized the 18 ecosystem services into 'supply services', 'regulating services' and 'intangible inputs'.<sup>4</sup>

- **Materiality** - The concepts of materiality introduced in this report are aligned with the IFRS Foundation (IASB and ISSB) definition of materiality, which is focused on information so important that its absence or misstatement could be reasonably expected to influence investor decisions. Whilst this report focuses primarily on the IFRS foundation of materiality, given the evolution of materiality in the EU with respect to Double Materiality, there are some references made to this where it could present a risk or opportunity to business. As regulation evolves, companies will be required to not only assess risks to their own business model but also how their business model impacts its wider stakeholder and the world more broadly (often defined as 'double materiality'). Companies need to understand their own impact before they can assess their wider impact on the environment. Evolving regulations, such as the EU Corporate Sustainability Reporting Directive (CSRD) increase the need for companies to address Double Materiality.

- **Nature-based solutions** - Actions to protect, sustainably manage, and restore ecosystems that address societal challenges effectively and adaptively (IUCN). In the context of this report, nature-based solutions often refer specifically to ecosystem restoration initiatives that address the climate crisis through restoration of ecosystems and biodiversity.

- **Avoid, Reduce, Restore, Compensate** - A typical mitigation hierarchy that serves to meet the goal of "No Net Loss" biodiversity policy, which itself has its origin in US 'compulsory mitigation' legislation, specifically in the 1970 US Water Act. No Net Loss policies indicate that even when every effort is made to avoid, minimize and restore, human activities can still have negative impacts on biodiversity. To avoid a net loss of biodiversity and ecosystem services, damages resulting from human activities need to be balanced by at least equivalent gains, i.e. through compensation. (EU Commission) To secure the best outcomes for people and nature, the order of the sequence of the mitigation hierarchy should be respected.

1. We have used the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) definition: <https://ipbes.net/glossary/biodiversity>
2. We have used the IPBES definition: nature | IPBES secretariat
3. We have used the IPBES definition: <https://ipbes.net/node/41527>
4. We have used the IPBES definition: <https://ipbes.net/glossary/ecosystem-services>
5. We have used the abridged US Securities and Exchange Commission (SEC) definition: <https://www.sec.gov/interps/account/sab99.htm>
6. The CSRD incorporates the concept of 'double materiality'. This means that companies have to report not only on how sustainability issues might create financial risks for the company (financial materiality), but also on the company's own impacts on people and the environment (impact materiality).





## Why biodiversity should matter to investors

Value creation stories inspired by real-world examples

### From a risk perspective:

1. A successful company in the food industry, with popular products and strong branding secures investment at a high valuation. Insufficient attention was given to biodiversity by the investor during due diligence. Post-acquisition, it is revealed that the company is implicated in tropical rainforest deforestation through substantial use of unsustainable palm oil in its value chain. The company's value subsequently falls as consumers avoid its products. The Carbon Disclosure Project (CDP) found that only 22% of companies sourcing or producing palm oil in Indonesia have implemented public and comprehensive no deforestation policies,<sup>7</sup> thus leaving a vast majority of companies under strong value chain and reputational risks.
2. A PE fund acquires a pharma company with a strong public presence, credible products, a clear go-to-market strategy, and an expectation of growth in product demand. The company soon experiences significant manufacturing problems, since, unbeknownst to the PE fund, several key ingredients are endangered plants that are becoming harder to source due to invasive species, habitat loss and climate change. Currently, "80% of registered medicines come from plants, or have been inspired by natural products. Right now, the cure for cancer, or COVID, could be going extinct",<sup>8</sup> with biodiversity loss thus constituting one of the main challenges for the pharmaceutical industry in the years to come.

### From an opportunity perspective:

1. A well-known company in the cosmetics and self-care sector is highly reliant on water and plant resources as the key ingredients of its entire product range, and still uses animal testing to evaluate the quality of its products. Their products also require a lot of packaging, thus creating an important source of pollution for the company. A PE fund invests in the company recognizing that it possesses the people and research capabilities to transform its product offering towards a biodiversity-friendly approach and become an industry leader in natural cosmetics through innovation and responsible engagements (including on water use, chemicals use, waste management, raw ingredients sourcing, and non-animal testing methods). This transformation increases the company's revenues and valuation multiples.
2. A small packaging supplier does not have impressive financials, but their packaging is 100% biodegradable, biodiversity-friendly, and has similar properties to plastic equivalents. Currently, the costs to produce this packaging are significantly higher than their competitors. A PE fund invests seeing an opportunity to reduce production costs through economies of scale and sustainable waste reduction levers. Increasing regulations on plastic simultaneously drive demand for sustainable alternatives. The company's valuation consequently increases, and its environmental impact improves by reducing plastic waste as well as water and energy consumption.

In the report, you will find further real-world case study examples of when biodiversity considerations presented opportunities or risks for private equity, each of which comes from a PESMIT member firm:

[Nature-Based Solutions – ClimeCo – Warburg Pincus](#)

[Exclusion of a company during the due diligence phase – Confidential](#)

[Biodiversity forming part existing climate change/net-zero policies – Stark Group – CVC](#)

[Integrating biodiversity strategies on the basis of a materiality assessment – Geia Food – Triton](#)

[Growing Champions: maximizing value creation potential and impact – Lipton Teas & Infusions – CVC](#)

[Unlocking value through nature-positive transformation – Anticimex – EQT](#)

[Product Innovation – 80 Acres Farms – General Atlantic x Beyond Net Zero](#)

[Mitigating and compensating for manageable risks – Solarpack – EQT](#)

Descriptions of any ESG or impact achievements or improved practices or outcomes in case studies herein are not necessarily intended to indicate that a firm has been the sole or primary contributor to such achievements, practices or outcomes. A firm's ESG engagement may have been one of many factors, including other factors such as engagement by portfolio company management and other key third parties and advisors, that may have contributed to the outcomes described in each of the selected case studies. The information provided about portfolio companies is intended to be illustrative, and is not intended to be used as an indication of the current or future performance of a firm's portfolio companies. To the extent any firm engages with portfolio companies on ESG-related practices and potential enhancements thereto, there is no guarantee that such engagements will improve the financial, climate, sustainability, impact or ESG performance of the investment.

7. CDP, Measuring Progress Towards a Sustainable Palm Oil Supply Chain, A company's journey, 2022

8. Convention on Biological Diversity, Pharmaceuticals and biodiversity: to protect ourselves we must safeguard our planet, 2021



## About this report

The international community's focus on nature and biodiversity has grown significantly over the past year. It reached a peak on December 19, 2022, when the United Nations Biodiversity Conference (COP15) concluded with an agreement on a Global Biodiversity Framework (GBF), which has been described as an equivalent of the Paris Climate Agreement for Nature. This ambitious agreement, that 188 participating governments have signed up to, includes 4 broad goals and 23 specific targets whose collective aim is to halt and reverse nature loss by 2030. Whilst these goals are non-binding, like with the Paris Agreement, they are expected to guide the international community's action on biodiversity, and present both opportunities and risks for public and private bodies alike. Notably, COP15 was the setting of the UN Convention on Biological Diversity (UNCBD)'s first ever Finance and Biodiversity Day, featuring prominent private sector coalitions such as the Finance for Biodiversity Foundation. In light of the international community's growing focus on combating nature loss, and in the context of increased attention on the private sector's role in this, this report seeks to address some of these themes from a Private Equity perspective.

Recognising the role that the Private Equity sector can play in addressing the biodiversity crisis, the Sustainable Markets Initiative's Private Equity Task Force (PESMIT) has partnered with BCG to present the business case for biodiversity, and call on the PE industry to more thoroughly integrate biodiversity considerations into the PE investment cycle to enhance value and mitigate risk. Specifically, this report aims to provide initial action-oriented guidance to the PE industry, allowing firms to incorporate biodiversity risks and opportunities efficiently and practically into their independent investment strategies.



## Why should I read this report?

### If I'm an investment professional:

- Outlines the significant value creation opportunity that proactive nature and biodiversity strategies enable, illustrated through factual case studies
- Describes in practical steps how to incorporate nature and biodiversity considerations into the PE investment cycle - from due diligence to post-acquisition value creation strategies
- Sheds light on the need for the degree of granularity of a firm's nature and biodiversity strategy to correspond to the sectors they predominantly operate in, and their dependency and impact on nature
- Helps you to preemptively navigate nature-related risks and issues that will become significantly more prevalent and material as the biodiversity crisis worsens
- Provides methods to increase the attractiveness of your fund to both investors and target companies

### If my company is exposed to biodiversity issues and has been or may be acquired by a PE firm:

- Provides clear guidance to increase your company's value whilst mitigating risk through the implementation of strategic approach to nature and biodiversity
- Supports funds and management teams to align on ambitions, expectations and an action plan with regards to the design and implementation of a nature and biodiversity strategy

### If my focus is on ESG/Sustainability:

- Makes the case for why nature and biodiversity merits a greater focus within existing ESG initiatives, broadening the scope of 'E' and adding an essential dimension to climate-related focus
- Gives you a specific and value-focused perspective for systematically considering nature and biodiversity impact in investment decisions and strategy design

### For everyone:

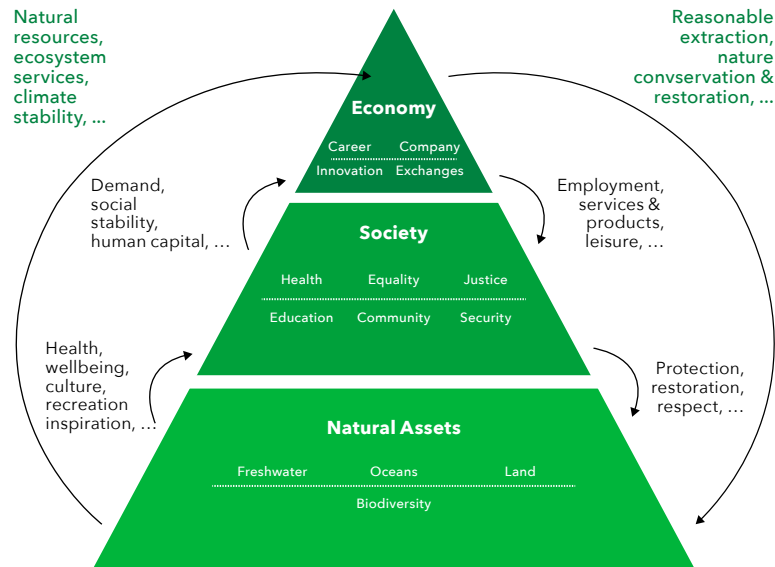
- Debunks common misconceptions surrounding biodiversity, whilst educating about the importance of biodiversity, its relevance to business including how consideration of relevant biodiversity issues can enhance value and mitigate risk and the extent to which it is in decline
- Outlines the potential for the PE sector to participate in efforts to address the biodiversity crisis, to contribute to the transformation towards an economy that values and protects nature and to close the global biodiversity financing gap
- Provides a core understanding of biodiversity, alongside simple steps that can be taken to protect it, in simple language that does not require prior knowledge (though we recommend consulting subject-matter experts where appropriate)

## Executive Summary

### The urgency to act now

Failure to reverse biodiversity losses may trigger irreversible global consequences that stretch beyond losing the one million animal and plant species that are currently at risk of extinction. We rely on healthy, functioning ecosystem services to provide the food we eat, filter the water we drink and regulate the climate we live in. Indeed, over 50% of global GDP – USD 44 trillion – is heavily reliant on ecosystem services according to the

WEF.<sup>9</sup> In recent years, there has been an emerging recognition of the significant value nature and biodiversity bring to our society and economy and these topics are beginning to generate increased interest amongst investors and the broader business world. The unprecedented rate of biodiversity loss and considerable dependency of our society on nature calls for decisive action, in particular from the financial sector.



### The paradox of the biodiversity crisis

Although scientists warn that the biodiversity crisis is as critical as climate change, and perhaps more tangible, far greater attention has been paid to tackling the latter. This is partly due to common misconceptions which impair our understanding of the value of biodiversity and functioning ecosystems and the extent to which they are in decline.

### Private Equity is well positioned to participate in efforts to address the biodiversity crisis, and can create significant value doing so

Five characteristics of PE mean that it is well positioned to contribute to the private sector's efforts to close the biodiversity financing gap:<sup>10</sup>

1. The medium to long-term nature of PE investments and the need to increase a company's value during the holding period
2. PE firms have direct access to management in the companies their funds invest in, especially when they have a controlling stake
3. Companies controlled by PE funds are less constrained by the 'short-termism' of the public market
4. PE firms have expertise in transforming companies that they have invested in and the ability to inject capital from fund level
5. Many PE firms and private companies have existing ESG programmes already in place (e.g. on water use, sourcing, deforestation, etc.), from which to develop a strategic approach to biodiversity

Currently 86% of the finance in nature-based solutions to tackle the biodiversity crisis comes from the public sector.<sup>11</sup> Given the strength of private markets, with Private Equity Assets Under Management alone expected to reach \$5.8 trillion by 2025,<sup>12</sup> PE is well positioned to engage with the private sector's attempts to invest in biodiversity and close the global biodiversity financing gap. Concretely, the UNEP states that "investment in nature-based solutions ought to at least triple in real terms by 2030 if the world is to meet its climate change, biodiversity and land degradation targets".<sup>13</sup>

### Nature and biodiversity must be approached with a sectorial lens

The value chains of the Agribusiness, Infrastructure & Mobility, Energy and Fashion sectors generate ~90%<sup>14</sup> of all direct pressure on biodiversity, expanding the scope of materially significant sectors beyond the heavy emitters from a climate perspective. Other sectors might be dependent on biodiversity, such as the Healthcare industry which heavily relies on nature to source key ingredients for its products, or have an indirect impact on it. For example, the Digital sector is generally not considered to be material in terms of biodiversity but can have an indirect impact through the energy (potentially driving climate change) and resources it uses. It can also be a potential enabler of nature-friendly solutions and therefore may be part of an integrated narrative and strategy for a fund. As such, every sector may have an impact on biodiversity. However, a purely sectorial approach to materiality is insufficient when it comes to nature and biodiversity. Indeed, there can be significant differences between two companies operating in the same industry - for example, even if they make similar products, depending on whether a food company uses palm oil or not and in which countries it sources that palm oil, its exposure to deforestation and the corresponding risks and value impacts will vary considerably.

9. Nature Risk Rising: Why the Crisis Engulfing Nature Matters for Business and the Economy, WEF, 2020

10. Recent estimates of this gap suggest an extra ~\$700 billion of financing per year is required to 2030 to reverse nature loss and meet key biodiversity and climate change targets. See page 17 for further details. Source: Paulson Institute, Financing Nature Report; UNEP State of Finance for Nature, 2021

11. UNEP State of Finance for Nature, 2021

12. The growing private equity market, Deloitte, 2020

13. State of Finance for Nature, UN Environment Programme, 2021.

14. The Biodiversity Crisis Is a Business Crisis, BCG, 2021



### Integrating biodiversity into the PE investment cycle

PE firms can immediately begin to integrate biodiversity into their business through simple yet effective actions. The first step of integrating biodiversity into Private Equity is to screen current investments in portfolio companies against a map of sector value chain impacts on ecosystems and biodiversity, to determine where the firm may want to focus more effort. Where more focus is merited, investors can conduct a materiality assessment to identify the dependencies and impacts of a target company on biodiversity and nature loss. While this sounds technical, it really consists of a simple exercise of mapping relevant environmental issues and assessing how critical they are for the company.

From this starting point, PE firms can identify the key environmental issues to address, along with the ambition and approach they want to set when designing and implementing their biodiversity roadmap. As the funds of PE firms differ in size and sectoral focuses, each with multiple portfolio companies, integrating biodiversity into the investment cycle requires a tailored and materiality-driven approach. Multiple science-based frameworks and tools already exist and can be leveraged by PE firms to develop their biodiversity strategy easily and efficiently. Beyond pure risk mitigation, implementing a biodiversity roadmap within a broader value creation plan can create additional value in companies invested in by PE funds, through the enhancement of traditional PE value creation levers.

### To mitigate impact on nature, companies can follow the sequence of 'Avoid, Reduce, Restore, Compensate'

This mitigation hierarchy is at the core of biodiversity regulation (see definition in dedicated section). On compensation specifically, there is emerging demand for market mechanisms to enable private actors to offset unavoidable impacts. Many companies consider restoration funds, biodiversity credits and other methods to regenerate ecosystems and resources and aim towards having a "net positive nature impact",

or being "nature positive". While the importance of compensation of unavoidable damages is widely recognized, all biodiversity loss is not equal and it is crucial to take into account the specific local conditions (e.g. deforestation of the Amazon rainforest is not the same as deforestation in the UK, whilst significant water usage may have little impact in the UK, which generally has plentiful water resources, but may have a significant impact in water-scarce countries). The design and governance of these market mechanisms should be executed in an equitable, socially and ecologically sustainable way. PE funds can start working together with their portfolio companies to assess and select mechanisms that will help them increase the resilience of their business and the ecosystems on which they rely.

### Challenges around communicating and reporting on biodiversity strategies

Strong, transparent reporting on PE firms' biodiversity strategies can help set new environmental standards and encourage change both in the PE industry and beyond; whilst also enabling a biodiversity-responsible PE firm to reap the benefits of its robust approach, through enhancing the firm's reputation and value enhancement through attractiveness for investors, target companies, and employees. To enable PE firms to do this successfully, we suggest solutions to common reporting challenges that they may encounter, namely:

- Integrating all biodiversity reporting into their existing ESG reporting frameworks to avoid it being perceived as a confusing 'extra'
- Systematically relying on scientifically recognized tools, metrics and targets when reporting on biodiversity to help ensure the legitimacy of their reporting and to limit uncertainty regarding which of the many biodiversity metrics and targets to report on

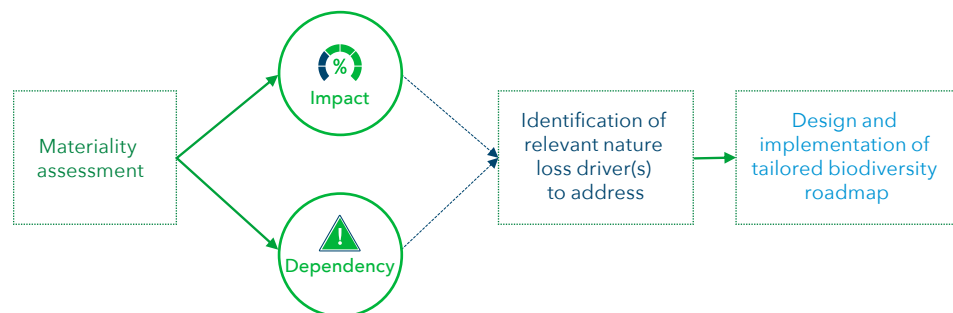
- Reporting biodiversity progress and limitations transparently, including an educational component and adopting specific language for each relevant stakeholder being addressed (i.e., portfolio companies, investors, wider society) to better manage stakeholders' expectations with regards to what should be reported on

### The PE industry's suggested agenda on nature and biodiversity

The purpose of this report is to set out guidance and blueprints to enable PE firms to better independently integrate biodiversity into the investment cycle and drive concrete action, value creation and risk mitigation in the sector. We suggest five steps to follow to begin the journey to nature positivity. All of them directly derive from a materiality assessment that will help determine the key environmental issues to be addressed, and the level of ambition and engagement required for each firm:

- Conduct a firm and portfolio biodiversity materiality assessment and apply industry 'screens' to identify potentially relevant funds, sectors, and companies
- Assess nature-related risks and opportunities in the acquisition phase
- Consider investing in companies that develop or have the potential to develop nature-based solutions and contribute to a nature-positive economy, leverage market opportunity, and aim to enhance value
- Consider defining a nature strategy focused on value creation and risk mitigation with corresponding targets for portfolio companies where material
- Mobilize the organization and grow internal capabilities

### It all starts with materiality....





## Why the biodiversity crisis has thus far received less attention than the climate crisis

### Common misconceptions around biodiversity inhibit decisive action to tackle the biodiversity crisis

The preservation of biodiversity has been most commonly associated with the conservation of endangered species and their ecosystems. By this definition, biodiversity is arguably a more tangible issue than, for example, climate change. It is highly appreciated by the general public, who in general care about wildlife, are animal-lovers and understand that extinctions of iconic species like elephants would be an irreversible catastrophe.<sup>15</sup> Historically, concerns with animal welfare or poaching have been among the most prominent environmental issues in society. It should, in theory, be easier to inspire people to take action against the threat of collapsing biodiversity and mass extinctions than invisible greenhouse gas emissions with long term effects on climate. However, due to common misconceptions regarding what biodiversity is and why it should be protected, this has not proved to be the case in reality.

Misconception	Reality
<b>Protecting biodiversity means protecting iconic endangered species such as elephants, tigers, pandas, etc. by introducing conservation efforts</b>	Biodiversity refers to the diversity of life on Earth, defined at three levels: diversity of ecosystems, diversity of species and genetic diversity within species. Biodiversity is all around us, both in the iconic species of jungles and wildlife reserves, but also in the insects and rodents that live in capital cities. Due to the intricate dependencies between them, the health of biodiversity is dictated by the health of all species and ecosystems, not just the 'iconic' ones. To protect biodiversity hence encompasses, but goes far beyond, conservation efforts of famous species.
<b>The loss of biodiversity does not affect me directly</b>	Biodiversity affects us all directly for our most basic needs such as clean water, food, health and clothing. 75% of global crops depend on pollinators. 70% of antibiotics and drugs used to fight cancer are directly or indirectly derived from natural substances. Natural ecosystems sequester roughly one-third of global greenhouse gas emissions. Indeed, over half of global GDP, approximately \$44 trillion, is highly dependent on biodiversity. <sup>16</sup>
<b>The loss of one insect, frog or fish does not make a difference, so why all the fuss?</b>	It is true that the loss of one individual species will not necessarily have a significant and immediate detrimental societal impact, and extinctions have always occurred throughout history at what is known as the natural or background extinction rate. However, we are currently experiencing unprecedented rates of extinction, between 1000 and 10,000 times greater than the natural extinction rate. <sup>17</sup> This threatens the stability of ecosystems and jeopardises the ecosystem services they provide, upon which our society and economy rely. Regardless of the extent to which people may value nature or care about the loss of an individual animal, biodiversity and nature loss is hence now a major social and economic issue that everyone should be concerned by.
<b>Biodiversity is a resource we can continue to exploit at the current rate</b>	Biodiversity is not a resource that we can endlessly exploit, but rather a system that regulates the Earth, ensuring it is liveable, for example by filtering the water we drink and providing the oxygen we breathe. If this system is disrupted too much, there may be a point after which we will no longer be able to rely on the services provided by biodiversity. Human activity is destroying biodiversity at an unprecedented rate: it is estimated that 99.9% of critically endangered species and 67% of endangered species will be lost within the next 100 years. <sup>18</sup>
<b>The majority of businesses have little to no impact on biodiversity</b>	Unlike climate change, biodiversity loss is caused by 5 different drivers <sup>19</sup> : <ul style="list-style-type: none"> <li>• Land-use &amp; sea-use change</li> <li>• Direct overexploitation of resources (e.g. deforestation or overfishing)</li> <li>• Climate change</li> <li>• Pollution of soil, water, and air (both through chemicals and pesticides, but also noise and light pollution)</li> <li>• Spread of invasive species</li> </ul> <p>All human activity and therefore all businesses contribute at least in part to one of these five drivers either directly or indirectly through their value chain. Although not all sectors have the same impact or dependency on biodiversity, they are all, whether directly or indirectly, to some extent connected to at least one component of nature and should therefore be aware of its value and importance.</p>

15. Only 2% of 12,000 adults surveyed by Ipsos and the National Geographic Society across Australia, Brazil, China, Great Britain, India, Indonesia, Kenya, Mexico, South Africa, South Korea, the UEA and the USA, said that they were unconcerned by the extinction of species. A majority of respondents were also in favour of transforming over half of the planet's land and sea into protected areas.

16. The Biodiversity Crisis Is a Business Crisis, BCG, 2021 (Nature Risk Rising: Why the Crisis Engulfing Nature Matters for Business and the Economy, WEF, 2020).

17. What is the sixth mass extinction and what can we do about it?, WWF, 2022 See also: De Vos, J.M., Joppa, L.N., Gittleman, J.L., Stephens, P.R. and Pimm, S.L. (2015), Estimating the normal background rate of species extinction. Conservation Biology, 29: 452-462.

18. Mooers, A., Faith, D., & Maddison, W. P., Converting endangered species categories to probabilities of extinction for phylogenetic conservation prioritization. PloS one, 3(11), 2008.

19. The Global Assessment Report on Biodiversity and Ecosystem Services, IPBES, 2019.

Due to how commonplace these misconceptions are, companies may presume that, as long as their activities do not directly negatively impact the renowned habitats of iconic species, their impact on biodiversity will be minimal. This translates into the fact that:

- Only 4% of companies feel well-informed about the correct actions to take to develop a biodiversity strategy<sup>20</sup>
- Over 75% of PESMIT firms surveyed for this report have a limited understanding of the consequences of biodiversity loss, and its impacts on business and investments<sup>21</sup>

**While most societal and corporate attention is on climate change, relatively less focus has been given to addressing nature loss**

Little attention has been paid to the biodiversity crisis thus far, despite the efforts by the international community to change this. The United Nations Convention on Biological Diversity (UNCBD) and its sister convention on climate change, the United Nations Framework Convention on Climate Change (UNFCCC), were both set-up in 1992, with the former being the official UN body tasked with protecting biodiversity. In 2010, the UNCBD seemed to have achieved a major success, when a set of 20 targets were agreed upon by governments at COP10 in Japan, devised with the aim of stemming the loss of biodiversity and wildlife. These 'Aichi targets' - named after the location of the COP - ranged from issues such as tackling pollution to reducing overfishing. Indeed, the first Aichi target aimed to increase awareness on the importance of biodiversity. In the words of the UN Convention of Biological Diversity (UNCBD) - the international body responsible for conserving biodiversity - "biodiversity is not widely understood and as a result its economic, social and environmental importance is often poorly recognized."<sup>22</sup> This lack of awareness is significant and has translated to solutions of the biodiversity crisis receiving ~7 times less financial investment than solutions to the climate crisis.<sup>23</sup>

**The "30x30" targets agreed at COP15 in December 2022 marks a pivotal turning point in this trend**

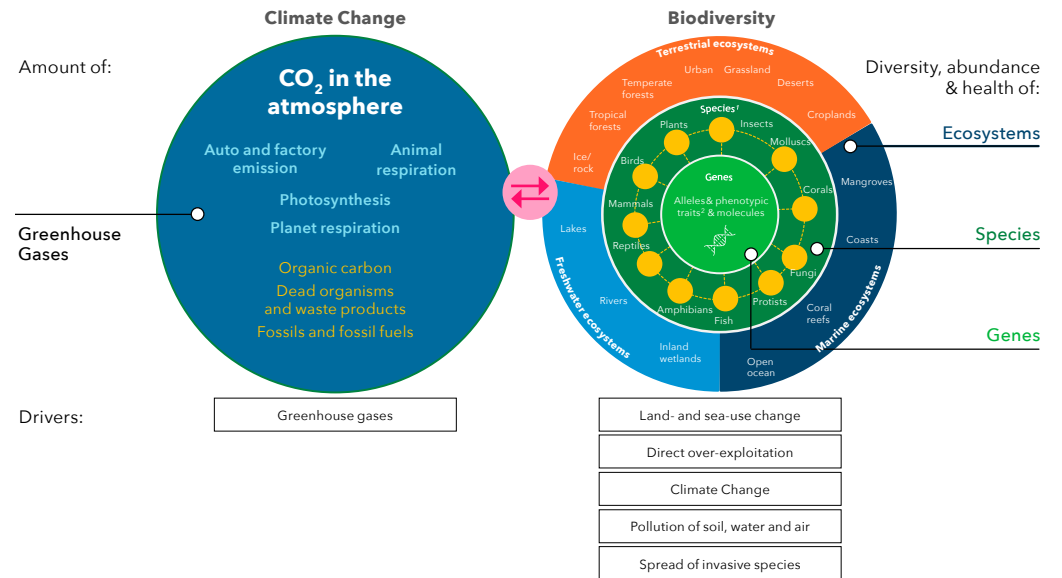
Unfortunately, the Aichi targets failed to attract sufficient attention and concern from both public and private sectors, with limited engagement in implementing measures in service of their aims. However, COP15, which took place in December 2022, was a significant change to this narrative, attracting unprecedented international attention onto biodiversity loss. COP15 concluded with an agreement on a Global Biodiversity Framework (GBF) that has been described by some as an equivalent of the Paris Climate Agreement for biodiversity. The GBF will shape policies globally for the next decade, with clear commitments and targets for governments to act on, ensuring that nature and biodiversity are considered in tandem with, rather than in addition to, climate change. The most prominent of these targets is the 30x30 commitment, according to which 30% of all terrestrial and all marine habitat is to be protected by 2030.

**The relative complexity of biodiversity, particularly compared to climate change, has likely contributed to societal inaction on biodiversity loss thus far**

- Whereas climate change has one key driver - greenhouse gas emissions - there are five major drivers of biodiversity loss.
- Whereas climate change has one key metric - GHG emissions measured through CO<sub>2</sub>e<sup>24</sup> - biodiversity has numerous metrics that vary depending on what driver of biodiversity is to be measured. Land-use change, water pollution and spread of invasive species all require significantly different measurements for example.
- Whereas the greenhouse gases causing climate change are fungible - 1 ton of CO<sub>2</sub>e emitted is always the same, regardless of where and how it was created - the biodiversity crisis and its drivers are not.

The best way of visualizing this complexity is through the depiction below:

**The relative complexity of biodiversity compared to climate and their interaction**



As a result, it is easier to set targets, track, and compensate one's impact on the climate than it is for one's contribution to biodiversity loss. Tackling this complexity and finding effective ways to address the biodiversity crisis is crucial if we are to enable both companies and investors to take action, as we cannot expect the business community to all be experts on nature and biodiversity.

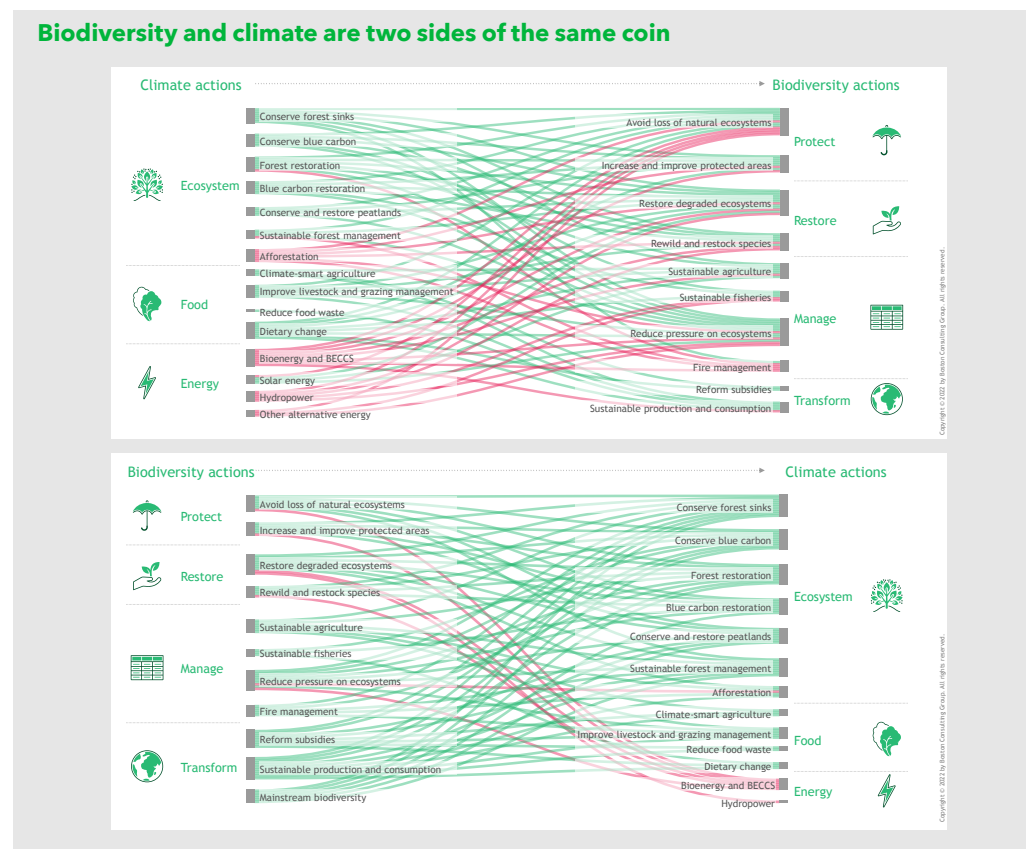
20. When it comes to biodiversity, businesses are at a loss, Quantis, 2021  
 21. Survey conducted by BCG with a total of 19 ESG Heads or equivalent at 13 leading, global Private Equity firms, October 2022  
 22. Aichi Biodiversity Target 1, Communication, Education and Public Awareness (CEPA), Convention on Biological Diversity (<https://www.cbd.int/cepa/target1/>)  
 23. Global Climate Finance: Climate Policy Initiative Thinktank, 2021, Global Biodiversity Finance: OECD, Comprehensive Overview of Global Biodiversity Finance, 2020  
 24. IPCC Definition for CO<sub>2</sub>e: The amount of carbon dioxide (CO<sub>2</sub>) emission that would cause the same integrated radiative forcing or temperature change, over a given time horizon, as an emitted amount of a greenhouse gas (GHG) or a mixture of GHGs. For the equivalence table, see: <https://unfccc.int/process/transparency-and-reporting/greenhouse-gas-data/greenhouse-gas-data-unfccc/global-warming-potentials> (IPCC Fourth Assessment Report)

## Why biodiversity should join climate at the top of the business agenda

Historically, there has been a tendency to view biodiversity and climate change as separate or even competing issues. Each issue has its own UN intergovernmental body (the IPBES for biodiversity versus the IPCC for climate change), its own convention or treaty (the UN CBD and the UNFCCC), and hence its own COP, with relatively limited historical co-operation between them. Such divisions have reinforced the tendency to tackle biodiversity and climate change in a siloed manner at both a political and scientific level.

In recent years however, the connected nature of biodiversity loss and climate change has been increasingly recognised, with efforts being made to treat the two issues in a more integrated manner. For example, the IPBES and IPCC jointly called for “a new conservation paradigm that would address the simultaneous objectives of a habitable climate, self-sustaining biodiversity, and a good quality of life for all.”<sup>25</sup>

Biodiversity and climate change are intrinsically interlinked and often mutually reinforcing



A more holistic view of biodiversity loss and climate change is important due to the intrinsic connections between these two issues. Failure to tackle one of these crises jeopardises our ability to tackle the other.

Failure to address the biodiversity crisis will accelerate climate change. A well-known example is the deforestation of the Amazon rainforest. The Amazon is home to at least 10% of the world's known biodiversity,<sup>26</sup> including distinct species of

over 100,000 invertebrates, 40,000 plants, 3,000 freshwater fish, 1,300 birds, 427 mammals, 400 amphibians and 378 reptiles.<sup>27</sup> This biodiversity is being lost at a breath-taking rate. 17% of the forest cover has been lost in the last 50 years,<sup>28</sup> with ~5 million acres of rainforest destroyed in 2021 alone.<sup>29</sup> Land conversion for cattle ranching is accountable for 80% of this deforestation that is driving biodiversity loss, whilst also having significant consequences for climate change.<sup>30</sup> The Amazon stores ~90-140 billion metric tons of

carbon,<sup>31</sup> but as it is destroyed, these emissions are released into the atmosphere. In 2021, the Amazon emitted more carbon dioxide than it was able to absorb for the first time ever in its history<sup>32</sup>; making the Amazon a net driver of climate change, rather than a carbon sink.

Climate change itself is the third biggest cause of biodiversity loss, and could soon become the second or first greatest. The ocean has thus far slowed climate change, having absorbed ~30-40% of the CO<sub>2</sub>, and 93% of the heat added to the atmosphere through human activity.<sup>33</sup> If climate change is not contained, rising ocean temperatures will significantly accelerate biodiversity loss in two major ways. Firstly, warm water coral reefs will be pushed beyond tolerable levels of thermal stress leading to mass-bleaching. Already between 2014 and 2017, coral reefs experienced heat-stress severe enough to kill 30% and bleach 75% of the world's reefs.<sup>34</sup> Thousands of marine animals, particularly those at the bottom of the food chain, depend on coral reefs for shelter, protection from predators, and as breeding grounds. Losing reefs therefore threatens to destabilize entire marine ecosystems, with important knock-on effects to the rest of the food web. Secondly, warmer oceans decrease the solubility of oxygen in water. Indeed, over the past 50 years, the area of low oxygen water in the open ocean has increased by 4.5 million km<sup>2</sup>, with the world's oceans now losing ~1 gigaton of oxygen annually.<sup>35</sup> Most marine organisms require a high enough concentration of dissolved oxygen to breathe; ocean deoxygenation thus threatens to accelerate biodiversity loss through the suffocation of marine ecosystems.

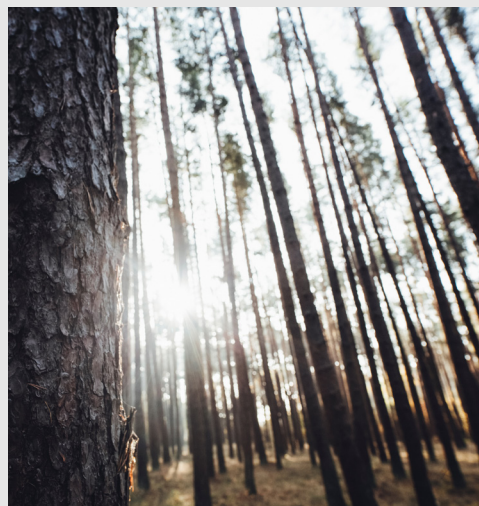
25. IPBES-IPCC co-sponsored workshop report on biodiversity and climate change 2021, Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES)

26. Inside the Amazon, WWF  
 27. From the boa to the leafcutter ant, and back to the red piranha, Amazon wildlife comes in all shapes and sizes, WWF  
 28. Inside the Amazon, WWF  
 29. MAAP #158, Monitoring of the Andean Amazon Project, 2022  
 30. Unsustainable Cattle Ranching, WWF  
 31. Inside the Amazon, WWF  
 32. Amazonia as a carbon source linked to deforestation and climate change, Gatti LV, Basso LS, Miller JB, et al., Nature, 2021  
 33. The Threat of High-Probability Ocean 'Tipping Points', Carbon Brief, 2021  
 34. Everything You Need to Know about Coral Bleaching - And How We Can Stop It, WWF  
 35. Intergovernmental Oceanographic Commission, UNESCO

Given the mutually reinforcing nature of climate change and biodiversity loss, nature-based solutions to climate change have an important role to play

Viewed specifically through the lens of combatting climate change, nature-based solutions seek to protect, restore and manage carbon- and species-rich ecosystems. Such nature-based solutions can range from reforestation projects, to the planting of new mangrove swamps, to the preservation of rainforests or wetlands. These projects, which help remove carbon from the atmosphere whilst simultaneously providing protection against biodiversity loss, can be directly invested in, as exemplified by the below case study. Furthermore, certain nature-based solutions, such as ecosystem restoration, are also among the cheapest and most rapidly implementable climate change mitigation measures according to a joint IPCC & IPBES report.<sup>36</sup>

### Case Study: ClimeCo



- Founded in 2009 and headquartered in the US, ClimeCo is a global company focusing on developing, trading, and advising on emerging environmental markets and projects, including greenhouse gases and energy.
- Since its creation, the company has focused on decarbonizing the most challenging industries, including cement, hydrogen, fuel, and other energy-intensive trade-exposed clients, leveraging the ClimeCo team's decades of technical expertise.
- Warburg Pincus invested in ClimeCo in April 2022 alongside The Heritage Group with the objective to fund corporate and project-level growth initiatives with the aim of enhancing value. As part of the capital raise, ClimeCo also gained access to additional funds for project equity financing, allowing their expansion of the company's global project development efforts in reforestation, mangrove restoration, ocean bound plastic removals, as well as foundational industrial gas and agricultural methane programs.
- ClimeCo operates beyond climate with a biodiversity-friendly approach and has launched multiple initiatives in that sense:
  - **Plastic removal** - Launch of plastic removal credit projects, a market-based mechanism to drive private sector capital to on-the-ground projects by removing plastic from the environment and creating sustainable solutions, including recycling, repurposing, and co-processing. For example, the Bahari Safi project in Kenya supports over 350 fishers in local Indian Ocean coastal communities by empowering them to collect abandoned nets, gear, and marine and ocean bound plastics. This project encourages the fishers to employ more sustainable fishing practices, including the reduction of overfishing by pausing and limiting their fishing activities while receiving income collecting plastic.
  - **Reforestation** - ClimeCo partners with Restore the Earth Foundation, aiming for the successful reforestation of over 20,000 acres of coastal and bottomland hardwood forest across several Wildlife Management Areas (WMA) in Louisiana.
  - **Blue carbon** - ClimeCo is working with Yayasan Konservasi Pesisir Indonesia (YAKOPI) to reforest over 2,700 acres of mangroves in the Aceh and North Sumatra regions of Indonesia, which are renowned for containing the highest biodiversity in the Asian Pacific.
- ClimeCo demonstrates how climate-focused businesses can simultaneously have a broader impact on interrelated global challenges, including biodiversity protection, ecosystem restoration, and community prosperity.

36. IPBES-IPCC co-sponsored workshop report on biodiversity and climate change 2021, Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES)



The magnitude of the biodiversity crisis requires decisive action

We are experiencing biodiversity loss at an unprecedented rate. WWF's landmark Living Planet report has shown a 69% average decline in wildlife populations since 1970, rising to 83% for freshwater species and 94% for species in Latin America.<sup>37</sup> The current extinction rate<sup>38</sup> – between 1,000 and 10,000 times higher than natural extinction rates<sup>38</sup> – means that we have entered into the sixth age of mass extinction by scientific standards: over 1 million animal and plant species are currently threatened with extinction,<sup>39</sup> more than ever before in human history.

**Delving deeper into this statistic, we see that:**

Vertebrate extinction rates since 1980 are

**70-300**

times greater than during the most recent mass extinction event, which killed off the dinosaurs 65 million years ago<sup>40</sup>

It will take Earth at least

**3 million**

years to recover the phylogenetic diversity lost as a result of extinctions in the next 50 years<sup>41</sup>

37. Living Planet Report, WWF, 2022  
 38. What is the sixth mass extinction and what can we do about it?, WWF, 2022 (Natural extinction rates, also called background extinction rates, are the rate of species extinctions that would occur without human activity)  
 39. Global Assessment Report on Biodiversity and Ecosystem Services, IPBES, 2019  
 40. McCallum, M.L. Vertebrate biodiversity losses point to a sixth mass extinction. *Biodivers Conserv* 24, 2497-2519 (2015)  
 41. 'Mammal diversity will take millions of years to recover from the current biodiversity crisis', Davis M., Faurby S., Svenning J., *PNAS* Vol. 115|No. 44, 2018  
 42. Living Planet Report, WWF, 2022  
 43. Ibid.  
 44. 'More than 75 percent decline over 27 years in total flying insect biomass in protected areas', Caspar A. Hallmann et al., *PLOS One*, 2017  
 45. Stockholm Centre: <https://www.stockholmresilience.org/research/planetary-boundaries.html>

**1-2.5%**

of birds, mammals, amphibians, reptiles and fish have already gone extinct<sup>42</sup>

**25%**

of plants and animals are currently at risk of extinction<sup>43</sup>

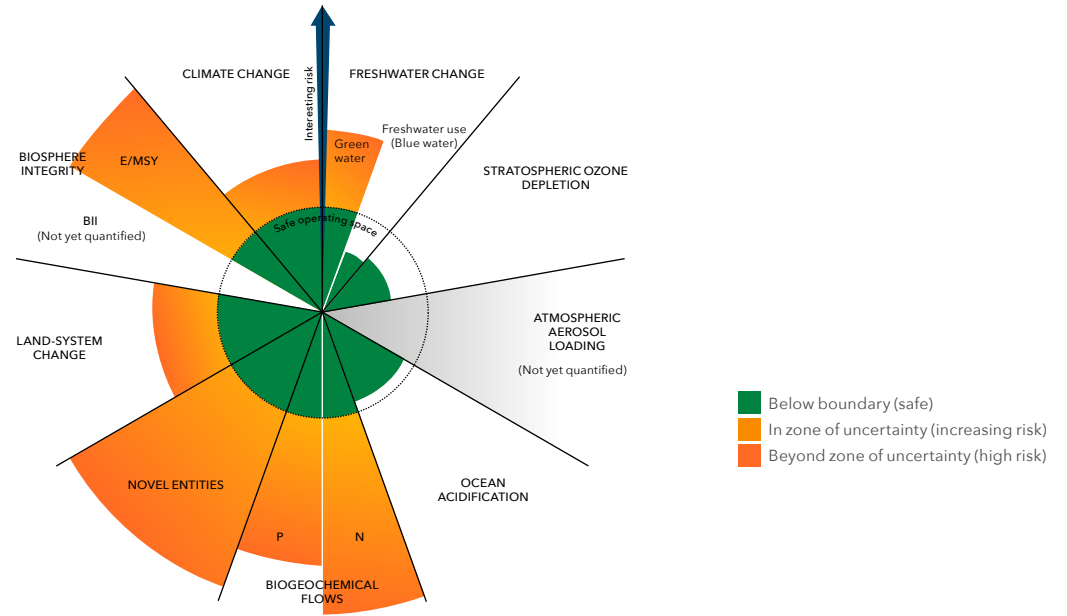
Even in protected areas, there has been

**about 75%**

decline in total flying insect biomass over the last ~30 years<sup>44</sup>

These statistics illustrate how we have already breached the 'Biosphere integrity' planetary boundary. Crossing a planetary boundary "increases the risk of generating large-scale abrupt or irreversible environmental changes.<sup>45</sup> In other words, biodiversity loss may be approaching, or have exceeded, tipping points after which the stability and functionality of ecosystem services is at threat, jeopardizing Earth's ability to sequester carbon, pollinate crops, or filter groundwater.

**Planetary boundaries**



The planetary boundaries diagram, created by the Stockholm Resilience Centre, illustrates the extent to which humanity has surpassed a planetary boundary.

- The center ring indicates humanity is within the "safe operating space" of a boundary
- The middle ring indicates that humanity is operating "in a zone of uncertainty", with increased risk of having crossed a planetary boundary
- The outer ring indicates that humanity is operating "beyond the zone of uncertainty", with a high risk of having crossed a planetary boundary

For freshwater change, biochemical flows, and biosphere integrity boundaries, 2 different metrics are used to take into account distinct dimensions of the respective boundary (e.g. nitrogen pollution vs. phosphorus pollution, green water vs. blue water).

## The drivers of the biodiversity crisis have human origins, and thus human solutions

Five activities in particular drive biodiversity loss, all of which have human origins and hence human solutions.

### Exhibit 3 - Five major factors drive biodiversity loss

1

#### Land-use and sea-use change

Habitat conversion (e.g. deforestation), habitat fragmentation, and degradation through overintensive use of ecosystems

**75%** of the Earth's land surface has been significantly altered from its natural state<sup>46</sup>

**10 million hectares** of forest are lost per year; an area equivalent to the size of Portugal<sup>47</sup>

4

#### Pollution of soil, water, and air

Release of harmful substances (e.g. through excessive chemical use) into ecosystems; also, light and noise pollution

The average person ingests approximately **5 grams of plastic every week** through eating and drinking, equivalent to a credit card's worth of microplastics<sup>52</sup>

The ocean will contain **1 metric ton of plastic** for every **3 metric tons of fish** by 2025<sup>53</sup>

2

#### Direct overexploitation

Overexploitation of animals, plants, and ecosystems in general (e.g. from poaching, unsustainable logging, or overfishing)

**Marine:** Over **90%** of the world's fish stocks are now either fully exploited at, or overexploited beyond, maximum sustainable levels<sup>48</sup>

**Land:** Only **4%** of the world's mammals, by weight, are wild; humans account for **36%**, and livestock for the remaining **60%**<sup>49</sup>

3

#### Climate change

Shifts in temperature, precipitation, and wind flows caused by increased levels of greenhouse gases in the atmosphere

Earth's temperature has risen by **0.18°C** per decade since 1980, with the nine years from 2013 to 2021 all ranking among the 10 warmest years on record<sup>50</sup>

Current climate pledges from the **193 states** that signed the Paris Agreement put the world on track for **~2.5°C** of warming by the end of the century - 1 degree over the 1.5°C target that itself would still cause significant climate disruption<sup>51</sup>

5

#### Spread of invasive species

Plants, animals, or other non-native organisms entering or expanding their presence in a given habitat

Approximately **42%** of threatened or endangered species are at risk due to invasive species<sup>54</sup>

The economic cost of invasive species in the USA was estimated to be \$21bn annually, from 2010-2020<sup>55</sup>

Source: IPBES, "Global Assessment Report on Biodiversity and Ecosystem Services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services" (2019)

46. Integrating biodiversity into private equity, France Invest, 2022

47. Living Planet Report, WWF, 2022

48. UN Food and Agriculture Organisation (UNFAO), The State of World Fisheries and Aquaculture 2022

49. 'The biomass distribution on Earth', Yinon M. Bar-On, Rob Phillips and Ron Milo, Proceedings of the National Academy of Sciences, vol. 115:25, 2018

50. Climate Change: Global Temperature, US National Oceanic and Atmospheric Administration (NOAA), 2022

51. Nationally Determined Contributions (NDCs) under the Paris agreement. Synthesis report, UNFCCC, October 2022

52. No Plastic in Nature: Assessing Plastic Ingestion From Nature to People, The University of Newcastle Australia, commissioned by WWF

53. Ibid.

54. The National Wildlife Federation of America, Invasive Species

55. Jean E. Fante-Lepczyk et al., Economic costs of biological invasions in the United States, Science of The Total Environment, Volume 806, Part 3, 2022

Although ecosystem services provide critical benefits upon which our society and economy depend, there are many considerations that may weigh either in favour of or against attempting to value them financially.

Ecosystem services bring significant benefits to our society and economy. 75% of our global food crops, including fruits, vegetables, almonds, and coffee, rely on pollinators such as bees. 70% of antibiotics and drugs used to fight cancer are directly or indirectly derived from natural substances. Natural ecosystems sequester roughly one-third of global greenhouse gas emissions annually, provide the oxygen we breathe and filter the water we drink.<sup>56</sup> Even those who have a general sense of the importance of biodiversity may not entirely appreciate the number, variety, and value of the services it provides to us. How often is the importance of soil health thought about when accessing food, or when seeking solutions to extreme weather events such as flooding or drought?

To better appreciate the value of ecosystem services, there have been several attempts to estimate their contribution to our society and economy in financial terms. While raw materials and food are the only ecosystem services that we consistently value financially (only representing 4<sup>57</sup> of the 18 ecosystem services identified by the IPBES), it appears crucial for mitigation of biodiversity loss to start estimating the total value behind nature in its entirety. Quantifying the value of ecosystem services is a means of highlighting our dependency on nature and, in doing so, encourages us to correctly protect it. The leading academia behind this work have argued that "as long as we are forced to make choices, between protecting nature or exploiting it, we are going through the process of valuation. Thus, being more explicit about the value of ecosystem services and natural capital can help society make better decisions in the many cases in which trade-offs exist."<sup>58</sup>

For example, there is a rapidly growing need for new infrastructure, particularly in developing nations - requiring an estimated \$94 trillion worth of investment by 2040,<sup>59</sup> which will also be necessary for climate change mitigation purposes. These projects are largely inevitable, and will cause significant detrimental impacts on nature and biodiversity. A scientific, accurate method of valuing nature is hence important in order to develop a form of 'biodiversity credits' that - recognising the complexity and non-fungibility of biodiversity - allows negative impacts on nature to be valued financially and, at least in part, compensated for (see definition in dedicated section).

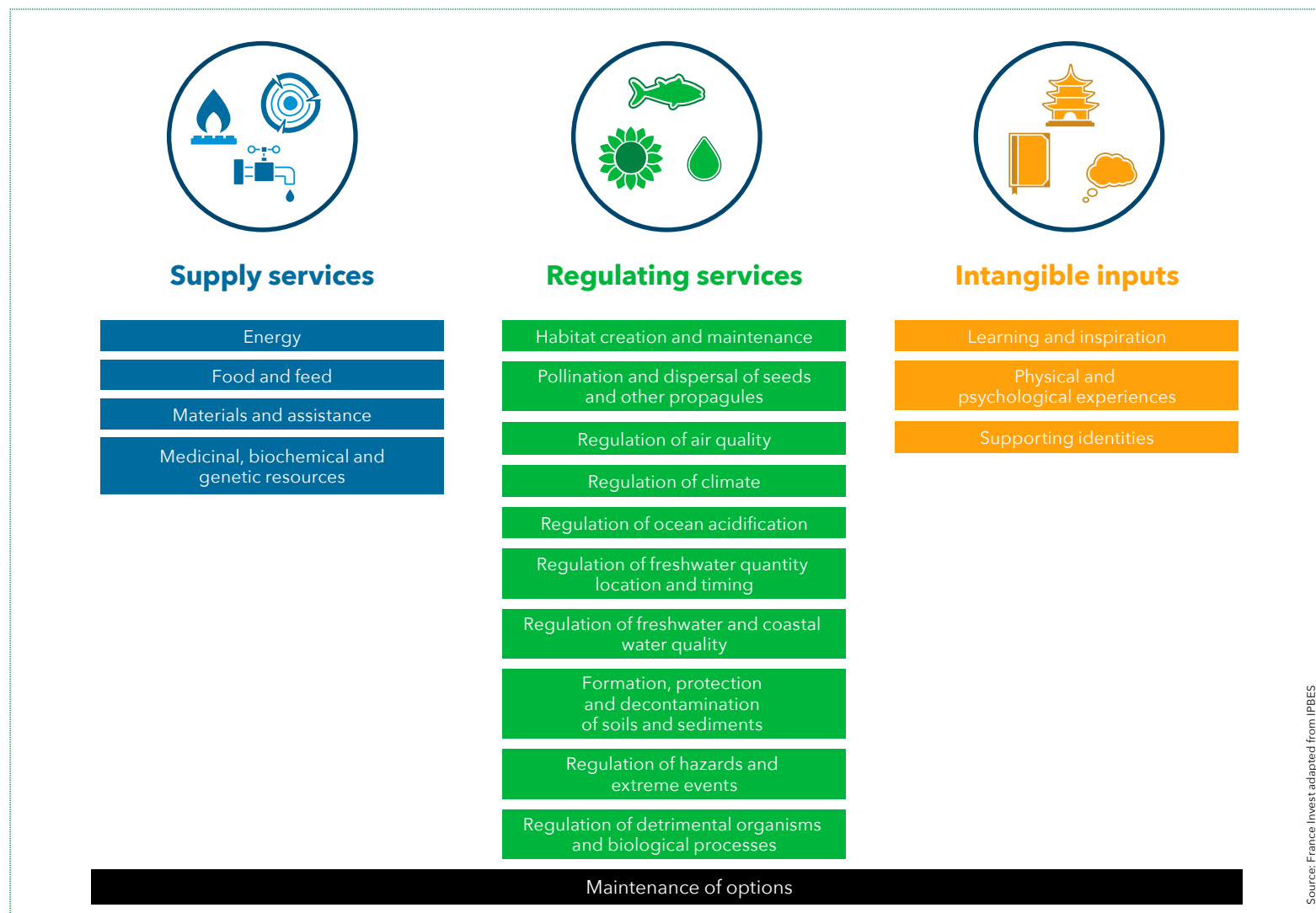
56. The Biodiversity Crisis Is a Business Crisis, BCG, 2021

57. Energy - Food and feed - Materials and assistance - Medicinal, biochemical and genetic resources

58. Costanza, Robert & Groot, Rudolf & Braat, Leon & Fioramonti, Lorenzo & Sutton, Paul & Farber, Steve & Grasso, Monica. (2017). Twenty years of ecosystem services: How far have we come and how far do we still need to go?. Ecosystem Services. 28. 1-16..

59. Oxford Economics, Global Infrastructure Hub G20 Initiative, Global Infrastructure Outlook 2017

The WEF has estimated that around \$44 trillion – over half of global GDP – is dependent on high-functioning, healthy biodiversity.<sup>60</sup> More concretely, this \$44 trillion is dependent on at least one of 18 ‘ecosystem services’ that collectively form the following three categories of “Nature’s contributions to people” to value biodiversity according to the IPBES:



According to the IPBES, 14 of the 18 ecosystem services are currently in decline

60. Nature Risk Rising: Why the Crisis Engulfing Nature Matters for Business and the Economy, WEF, 2020



While the WEF study only estimates the current, existing GDP related to nature, other studies have tried to estimate the value of ecosystem services that we benefit from and that are not currently monetized, and therefore not captured in GDP. Based on analysis from the Economics of Ecosystems and Biodiversity initiative (TEEB), the economic value of the full potential of ecosystem services alone is worth almost twice the world's GDP – about \$150 trillion annually.<sup>61</sup>

Quantifying the value of ecosystem services can raise awareness of the importance of biodiversity and create momentum for change. Ecosystem services fall into four primary categories:



**Regulating.** Natural ecosystems provide multiple services that are essential to environmental stability. Among them: climate regulation (through carbon sequestration), waste storage and filtration, air purification, recycling of nutrients, prevention of soil erosion, and control of biological disturbances such as disease. One way to approximate the economic value of these services is by calculating the opportunity costs that would be incurred without them. For example, we computed the climate regulation value by multiplying the carbon sequestration rate of different ecosystems by a carbon price of \$50 to \$120 per ton – a range that reflects the full cost of CO<sub>2</sub> emissions to society at different social discount rates. We estimate that regulating services, in total, account for 60% of total ecosystem services value.



**Cultural.** Natural ecosystems serve spiritual, heritage, educational functions. We excluded spiritual, cultural heritage, and educational benefits from our calculations, however, given the difficulty of assigning objective dollar figures to those functions. Even so, the value from travel, tourism, and other forms of recreation alone accounts for around 20% of the total.



**Habitat.** Ecosystems provide two forms of habitat services. First, they offer space for plant, animal, and microorganism species to live, migrate, and procreate. Second, they support the formation of fertile soil, which is vital for the survival of plants and other organisms, and for food production. Cumulatively, these habitat services account for more than 10% of total ecosystem services value.



**Provisioning.** This category captures the value of products such as food, timber, and medicinal inputs created within ecosystems. We based our estimates of provisioning services on market values for those products, but excluded the portion of that value created through man-made activities such as cultivation and raw material conversion. Our research indicates that provisioning comprises roughly 7% of total ecosystem service value.

Total ecosystem service value

>\$150 trillion

61. The Biodiversity Crisis Is a Business Crisis, BCG, 2021





Given the extent of the biodiversity crisis, it is unsurprising that the global economy is already estimated to be taking a hit of over \$5 trillion annually – roughly 6% of global GDP – due to failing ecosystem services.<sup>62</sup> In light of magnitude and dangers of this crisis, both economic and otherwise, the WEF has ranked biodiversity loss as the second-greatest global risk to humankind – after climate action failure, and announces that out of 10 of the most likely global risks, 8 are directly related to nature.<sup>63</sup> Failing to address nature and biodiversity issues thus represents a risk for companies, for example contributing to declining productivity and consumer demand, as well as increasing costs.

However, there are other considerations that may weigh against attempting to value biodiversity financially. Firstly, there is a risk that through assigning a monetary value to the natural world, we enable market mechanisms that could be perceived as granting the wealthy and corporations a ‘right to exploit nature’ for the correct price – thereby aggravating inequalities and nature loss simultaneously. Secondly, biodiversity is not fungible. A km<sup>2</sup> of biodiversity loss in the Amazon will have a different impact as a km<sup>2</sup> of biodiversity loss in a different ecosystem. Due to this non-fungibility, it is both difficult to accurately value ecosystem services and can be dangerous to do so, as it may encourage the misplaced belief that one can simply compensate for biodiversity loss in a key biodiversity area by, for example, reforesting elsewhere.<sup>64</sup> There is now extensive research on ecosystem restoration, and several metrics to capture the functionality of an ecosystem beyond acreage. For example, efforts led by the United Nations Decade on Ecosystem Restoration include “Finance restoration on the ground”. The United Nations Decade aims to “provide knowledge on how to finance ecosystem restoration and build capacity of stakeholders to raise finance”,<sup>65</sup> recognizing that “adaptation requires ecosystem protection, restoration and management”.<sup>66</sup> As these mechanisms develop, it will be essential to reflect that some of the most critical ecosystems for biodiversity, such as primary forests or free flowing streams, simply cannot be restored, and must absolutely be protected.

## The financial sector is highly dependent on biodiversity, and can be a force to help protect nature

While the macroeconomic perspective on nature is now better understood, the finance community and regulators have only very recently started to try and assess systemic and microeconomic risks related to nature loss.

Mark Carney, UN Special Envoy on Climate Action and Finance and co-chair of the Glasgow Financial Alliance for Net Zero (GFANZ) highlighted at COP15 that **“as net zero commitments move from targets to action, private finance must ensure that their transition plans include clear policies on deforestation and protecting nature and restoring biodiversity.”**<sup>67</sup>

Research from the Banque de France and De Nederlandsche Bank has revealed, for example, that 42% of the value of shares and bonds held by French financial institutions, and €510 billion of investments held by their Dutch counterparts are highly or very highly dependent on at least one ecosystem service.<sup>68</sup> The same research also highlighted that the Dutch financial sector had €96 billion worth of investments in, or loans to, companies involved in environmental controversies with negative consequences for biodiversity, in addition to a further €97 billion in businesses involved in deforestation, and €28 billion in companies operating in protected areas or areas that might soon come under protection.

62. Ibid.

63. WEF, The Global Risks Report, 2020

64. For further details: See George Monbiot, SPERI Annual Lecture, Sheffield Political Economy Research Institute, University of Sheffield

65. Food and Agriculture Organization of the United Nations (FAO), The key role of forest and landscape restoration in climate action, 2022

66. Ibid

67. The Unbearable Lightness of Beings, 13th December 2022, COP15 Finance and Biodiversity Day, Mark Carney Speech

68. A “Silent Spring” for the Financial System? Exploring Biodiversity-Related Financial Risks in France. Svartzman, R., et al., 2021. Indebted to nature: Exploring biodiversity risks for the Dutch financial sector. De Nederlandsche Bank, 2020



## The case for action for Private Equity

In the context of generally slower economic growth amidst the Covid-19 pandemic, the private market continued to experience strong year-on-year growth, with a record \$9.8 trillion assets under management (AUM) at the close of 2021 – a 32% increase on the previous year.<sup>69</sup> This growth is expected to continue over the coming years, with global PE AUM alone forecast to reach \$5.8 trillion by 2025 in a mere base-case scenario.<sup>70</sup> Indeed, the Private Equity sector in the USA is estimated to have generated \$1.4 trillion of GDP in 2020, equivalent to ~6.5% of total US GDP.<sup>71</sup>

## Private Equity can contribute to the Private Sector's efforts to direct value creation resources to biodiversity issues, to enable and scale some of the necessary solutions, enhance value and mitigate risk

Given this position, Private Equity has a role to contribute to closing the global biodiversity financing gap. Recent estimates of this gap suggest an extra ~\$700 billion of financing per year is required to 2030.<sup>72</sup> Part of this sum corresponds to measures that should be undertaken by the public sector through grants or programmes in favor of protecting public goods (e.g., creating natural parks, safeguarding water quality, etc.), while Private Equity's role would relate to nature-based solutions. Concretely, the UNEP states that "investment in nature-based solutions ought to at least triple in real terms by 2030, if the world is to meet its climate change, biodiversity and land degradation targets".<sup>73</sup> Key types of investments include natural infrastructures (e.g. wetlands, forests, etc.) that deliver substantial ecosystem services, as well as investments in nature-based solutions like carbon sequestration, reforestation or sustainable agriculture, which also contribute to the reduction of emissions and the protection of natural ecosystems. Closing this gap requires the public sector to also do more, however ~86% of all investments in nature-based solutions currently come from public sources.<sup>74</sup> The private sector is behind the public sector, and early movers in the PE industry may be able to benefit from an increasing global demand for ESG and environment-focused assets – global demand for ESG funds has grown at a 13% CAGR since 2012, compared to a 6% baseline for all funds.<sup>75</sup>

Five key characteristics of PE explain why it is particularly well-placed to participate in efforts to tackle biodiversity loss and make the case for action in the sector:

1. The medium to long-term value creation focus of PE compels firms to consider the future impact of biodiversity-related risks and opportunities on companies they invest in
2. PE firms have direct access to management in the companies their funds invest in, especially when they have a controlling stake
3. Companies controlled by PE funds are less constrained by the 'short-termism' of the public market
4. PEs have expertise in transforming companies to drive value creation, reinforced by a trend of sectoral specialization and the ability to inject capital from a fund level to drive positive change
5. Many PE firms and private companies already have solid ESG foundations and environmental policies (e.g. on water use, sourcing, deforestation, etc.), from which to develop a strategic approach to biodiversity

69. Private Markets Annual Review, McKinsey, 2022

70. The growing private equity market, Deloitte, 2020

71. Economic contribution of the US private equity sector in 2020, Ernst & Young – Prepared for the American Investment Council, May 2021

72. <https://www.paulsoninstitute.org/conservation/financing-nature-report/>

73. State of Finance for Nature, UN Environment Programme, 2021.

74. Ibid.

75. Global Sustainable Investment Alliance, Global Sustainable Investment Review (GSIR) 2020, 2018, 2016, 2014



## The medium to long-term value creation focus of PE, encourages firms to consider the future impact of biodiversity-related risks and opportunities on companies they invest in

PE firms are often long-term investors. The goal of PE firms is to create significant value in the companies they invest in during the holding phase, so that they can be subsequently sold at an increased value. PE firms' investment timeline often gives them the room and opportunity to guide companies throughout their transformation journey towards nature positivity, overseeing both risk mitigation actions and value creation opportunities along the way.

After a typical holding phase of 5-8 years, a company's exit valuation will take into account any risks to profitability in the following ~5 years. Hence, anything that could materially impact value or that could be subject to substantial risks (risks resulting from climate change, either event driven (acute) or from longer-term shifts in climate patterns (chronic)) or a transition risk (including risks linked to policy, legal, technology, and market changes in the context of transition to a lower-carbon economy<sup>76</sup>) in 10-13 years' time is often considered when acquiring a company or devising value creation strategies for companies that have already been invested in.

Despite these considerations, within a subset of firms participating in the PESMIT, our survey shows that only ~20% of PE firms assess biodiversity risks and impacts or have implemented a nature-based screening when considering a potential acquisition's value chain in a due diligence.<sup>77</sup>

There is however not just a risk-mitigation consideration, but indeed a value-creation opportunity for all acquired companies that are able to mitigate their impact on biodiversity-loss and even become nature-positive - demonstrating that they have a sustainable business model that helps secure their long-term operational viability. Indeed, this belief is growing across the PE sector specifically 75% of ESG heads surveyed for the

### Exclusion of a company during the due diligence phase - Confidential Case Study

- A PE firm disclosed to this study a 2022 example of choosing not to pursue an opportunity to invest in a company, where that decision was based on biodiversity grounds that could have impacted reputation and value.
- **The company is involved in seafood harvesting and production.**
- **The PE firm disclosed its approach and rationale:**
- "We used our proprietary sustainability trends framework to analyse the risks and drivers associated with an investment opportunity.
- On the one hand, we noted alignment with megatrends around rising demand for protein, including and perhaps especially fish and seafood within this, driven by demographics and affluence trends, particularly in emerging markets.

purpose of this report affirmed that they would expect a company with a robust biodiversity strategy to experience a significantly or somewhat greater increase in value, than a like-for-like equivalent that lacked said biodiversity approach. Case study examples further illustrate this point.

In addition to financial value-creation opportunity however, proactive biodiversity strategies also bring several additional benefits:

- In our assessment, which included reviewing the potential principal adverse impacts and the environmental characteristics of such an investment, we noted the following:
- **Shrimp farming** methods can face criticism for their environmental damage - often biodiversity-rich aquatic ecosystems will be cleared to make space for farms, including mangrove swamps. This is facing increasing criticism not only for reasons around biodiversity loss, but also as mangroves provide protection from storm surges (which are becoming more common with climate change). Furthermore, the climate impact of farmed shrimp is considered in studies to be very high.
- Additionally, shrimp farms are associated with leakage of waste, chemicals, excessive salinity and antibiotics, which can be detrimental to ecosystems and the people that depend upon them. Criticism comes from a range of sources not limited to NGOs and local communities which are supported by academic studies. The Socio-economic benefits from the economic activity around aquaculture are also disputed and in extreme cases have led to local, occasionally violent, conflicts.

- **Fish trawling**, particularly bottom trawling when nets are weighted and dragged along the seabed, is often seen as controversial, given its indiscriminate by-catch and resultant damage to ecosystems. This is not to say that the target company operates its trawlers in a more biodiversity-negative way than its competitors - however, it trawls for some species which have been identified as being over-fished. Certain fishstocks can achieve certified status, for example MSC accreditation, yet it was not clear from the materials reviewed how much of the company's fishing activity is considered sustainable by accredited third parties.
- Part of the company's growth plans looked at expansion into more **intensive marine farming opportunities**. Our diligence identified potential substantial biodiversity and related reputational risks associated with the proposed growth plans that could ultimately impact value.
- Ultimately we assessed that the production methods which the company operated presented significant potential biodiversity risks to the value of the business which we were uncomfortable acquiring into our portfolio, regardless of multiples paid."

### Benefits of biodiversity strategies for businesses



76. TCFD, Recommendations of the Task Force on Climate-related Financial Disclosures, Final Report, June 2017  
 77. Survey conducted by BCG with a total of 19 ESG Heads or equivalent at 13 leading, global Private Equity firms, October 2022

PE firms have direct access to management of the companies their funds invest in, especially when they have a controlling stake

PE firms, typically when they have a controlling stake, can work hand-in-hand with management to find and implement value-creation strategies, whilst mobilizing funds on this journey with a long-term view on returns. A PE house that understands biodiversity risks and opportunities and recognizes their potential as a value-creation/risk-mitigation lever, may transfer such knowledge and accompanying biodiversity strategies to its portfolio company. The challenge lies in ensuring the importance of improving a portfolio company's biodiversity impact is not lost amidst the many other competing priorities and limited bandwidth during a PE takeover. For this reason, the integration of biodiversity roadmaps into traditional value creation plans is key when considering potential biodiversity impacts.

Companies controlled by PE firms funds are less constrained by the 'short-termism' of the public market

By virtue of being on the private market, companies acquired by PE funds have a greater scope to improve their biodiversity impact, as they remain free from certain constraints of the public market, such as day-to-day stock price fluctuations and frequent reporting obligations, which can encourage public companies to prioritise solutions that bring short-term results. The European Securities and Markets Authority (ESMA) refers to short-termism in finance to describe "the focus placed by market participants on short-run profitability at the expense of long-term investments".<sup>78</sup> Portfolio companies hence may have greater scope to undertake, where necessary, more substantial, long-term changes to their value chains and business models. As well as a benefit, the lack of reporting obligations is also a challenge, as private companies consequently have significantly less data to use when assessing their biodiversity impact. The PE community can work to drive the adoption of nature reporting in private companies that are in the scope of regulation on mandatory disclosure, with simple and actionable KPIs that correspond to the key material topics for each company and can thus help drive action and impact.

PE firms have expertise in transforming companies to drive value creation, reinforced by a trend of sectoral specialization and the ability to inject capital from a fund level to drive growth

Conducting transformations of portfolio companies to create value is a strength of Private Equity. The percentage of PE firms with a sectoral specialization has doubled over the past decade, with ~40% of all PE funds now having a sectoral focus.<sup>79</sup> With this increasing specialization, the PE sector has acquired an even deeper expertise in the business models, end-to-end value chains and operations of their portfolio companies. Such expertise, combined with the significant funding acquired companies receive, means that PE-backed private companies are ideally placed to identify, evaluate and overcome potential biodiversity risks inherent to their business. For instance, a fund investing in FMCG can acquire a deep expertise in sustainable packaging solutions and can thus help companies scan the innovations landscape to pick the solution that will best fit their needs.

Many PE firms and private companies have existing ESG programmes already in place, from which to develop a strategic approach to biodiversity

Many PE firms already have solid foundations to build from when it comes to improving their portfolio's biodiversity impact. Existing ESG strategies often already cover some of the fundamentals required in a responsible biodiversity strategy, such as policies regarding deforestation, water-use and protected areas. Furthermore, with climate change being one of the five principal drivers of biodiversity loss, the existing climate strategies of many PE firms can also contribute to any biodiversity strategy. Indeed, ~85% of SMI PE firms interviewed for the purpose of this report have policies on GHG emissions, whilst roughly 25% declared that their firm had at least one other biodiversity-related policy, including on topics such as deforestation, overfishing and land-use change.<sup>80</sup> In addition, with climate change being one of the three most impactful drivers of nature loss,<sup>81</sup> climate mitigation actions contribute to the preservation of biodiversity, and may be integrated into a holistic nature positive strategy. Of course, companies should seek to make sure that they pick climate actions that do not significantly harm other environmental objectives (including sustainable use and protection of water and marine resources, and protection and restoration of biodiversity and ecosystems).<sup>82</sup>

78. [https://www.esma.europa.eu/sites/default/files/trv\\_2020\\_1-short\\_termism\\_pressures\\_from\\_financial\\_markets.pdf](https://www.esma.europa.eu/sites/default/files/trv_2020_1-short_termism_pressures_from_financial_markets.pdf)

79. Prequin, BCG Analysis

80. Survey conducted by BCG with a total of 19 ESG Heads or equivalent at 13 leading, global Private Equity firms, October 2022

81. IPBES

82. European Commission, 'Do no significant harm' Technical Guidance by the Commission, February 2021



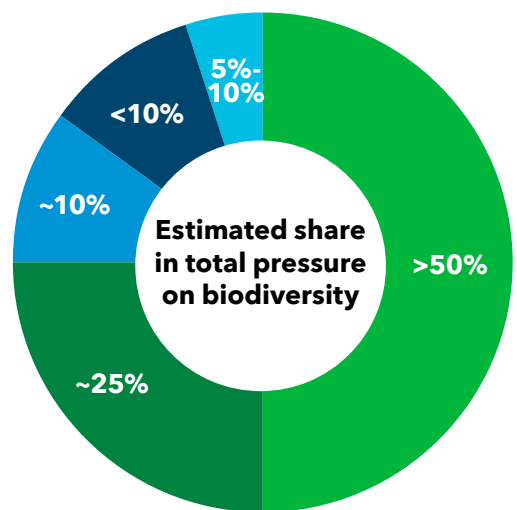
# Integrating biodiversity into the PE investment cycle

PE firms can integrate biodiversity into their business through a set of 'no-regret' actions in the short-term, as well as more advanced and structured ones in the medium to long-term. This section details how these actions may be carried out and informs on the multiple existing frameworks and targets that can be leveraged by PE firms when considering integrating a biodiversity roadmap into their broader environmental strategy.

## Nature and biodiversity must be approached with a sectorial lens

Cumulatively, the value chains of the following sectors generate ~90% of all biodiversity pressure:

### Four Major Value Chains Account for About 90% of Pressure on Biodiversity



- **Food and beverages**, including packaging
- **Infrastructure and mobility**, including housing, public infrastructure, and vehicles
- **Energy**, including fuels, power, and other commodities
- **Fashion** and related FMCG, including luxury goods
- **All other**, including pharma, cosmetics, and consumer electronics

Source: BCG analysis (see appendix for details).  
Note: Value chains are defined by consumer end products; FMCG = fast-moving consumer goods

It is however important to note that other sectors, including the Healthcare industry, are heavily reliant on biodiversity, or can be responsible for many of the indirect pressures weighing on it. For example, despite it seeming separate from the natural world, the Digital industry is a heavy polluter and contributes significantly to accelerating climate change through the energy it uses.

The sectoral lens should also be complemented with a location-based / geographic approach which contributes to driving intra-sectoral variations. For example, in the soy industry, the risk of induced deforestation can be very high for imports from specific areas of South America, and much more limited for soy grown in the United States or Europe. Therefore, when assessing potential biodiversity impacts companies would need to map their impacts and dependencies across their value chain and consider them in the context of the location of their activities.

Companies from each sector should adapt the level of granularity and engagement of their biodiversity strategy according to their impact and dependency on nature. As all sectors have a direct or indirect impact on biodiversity and ecosystem services, they may also engage in building a coherent action plan and narrative integrating biodiversity into their existing climate strategy.

## PE firms can begin to integrate biodiversity into their business through simple yet effective actions

PE firms can begin their journey towards a nature-positive world with several actions that do not require an advanced biodiversity strategy:

### 1. High-level materiality assessment

### 2. Gap assessment between biodiversity-related issues identified and current environmental strategy

### 3. Conversation starters with management

### 4. CXOs ESG Summits

### 5. Internal trainings

1. Firms can conduct a high-level materiality assessment on nature risks based on their respective sectoral focuses - without deep-diving on portfolio companies' specificities at this stage - to assess how significant their impacts and dependencies on nature may be. For instance, a fund that is active in the IT hardware industry can look at six issues according to The Sustainability Accounting Standards Board (SASB): GHG Emissions, Air Quality, Energy Management, Water & Wastewater Management, Waste & Hazardous Materials Management, Ecological Impacts. This assessment can leverage standard general or sectorial frameworks to allow a high-level mapping of common risks and opportunities faced by the sectors that are relevant to each firm. Reference frameworks include:



The Sustainability Accounting Standards Board (SASB) Materiality Map



Science Based Targets Network (SBTN) Sectoral Materiality Tool



The Global Reporting Initiative (GRI) Sector Standards and Material Topics

- Other sectorial maps such as Standard & Poors' ESG Materiality Maps

2. Simultaneously, it can be useful for firms to evaluate their existing ESG initiatives and determine which, if any, already serve to mitigate biodiversity risks. Protecting biodiversity, intentionally or otherwise, often already forms part of existing climate change/net-zero policies.

## Case Study: Stark Group



- Headquartered in Denmark, STARK Group is a leading B2B distributor of heavy building materials for the construction industry in the Nordics and Germany, with a focus on serving professional craftspeople. CVC invested in STARK Group in early 2021.
- As part of wider ESG and sustainability policies, STARK had already implemented several measures to minimise waste and energy consumption, reduce its carbon footprint and minimise indirect environmental impacts in its supply chain. For example, in 2021, STARK Group joined the Science Based Targets initiative (SBTi) in recognition of the urgent need to combat climate change.
- In addition, STARK's climate change mitigation and adaptation efforts includes an objective to source their timber products from sustainably managed forests which help preserve soil health, water resources and biodiversity. As outlined in STARK's 2022 sustainability report, one of such initiatives is a 'Responsible Timber Sourcing Policy'.
- Under this initiative, all timber sourced by STARK is done so in collaboration with an external partner, Preferred by Nature, to help ensure product legality in compliance with the EU Timber Regulation and to assess the sustainability of forest resources. 100% of STARK Group's Nordic branches are hence PEFC1 and/or FSC2 certified.
- Such sustainable forestry practices directly improve STARK's biodiversity impact as they help ensure that timber does not come from primary forests and does not compromise the ecological balance of the commercial forests it is sourced from.
- In August 2022, STARK Group's German roofing and facade specialist, Melle Gallhöfer, partnered with the organisation PLANT-MY-TREE to contribute to sustainable forest management and afforestation. Since launching the campaign, 4,597 trees have been planted of which more than 600 together with customers - the aim being to reach 10,000 trees planted.
- A clear commercial benefit of this approach is that STARK is now well placed to meet the increasing demand of its customers for sustainably sourced products. In 2022, STARK Group achieved a platinum rating by EcoVadis, placing them in the top 1% of companies assessed by EcoVadis globally. STARK is thus a strong example highlighting potential benefits from including biodiversity efforts within a broader ambitious environmental strategy.

- Firms can engage management with simple questions to understand their starting point and open the conversation. The relative complexity of biodiversity makes for a greater educational challenge when attempting to secure engagement and buy-in from stakeholders in deal teams or management of portfolio companies. The educational process can be kickstarted through leading questions, both during the DD and holding phases, which should aim not to impose biodiversity as a rule, but rather to open a conversation on the importance of biodiversity within ESG strategies.

**Example questions to ask to the management of companies being acquired by a PE fund**

**During DD phase:**

- Does the company already have a view, formalized or not, of the exposure of your business and supply chain to nature-related risks?
- If so, what are the most material nature-related issues that you have identified?
- As part of your strategy, do you have specific actions aiming at mitigating nature related risks or capturing value creation opportunities?

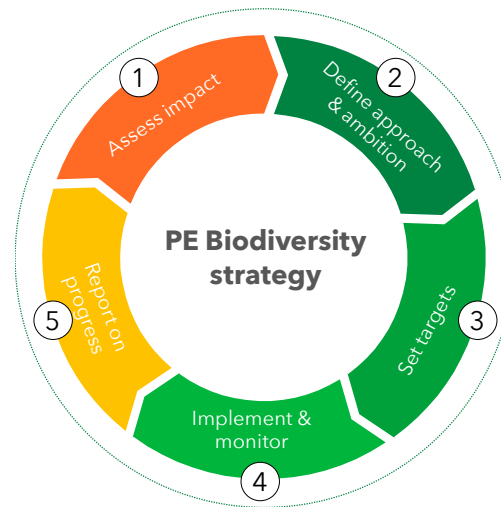
**During holding phase:**

- How would you describe the current status given to biodiversity within your company, and does this seem appropriate in light of your company's impacts/dependencies on nature?
- What are your firm's biggest challenges when attempting to address biodiversity issues? (No governance appointed, other environment-related priorities, etc.)

- Have any of your competitors successfully reduced their impact and dependency on nature? (Point out to best practices of ESG leaders, benchmarks, case studies, etc.)
  - Do you believe implementing measures to improve your nature and biodiversity footprint could bring your company additional value?
  - As your investors, how can we support you to improve your nature and biodiversity impact over the short to medium term?
- Another action PE firms can take to improve engagement with biodiversity across their entire portfolio comes in the form of so-called CXO 'ESG summits'. These summits consist in recurring meetings that unite every CFO, CSO, etc. (depending on the summit) in a PE fund's portfolio to share knowledge and best practices. Running an ESG session with time dedicated to biodiversity is a way of raising awareness on its importance, encouraging cross-functional learning and leveraging any synergies that may exist between portfolio companies with regards to nature and biodiversity strategies.
  - Finally, deal teams can be encouraged to screen targets and support portfolio companies in a nature-positive way through internal biodiversity trainings. Such trainings can cover anything from the importance of biodiversity, through anticipated biodiversity regulation and associated risk, to the potential cost savings and value creation opportunities that may accompany solid biodiversity strategies. Providing concrete examples and case studies of ESG leaders who have successfully implemented a biodiversity strategy and gained an advantage as a result is helpful to include in such trainings, regardless of whether the examples come from inside or outside the firm's portfolio.

Five typical steps can be followed to support the design and implementation of a more structured biodiversity strategy

Two major organisations have developed frameworks to help private companies integrate nature-related considerations into their ESG strategies - the Science Based Targets for Nature (SBTN) and the Taskforce for Nature-related Financial Disclosure (TNFD). It is important to note that these frameworks are still in the process of being developed and are not yet entirely mature. However, they can already serve as reference and starting point for all sectors seeking to understand and improve their biodiversity footprint. The purpose of this report is not to duplicate and create a new framework, but to suggest simple steps to adapt existing science-based guidance to the specificities of the PE sector:

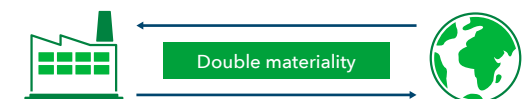


**1 Assess Impact:**

A materiality assessment to evaluate a company's impact on biodiversity can involve PE funds considering two dimensions. Both dimensions together form the concept known as 'double materiality', namely that both the impacts of biodiversity on a company, as well as the impacts of a company on biodiversity are material:

- The first is the degree to which biodiversity impacts a business. If, for example, biodiversity loss negatively impacts an ecosystem service on which a company depends, then it is a material risk for the company, which would have a negative biodiversity materiality.
- The second is the degree to which a business' activities impact biodiversity. A company whose activities drive biodiversity loss will have negative materiality, whilst a company that is able to generate revenue from products and services that actively enhance biodiversity would have positive biodiversity materiality. Exposure to biodiversity issues that are the subject of existing or future regulations represent the greatest material risk, and should be given the highest priority subject to the results of a fact-specific diligence exercise (e.g., protected areas, deforestation, protected species, use of certain pesticides). This dimension of a materiality assessment should also consider stakeholder expectations, and how being implicated in biodiversity loss (or recovery) may impact investor views, consumer demand, and the needs of employees and local communities. Finally, when assessing materiality from this perspective, a company may also factor in its competitors' approaches to biodiversity, which they will likely be compared against by stakeholders.

**The concept of double-materiality**



In practical terms firms can start by performing a high-level materiality assessment (see dedicated section) and then develop a more granular approach building on the same tools, as well as more specific ones, to assess risks and impacts at company level. The results of these analyses can inform the outcome of the due diligence including corresponding risk assessment, such as reputational risk, and potential impact on value. Namely, whether the level of biodiversity risk identified – and whether this risk is mitigable through a rigorous biodiversity strategy – may play a role in the decision of whether to invest or not.

To start setting an appropriate scope for their overall effort, companies can for example use the following framework, based on the work of SBTN, to identify their most critical biodiversity-related issues:

### A potential Framework for Identifying Key Biodiversity Issues

**A** Consider all Value chain areas

**B** Identify Focus ecosystems

**C** Determine relevant Pressures on biodiversity

**D** Assess Criticality\*

Exemplary metrics for different biodiversity issues

<b>Supply chain</b> Footprint of inputs (including logistics)	<b>Marine</b>	Open oceans	<b>1</b>	Ecosystem conversion (e.g., forests, wetlands)	<ul style="list-style-type: none"> <li>Extent lost (e.g., forest cover loss)</li> <li>Impact on functionality (e.g., carbon sequestration)</li> </ul>
		Coral reefs		Ecosystem degradation (e.g., croplands, freshwater)	<ul style="list-style-type: none"> <li>Area affected</li> <li>Extent of degradation (e.g., soil erosion level)</li> <li>Impact on functionality</li> </ul>
		Coasts, mangroves, and tidal marshes		Ecosystem modification (e.g. forests, rivers)	<ul style="list-style-type: none"> <li>Area affected</li> <li>Number of species and habitats affected</li> <li>Impact on functionality</li> </ul>
<b>Company operations</b> Direct impact of production sites	<b>Terrestrial</b>	Tropical forests	<b>2</b>	Freshwater overuse	<ul style="list-style-type: none"> <li>Local baseline water stress</li> <li>Net withdrawal of clean water</li> </ul>
		Temperate and boreal forests		Overuse of other natural resources (e.g., wood)	<ul style="list-style-type: none"> <li>Net extraction per resource, relative to local stocks</li> <li>Forest cover loss, bare ground cover change</li> </ul>
		Grasslands and rangelands	<b>3</b>	Wildlife overexploitation	<ul style="list-style-type: none"> <li>Number of species and individuals affected, relative to local stocks and level of threat</li> </ul>
		Croplands		<b>Climate change</b>	<ul style="list-style-type: none"> <li>Net GHG emissions (tCO<sub>2</sub>e)</li> </ul>
<b>Products</b> Effects of usage and disposal	<b>Freshwater</b>	Inland wetlands	<b>4</b>	Persistent waste pollution (e.g., plastic)	<ul style="list-style-type: none"> <li>Amount of (micro-)plastic released into waterways or oceans</li> <li>Other solid waste released</li> </ul>
		Lakes and rivers		Chemical soil and water pollution	<ul style="list-style-type: none"> <li>Pollutants released</li> <li>Degree of eutrophication/acidification/ecotoxicity</li> </ul>
			Air pollution (e.g., nitrous oxides)	<ul style="list-style-type: none"> <li>Pollutants released</li> <li>Air pollution levels</li> <li>Acidification in surrounding ecosystems</li> </ul>	
			<b>5</b>	<b>Spread of invasive species, and other</b>	<ul style="list-style-type: none"> <li>Alien biomass introduced, per type of species</li> <li>Other disturbances (e.g., noise, light)</li> </ul>

Shading represents an example pathway of analysis

- 1** Land-use and sea-use change
- 2** Direct overexploitation
- 3** Climate change
- 4** Pollution of soil, water, and air
- 5** Spread of invasive species

1. Sources: Science-based Targets Network; BCG analysis.  
 2. Note: tCO<sub>2</sub>e = tons of carbon dioxide equivalent.  
 3. \*Suggestions for KPIs, not exhaustive.



There are a myriad of tools to be leveraged to deep-dive on key issues, however it is important to note that some are more relevant than others depending on the biodiversity-related topics covered. For example, the IBAT tool is mainly relevant to assess and predict land use impacts and risks of infrastructure or real estate companies looking to develop large projects in a specific Key Biodiversity Areas (KBA), while the ENCORE tool assesses the exposure to financial risk due to broader biodiversity risks of a company's value chain. The choice of indicators should thus be sector-driven and focus on the key pressures faced by the company and sector(s) being assessed.



**Geographical analysis of impact on protected areas and species**

Based on the geographical locations of a company's operations, the Integrated Biodiversity Assessment Tool (IBAT) will identify:

- The number of threatened species within 50km (IUCN Red List)
- The number of protected areas within 50km (Protected Planet)
- The number of Key Biodiversity Areas within a 50km radius (KBA)

The protected areas, key biodiversity areas, and IUCN red list species highlighted by the tool can be cross-referenced against a company's operations, to evaluate any significant biodiversity risks – such as if the company was operating in a protected area or impacting endangered species.



**Portfolio-level value chain risk exposure**

The ENCORE tool allows firms to determine both the materiality level and the number of dependencies and impacts that the value chains of specific sectors and sub-sectors have on biodiversity. The sub-sector granularity enabled by the tool is important to differentiate between intra-sector variances in materiality.

Materiality assessments at company level are also relevant as sectors with potentially material biodiversity considerations are different than those for climate and contain important intra-sectoral variations. The relevance of this is twofold. Firstly, it expands the scope of environmentally material sectors. Previously, environmental concerns within ESG frameworks have generally been viewed through a climate lens, where the focus is on heavy emitting sectors such as energy and industry. When adding biodiversity considerations to ESG criteria, the spectrum of materially important sectors hence grows, with sectors such as agriculture, infrastructure and fashion gaining importance.

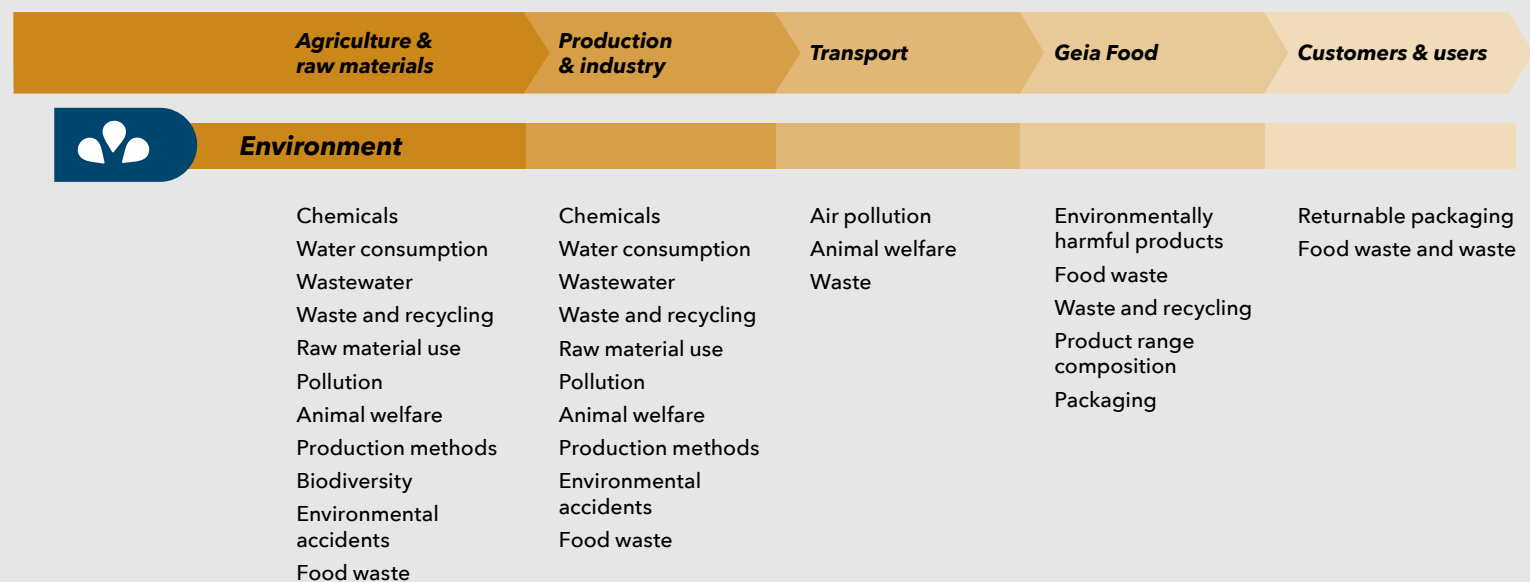
Secondly, there are important intra-sector variations in biodiversity materiality, for which there are no climate-related equivalents. Taking the example of the fashion industry, a fast-fashion company that has outsourced its production supply chain to factories in Bangladesh may have a significant material biodiversity impact. Wastewater from textile industries in Bangladesh was estimated to have reached 349 million m<sup>3</sup> in 2021.<sup>83</sup> This wastewater, containing textile dyes amongst other pollutants, is in some cases released untreated into waterways,<sup>84</sup> with vegetable and fruit samples collected in various regions of the country showing the presence of textile dyes.<sup>85</sup> On the other hand, a fashion company using Global Organic Textile Standard (GOTS) cotton,<sup>86</sup> recycled materials, environmentally friendly dyes, and with rigorous water-usage policies, would likely have a considerably smaller biodiversity risk. Intra-sectoral variations can also be driven by the location of a company's activities. For example, water usage has very different implications in different landscapes, and targets on water should focus on water-scarce areas.

83. Sakamoto M., Ahmed T., Begum S., and Huq H., Water Pollution and the Textile Industry in Bangladesh: Flawed Corporate Practices or Restrictive Opportunities? 2019  
 84. Haque, N. Exploratory Analysis of Fines for Water Pollution in Bangladesh. Water Resour. Ind. 2017, 18, 1-8.  
 85. Mohiuddin, A.K. Chemical Contaminants and Pollutants in the Measurable Life of Dhaka City. European Journal of Sustainable Development Research, 2019  
 86. Organically grown cotton uses 91% less 'blue' water (from groundwater and surface-water bodies). Source: Organic cotton and climate change, Soil Association, 2015

## Case Study: Integrating biodiversity strategies on the basis of a materiality assessment - Geia Food

- Founded in 2014 as a supplier of food concepts in Scandinavia, acting as a value-creating link between food producers & customers in the retail and food service sector
- Triton Partners invested in Geia Food in 2021, influenced in part by Geia's strong biodiversity strategy and overall sustainability strategy
- Geia had already conducted a materiality assessment for its biodiversity impact, among other ESG criteria, and mapped material risks against its value chain

### Materiality assessment from Geia Food's Annual Sustainability Report 2021



- As this materiality assessment indicates, a large proportion of Geia's material risks in the Environment category are directly or indirectly related to biodiversity
- As a company involved in the food & beverage industry, Geia was particularly exposed to the 'land-use change', 'direct overexploitation' and 'pollution' drivers of biodiversity loss
- Geia hence developed a sustainability strategy to mitigate these risks

Key components of this sustainability strategy, relevant to biodiversity, include:

1. Responsible procurement: Geia joined Sedex in 2021, a global system enabling end-to-end supply chain transparency through supplier audits. Furthermore, all suppliers to Geia are risk assessed and, amongst other criteria, evaluated on their packaging material, use of palm oil and the extent to which they have Rainforest Alliance/UTZ certification.
2. Product certifications: Geia aims to maximise its sustainable seafood product offering. As of the end of 2021, 71% of its seafood products had MSC or ASC certifications.
3. Sustainable packaging: Geia is actively investigating the use of recycled, reused and biodegradable packaging. From 2022, Geia's juice bottles delivered to large customers consist of 100% recycled plastic, saving in excess of 45.9 tons of virgin plastic annually.<sup>87</sup>
4. Vulnerable resources: Geia's seafood products contain no IUCN red-listed fish products. Likewise, where possible, Geia avoids products containing palm oil - an ingredient known to have a large deforestation risk - and, if unavoidable, deliberately sources certified sustainable palm oil.

87. Geia Food Annual Sustainability Report 2021

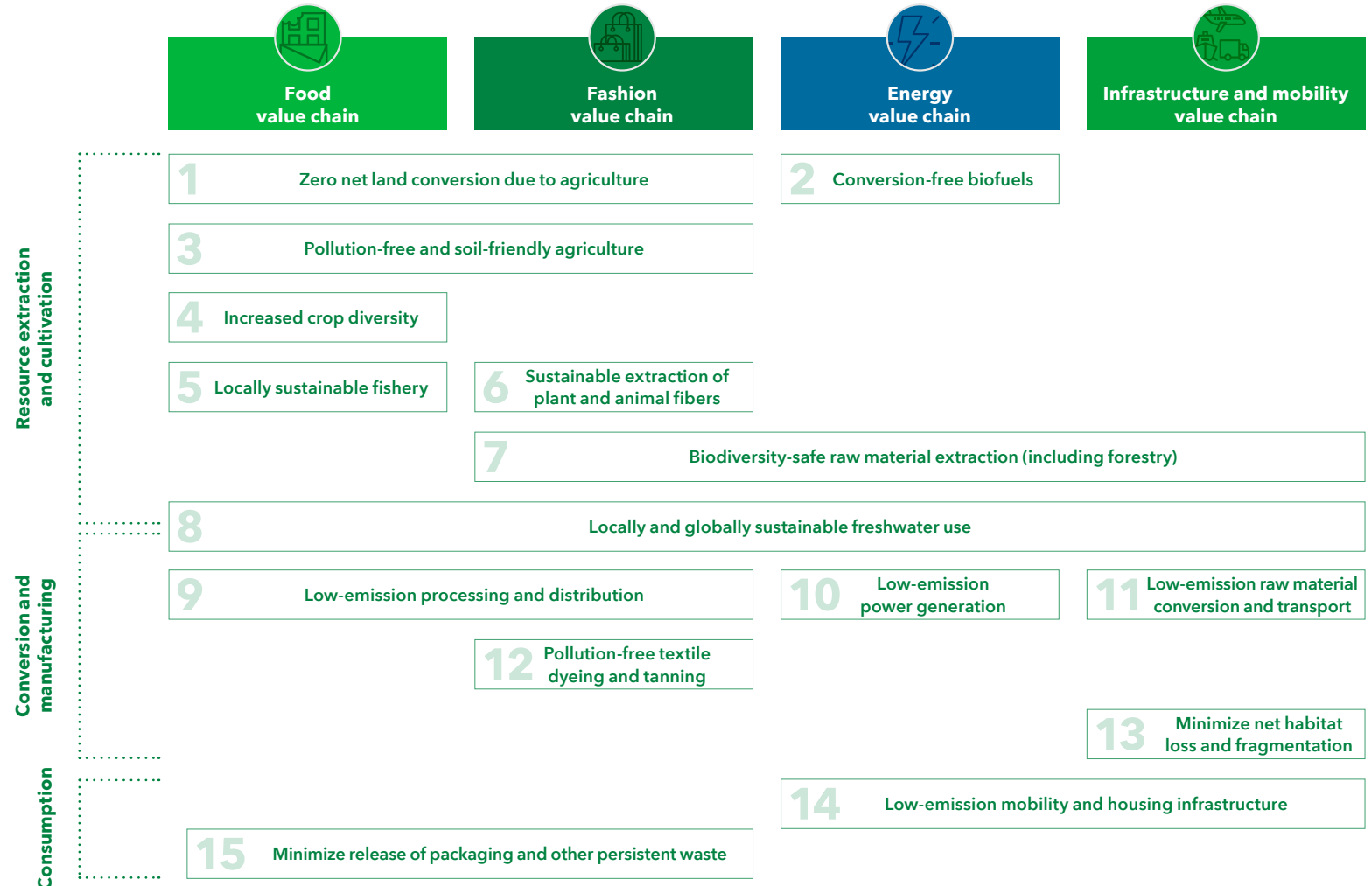
**2 Define approach & ambition:**

The outcome of a firm’s, fund’s or company’s materiality assessment, as well as its identity and existing ESG strategies, should collectively inform the approach and ambition selected with regards to biodiversity. Examples of approaches and related ambitions include:

- Climate-extended approach to biodiversity (“Do No Significant Harm”) with the ambition of complying with regulations and limiting the impact of a company on the environment
- A targeted approach to biodiversity, addressing material environmental issues that came out of the analysis, for instance land use or deforestation.<sup>88</sup>
- Nature-oriented comprehensive approach to biodiversity addressing drivers of biodiversity loss, with the ambition to shaping or leading the industry’s nature-positive transition and setting a new standard

The approach and ambition set can serve to derive key nature-related objectives for the companies in question. Key examples of biodiversity objectives for business include:

**Fifteen Key Biodiversity Objectives for Business**



88. In 2021, 30 leading financial institutions from the asset management industry with over US\$ 8.7 trillion AUM collectively, committed to eliminate “agricultural commodity-driven deforestation” from their portfolios by 2025

2.

1. Source: BCG analytics. Note: Not exhaustive due to focus on four value chains.

3 Set targets:

To translate a PE firm’s approach and ambition to biodiversity into quantifiable, trackable actions, targets can be set based on a variety of existing biodiversity metrics and can correspond to the outcome of a firm’s materiality assessment, its chosen approach and ambition level. These can inform investment decisions starting from the DD process, through an assessment of nature-related risks against key indicators like overexploitation of resources, pollution, etc., the firm may avoid companies with an excessively negative impact on biodiversity.

Biodiversity strategies differ from climate change strategies. A decarbonization strategy principally aims to reduce CO<sub>2</sub>e emissions, while a biodiversity strategy can encompass multiple targets and related metrics. As a PE firm may manage multiple funds of different sizes and sectoral focuses, which in turn hold investments in a portfolio of several companies, each fund may have different investors whose expectations in terms of risk and return might vary. In order to match these expectations, PE funds and their portfolio companies, even though managed by the same firm, cannot always commit to the exact same ambition and targets.

The SBTN compiled guidance on SBT aligned targets across key issues areas that PE firms can refer to and build on when setting their own targets<sup>89</sup>:

Target	Illustrative target wording	Initial guidance on target ambition for companies	Indicator	Alignment (with corporate reporting, global goals and Earth’s limits)
<b>Use Change (Land)</b>	<b>Reduce</b> to X by 2030 activities causing deforestation / conversion in your supply chain	<b>Zero deforestation from 2020 / Zero conversion of natural habitats in value chain by 2030;</b> following Accountability Framework Initiative <b>No net loss of non-forest natural habitats from 2020;</b> following IFC Performance Standard 6	Deforestation / Conversion of natural ecosystems (ha)	Accountability Framework Initiative; CDP Forests SDG 15 (Life on Land) Planetary Boundaries on land use and biosphere integrity
<b>Resource exploitation (Freshwater)</b>	By 2030, <b>reduce</b> water use in high water impact parts of the value chain by X%	<b>Locally dependent;</b> following Contextual Water Targets	Water withdrawals (m <sup>3</sup> )	GR 303; CDP Water SDG 6 (Clean Water and Sanitation) Planetary Boundary on water
<b>Resource exploitation (Ocean)</b>	<b>Avoid</b> sourcing from fisheries with stocks outside biologically sustainable levels	Ambition guidance coming soon	Proportion of fish sourced (%)	SDG 14 (Life Below Water) Planetary Boundary on biodiversity
<b>Climate change (Cross-Realm)</b>	<b>Reduce</b> value chain GHG emissions by X% by 2030	<b>&gt;4.2%/year reductions for 1.5°C alignment;</b> following Science-based Targets Initiative	GHG emissions (tons CO <sub>2</sub> e)	GR 302; CDP Climate; GHG Protocol UNFCCC; SDG 13 (Paris Agreement) Planetary Boundary on climate change
<b>Climate change (Land)</b>	After prioritizing GHG reductions, <b>remove</b> X tons CO <sub>2</sub> by 2030 through forest landscape restoration	Ambition guidance coming soon	CO <sub>2</sub> e sequestered (tons CO <sub>2</sub> e)	GHG Protocol UNFCCC; SDG 13 (Paris Agreement) Planetary Boundary on climate change
<b>Ecosystems (Land)</b>	<b>Regenerate</b> ecological integrity in supply chain by ensuring X% ecological focus areas per km <sup>2</sup> for all sourced agricultural inputs	10% per km <sup>2</sup> following European Commission definitions	Fraction of agricultural land in ecological focus areas at 1km <sup>2</sup> scale (%)	UNCBD Post 2020 goal on area, connectivity, and integrity of natural ecosystems; SDG 15 (Life on Land) Planetary Boundaries on land use and biosphere integrity European Commission policy
<b>Ecosystems (Land)</b>	Increase soil organic C by X%/year through <b>restoration and regeneration</b> in critical value chain sourcing locations by 2030	Ambition guidance coming soon	Soil C (tons C/ha)	Accounting for Natural Climate Solutions Guidance: Gold Standard UNCCD; SDG 15 (Life on Land) Planetary Boundary on climate change
<b>Ecosystems (Cross-Realm)</b>	Through <b>restoration</b> , increase the area, connectivity and integrity of natural ecosystems by X% by 2030	Ambition guidance coming soon	Extent, connectivity, and integrity (realm-specific indicators)	UNCBD Post-2020 goal on area, connectivity, and integrity of natural ecosystems; SDG14 (Life Below Water); SDG 15 (Life on Land) Planetary Boundaries on land use and biosphere integrity
<b>Species (Cross-Realm)</b>	<b>Avoid</b> sourcing from areas of high species extinction risk <b>Reduce</b> by X% extinction threat to species	Ambition guidance coming soon	Species Treat Abatement and Recovery (STAR)	IFC Performance Standard 6 UNCBD Post-2020 goal on species extinction; SDG14 (Life Below Water); SDG15 (Life on Land) Planetary Boundary on biosphere integrity

89. Science-based targets for nature, Initial Guidance for Business, 2020

**4 Implement & monitor:**

The implementation phase consists of developing and employing value creation plans and roadmaps specific to portfolio companies where biodiversity is deemed relevant. The development of biodiversity roadmaps may take into account both the PE firm’s approach and ambition level with regards to biodiversity, as well as the results of the specific company’s biodiversity materiality assessment including risk mitigation and value creation opportunities. The implementation of said nature and biodiversity roadmap includes formulating the commitments previously set, setting up governance on the topic and monitoring progress made to be able to report on the targets set. The roadmap can build on the core principle of biodiversity actions; the mitigation hierarchy ‘avoid, reduce, restore, compensate’ (see details in dedicated section).

Throughout the holding period, the portfolio company’s performance against biodiversity targets can be monitored to help ensure that progress is made according to the value creation plan, and to enable accurate reporting. An array of existing methodologies and metrics designed to tackle biodiversity issues can help firms in their journey to becoming nature positive. The Finance for Biodiversity Pledge developed a detailed although non-exhaustive list of key tools, their uses and their levels of maturity.<sup>90</sup> The framework points out the most advanced and useful materials to be leveraged. This comprehensive review can be used by PE firms as a basis for the assessment and monitoring of their biodiversity impact.

90. Finance for Biodiversity Pledge, Guide on biodiversity measurement approaches 2nd edition, 2022 [https://www.financeforbiodiversity.org/wp-content/uploads/Finance-for-Biodiversity\\_Guide-on-biodiversity-measurement-approaches\\_2nd-edition.pdf](https://www.financeforbiodiversity.org/wp-content/uploads/Finance-for-Biodiversity_Guide-on-biodiversity-measurement-approaches_2nd-edition.pdf)

	BFFI	BIA-GBS	CBF	GBSFI	GID	ENCORE	IBAT*
<b>Pressure</b>							
Land use change	●	●	●	●	●	●	●
Sea use change						●	●
Direct exploitation	Partial	Partial		Partial		●	●
Climate change	●	●	●	●	●	●	●
Pollution	●	●	●	●	●	●	●
Invasion species						●	●
<b>Coverage</b>							
Negative impacts	●	●	●	●	●	●	●
Positive impacts	●		Underway	Underway			●
Dependencies	●	●	Underway	●		●	
<b>Scope</b>							
Scope 1	●	●	●	●	●	●	●
Scope 2	●	●	●	●	●	●	●
Scope 3 upstream	●	●	●	●	●	●	●
Scope 3 downstream		Partial	●		●		●
<b>Metric</b>							
MSA		●	●	●	●	●	
PDF	●				●		
STAR						●	●
Aggregate index		●	●	●	●	●	
Monetization	Possible				●		
<b>Data type</b>							
Biodiversity state data			E <sup>2</sup>		U / M	E / M	E / M
Pressures, resources and emissions data	U / E	U / E / M	U / E / M	U / E / M	U / E / M		U / E
Economic quantification of activities data	U / E	U / E	U / E / M	U / E	U / E / M		U
<b>Effort</b>							
Accessibility	OS with support	Commercial	Commercial	Commercial	Commercial	OS with support	Commercial
Required expertise	EXT-T	EXT-T	EXT-T	EXT-T	EXT-T	INT / EXT-T	INT / EXT-T
Costs for hiring	M	L	L	H	L - M	L	L - M
Other costs	M	H	H	M	M - H	L	L
Time investment	L	L	L	H	L	L	L-M

**Legend Data types**

- 1. U: User-derived
- 2. E: Externally collected
- 3. M: Modelled
- 4.

**Legend Efforts**

- 5. EXT: External expertise required
- 6. T: Training offered
- 7. L: Low
- 8. M: Moderate
- 9. H: High
- 10.
- 11. \* IBAT: The sections on pressures and scope in this column refer specifically to the STAR metric, which is embedded as a data layer in IBAT. The pressures (threats from the IUCN Red List) can also be accessed directly under license from IBAT if requested by companies.
- 12. \*\* For infrastructure projects.



## The mitigation hierarchy 'avoid, reduce, restore, compensate' has practical implications when implementing a nature & biodiversity roadmap

### 5 Report on progress:

The TNFD provides multiple KPIs PE firms can refer to in order to evaluate and monitor their improvements, including for example the Global Risk Assessment Services (GRAS) – third-party assessments using GIS<sup>91</sup> and remote sensing technologies to move toward transparent and deforestation-free supply chains.

Through the regular monitoring of their portfolio's performance against set targets, PE firms can themselves regularly report on their biodiversity impact at an aggregated firm level. The frequency and detail of biodiversity reporting can be determined by a firm's biodiversity maturity, risk profile, and ambition level. While there are challenges to aggregation, the PE industry can find inspiration in the broader finance and asset management industries.

Once a firm has defined its approach, it can develop roadmaps to mitigate risks and capture opportunities related to nature and biodiversity. The roadmap may build on the core principle of biodiversity actions; the mitigation hierarchy.

For example, during the screening phase, fund managers screen companies against investment criteria such as size, sectoral focus, geographical presence, etc. The implementation of a firm's biodiversity strategy can thus start during this step, with the **avoidance** principle translated practically through the use of an exclusion list. France Invest suggests that such lists should, as a minimum, encompass three key exclusion criteria: "International conventions to be observed, Geographical areas to be excluded (based on specific benchmarks), Particularly harmful sectoral practices to be excluded".<sup>92</sup>

The due diligence phase subsequently allows funds to assess a target company's ability to **reduce** their impact on biodiversity during the holding phase. Depending on a fund's ambition, a company may not meet expectations in terms of their biodiversity-related risks and opportunities, resulting in the fund not investing in a company. An initial materiality assessment can determine whether any specific biodiversity or nature-related due diligence will be required to assess the "biodiversity maturity"<sup>93</sup> of a target company. If required, such due diligences may, for example, conduct deep-dive analyses of a company's compliance with key biodiversity regulations, investigate the effectiveness of existing biodiversity strategies or governance systems, etc.

As the demand for infrastructure development is expected to massively increase over the next decades,<sup>94</sup> there is a pressing need for market mechanisms to enable private actors to offset unavoidable impacts.

The UN Decade on Ecosystem Restoration initiative was launched in 2019 based on the evidence that "there has never been a more urgent need

to restore damaged ecosystems than now".<sup>95</sup> Corporates and governments have already started identifying and implementing compensation mechanisms to initiate action. For instance, inspired by the Convention on Biological Diversity (CBD), Kering committed to have a "net positive impact" on biodiversity by 2025, notably through the regeneration of one million hectares of farms and rangelands in their supply chain landscapes and the restoration of habitats where mining and other activities occurred, supported by their newly launched "Kering for Nature Fund".<sup>96</sup> Multiple other companies are engaging on that path, for example, 67 French companies with international activities committed to act4nature international since 2020,<sup>97</sup> thus pledging to integrate biodiversity into their overall strategy and activities. Biodiversity offsets have first been used in the United States in the 1970s to mitigate damage to wetlands. According to the OECD, today "more than 100 countries have laws or policies in place that require or enable the use of biodiversity offsets (including Australia, Brazil, Canada, China, Colombia, France, Germany, India, Mexico, New Zealand and South Africa), or are currently considering their use".<sup>98</sup> These offsets can come in the form of one-off offsets (developer assuming financial and legal liability), in-lieu fees (a fee that a developer has to pay to a third party, to compensate for residual adverse biodiversity impacts) or biobanking (developer can purchase offsets directly from a public or private biobank).<sup>99</sup>

While the need for compensation of unavoidable damages is widely recognized, biodiversity is not fungible (see details in dedicated section) and it is crucial to take into account the specific local conditions in which it happens (e.g. deforestation of the Amazon rainforest is not the same as deforestation in the UK, whilst significant water usage may have little impact in the UK, which generally has plentiful water resources, but may have a significant impact in water-scarce African countries). Therefore, the design and governance of those market mechanisms should be developed in an equitable, socially and ecologically sustainable

manner. PE funds can start working together with their portfolio companies to assess and select mechanisms that will help them increase the resilience of their business and the ecosystems on which they rely.

During the holding period, the avoid, reduce, restore, compensate principles can be actively integrated into the acquired companies' tailored biodiversity roadmap – which will correspond to the fund's biodiversity approach & ambition. Implementing said roadmap may entail, amongst other things, formulating biodiversity commitments, setting-up biodiversity governance, and reporting on progress made to address the specific biodiversity issues identified during the due diligence phase. Once implemented, the roadmap can contribute to accelerating value creation for the company.

91. Geographical Information System (GIS) – TNFD Discussion Paper, A Landscape Assessment of Nature-related Data and Analytics Availability, 2022

92. Francelinvest, Integrating biodiversity into private equity – A practical guide for management companies, 2022

93. Ibid.

94. In 2022, the World Bank estimated \$1.3 trillion infrastructure investment per year were required to meet the Sustainable Development Goals (in in) Emerging Market Economies (EMEs) – Worldbank, Infrastructure Finance Brief, August 2022

95. UNEP/FAO Factsheet, June 2020

96. <https://keringcorporate.dam.kering.com/m/6b254da158b2d217/original/Kering-Biodiversity-Strategy.pdf>

97. Act4nature is an initiative launched by the French association of Companies for the Environment (EpE) and many other partners in 2018. It aims to mobilize companies on the issue of their direct and indirect impacts, their dependencies and their possibilities of action favorable to nature. It was launched with the aim of enhancing the value of these initiatives during international deadlines: launch of the first global scientific assessment of the IPBES, World Conservation Congress and COP15

98. OECD, Biodiversity Offsets Effective design and implementation, Policy Highlights, 2016

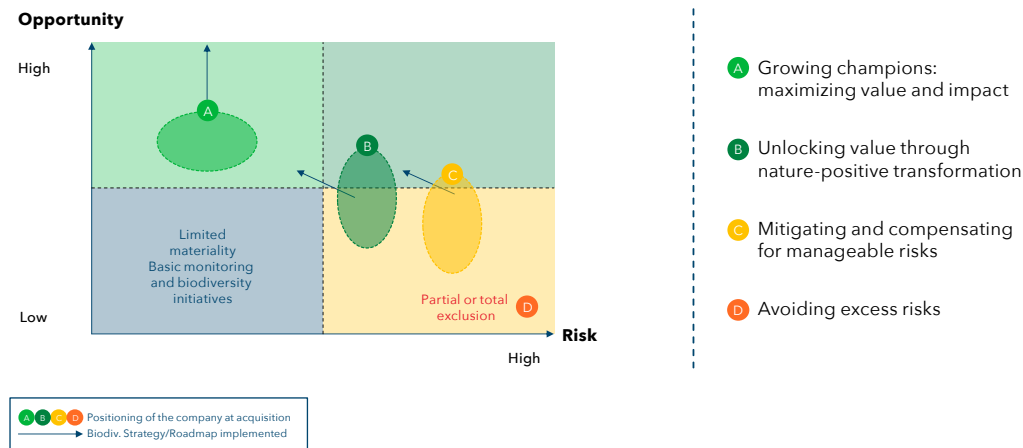
99. A biobank refers to a repository of existing offset credits, where each credit represents a quantified gain in biodiversity resulting from actions to restore, establish, enhance and/or preserve biodiversity (e.g. wetlands, stream, habitat, species) (OECD, Biodiversity Offsets Effective design and implementation, Policy Highlights, 2016)

## Biodiversity roadmaps can be integrated within standard PE value creation plans and improve their efficiency

There does not necessarily have to be a trade-off between implementing biodiversity levers and other high-priority value creation levers during the holding period. Indeed, both can be mutually reinforcing. When integrated into PE value creation levers, biodiversity roadmaps can not only reduce the risks associated with the portfolio company, but also have the potential to increase its revenue, reduce its costs and improve the exit multiple.

We identified four archetypes of value creation stories integrating biodiversity-related risks and opportunities into a PE funds' broader strategic view for the company:

### Value Creation Plans (VCPs)



- A. Growing champions: maximizing value creation potential and impact (e.g., acquisition of a company with high reliance on biodiversity but with existing ESG measures implemented and a strong potential to lead the industry's sustainability development)
- B. Unlocking value through nature-positive transformation (e.g., acquisition of a 'biodiversity laggard' in an industry with negative impact on nature and implementation of ambitious biodiversity strategy to match high expectations from customers and drastically reduce impact on nature)
- C. Mitigating and compensating for manageable risks (e.g., acquisition of a company with positioned in a sector with high negative impact, and implementation of a biodiversity strategy to 'do no significant harm' while preserving climate benefits)
- D. Avoiding excess risks (e.g., negative screening and exclusion of a company in a sector relying on the overexploitation of terrestrial or marine natural resources)

Some examples of biodiversity-related equity stories / value creation stories are:

### Growing Champions - Lipton Teas & Infusions Case Study



- Lipton Teas & Infusions is the world's largest tea company covering 8% of the global market with a vertically integrated value chain (soil to sip).
- Whilst part of Unilever, Lipton Teas & Infusions had already developed into a sustainability leader, implementing responsible sourcing policies and with the Lipton brand pioneering the Rainforest Alliance certification in the tea industry. The company invested extensively in novel tea breeding programs to enhance crop resilience and is committed to protecting the genetic diversity of tea for future resilience traits
- CVC invested in Lipton Teas & Infusions in late 2021, with Pev Hooper, a CVC Managing Partner, noting that "Lipton Teas & Infusions is well positioned accept to lead the category's sustainable development."
- Under CVC's ownership, Lipton Teas & Infusions has accelerated its progress and reinforced its position as a champion of biodiversity and regenerative impact, committing to the Science-Based Targets Initiative, implementing ecosystem restoration efforts and focusing heavily on soil science to help ensure below-ground biodiversity, as well as allocating more than 11% of the land to conservation in its tea estates
- In this context, Lipton Teas & Infusions drives several 'flagship' programmes, which include:
  - Significant investment in digital smart agriculture to optimize and reduce agrochemical inputs used on crops - improving soil health and biodiversity, whilst reducing carbon footprint
  - Targeting zero pesticides by 2025 (with biological pest control used instead)
  - Aiming for 100% reusable, recyclable, or compostable and plant-based packaging by 2025
  - Seeking to neutralize the impact of fertilizer on their own tea estates by 2030
  - Building climate resilience and working to restore natural ecosystems surrounding its tea estates (e.g. partnership with IDH to protect and restore the Mau forest, one of Africa's most important water towers)
  - Combining science and nature has resulted in year-on-year yield increases, whilst simultaneously improving the climate resilience of tea crops
  - This demonstrates the business value of Lipton Teas & Infusions' biodiversity strategy, giving a positive signal for the value creation potential of biodiversity strategies more generally

Growing champions have the potential to lead their industry's journey to nature-positivity, and as such could benefit from an increase in valuation in the years to come. As demand for environmentally friendly assets increases, with 72% of PE firms and asset managers now declaring that they

"always screen target companies for ESG risks and opportunities at the pre-acquisition stage",<sup>100</sup> and with industry leaders in sustainability increasingly valued by investors, implementing biodiversity strategies in portfolio companies could foster significant premiums at exit.

### Unlocking value through nature-positive transformation - Anticimex Case Study



- Anticimex is a top global player in preventative pest control, operating in more than 20 countries across Europe, Asia-Pacific, and the Americas, whose ambition is to use digital, biocide - and toxin-free pest control solutions to kickstart the industry's sustainability transformation<sup>101</sup>
- Anticimex has developed the SMART pest-control solution, consisting of digital traps, cameras and sensors to enable a preventive, more biocide-efficient approach to pest-control
- Anticimex SMART is intended to reduce the negative environmental and biodiversity impacts of traditional pest control, whereby toxins can inadvertently be consumed by<sup>102</sup> other animals and contaminate water systems. Indeed, biocide contamination has been detected in both water systems and wild animals, including the liver tissue of freshwater fish<sup>102, 103</sup>
- Seeing an opportunity to reduce pesticides, positively impacting biodiversity and transform the pest-control industry through scaling Anticimex SMART, the impact-focused EQT Future fund acquired Anticimex from EQT VI in 2021, with the intention to promote sales of the SMART product as a core part of the value creation and impact acceleration plan agreed with the Anticimex management team
- Anticimex thus represents an archetypal 'Grey to Green' enterprise-level impact story with significant potential to positively influence the broader pest control industry, by demonstrating that material value has been created through shaping Anticimex into an industry-leading 'biodiversity champion'
- The deployment of SMART at scale will enable new methods for testing and measuring biodiversity materiality, which the newly-appointed Chief Biology Officer at Anticimex will be overseeing in the next phase of partnership with the EQT Future Fund

100. PwC, Private equity's ESG journey: From compliance to value creation - Global Private Equity Responsible Investment Survey, 2021 (The Global Private Equity Responsible Investment Survey explores the views of general partners and limited partners in responsible investment among global private equity firms. This year, 209 firms from 35 countries or territories responded, 198 respondents were general partners and 41 were limited partners)  
 101. <https://www.anticimex.com/sustainability/reducing%20the%20use%20of%20biocides>  
 102. <https://www.anticimex.com/digitally-enabled-pest-control>  
 103. Regnery, J. et al. (2018), Rating the risks of anticoagulant rodenticides in the aquatic environment: a review; Regnery, J. et al. (2019), Wastewater-borne exposure of limnic fish to anticoagulant rodenticides; Kotthoff, M. et al. (2018), First evidence of anticoagulant rodenticides in fish and suspended particulate matter: spatial and temporal distribution in German freshwater aquatic systems

## Impact Pathway" Climate & Nature - biodiversity Improvement

SMART technology reduces the need for biocides while maintaining the positive impact of pest control. The outcome is ecosystem preservation, protecting biodiversity

### Challenge

#### Use of biocides may cause harm to the environment

- Pest control is critical in today's society, with infestations often causing significant financial, physical and mental consequences. Pesticides and biocides are chemical or biological products intended to prevent or deter animals, plants or micro-organisms from causing damage to human health and/or property
- However, pesticides and biocides can cause harm to health and the environment if non-target animals are affected. As examples, biocides have been found in animals and wastewater, including liver tissue of freshwater fish as well to residue in predators

### Solution: SMART

#### SMART helps detect the root cause hence reducing the need for pesticides

- Anticimex SMART: Sensor technology-based preventative pest control solution
- Pest problems are detected before they become a visible problem and controlled at an earlier stage of the infestation via connected traps and sensors. As a consequence, biocide usage is significantly reduced

### Outcome

#### Preservation of ecosystems, protecting biodiversity

- By moving the industry towards biocide-free solutions, desired effects are preserved while negative externalities are mitigated
- Impact objective of accelerating a cleaner environment through positive impact on biodiversity

**SDG 15.5:** Reduce the degradation of natural habitats and biodiversity

**PD8494:** Ecosystem services provided

## SMART vs Traditional Pest Control

Anticimex SMART offers digital pest control solutions which detect pests before they become a visible problem



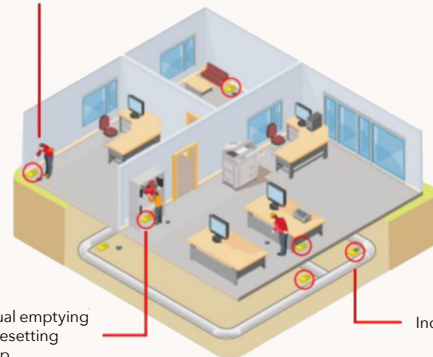
### Traditional

Pests are detected and controlled once they become a visible problem, large number of routing visits

### Digital

Pests are detected before they become a visible problem and controlled at an earlier stage of the infestation, visits on an as-needed basis

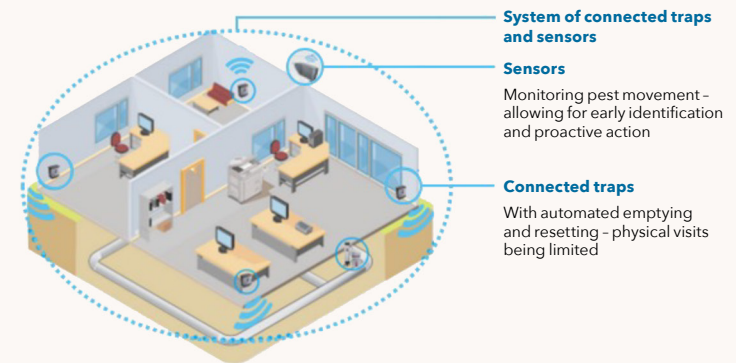
Pest control plan based on individual assessment and reactive adjustments



Manual emptying and resetting of trap

Individual traps

Source: Company web page



**System of connected traps and sensors**

#### Sensors

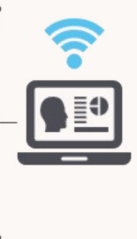
Monitoring pest movement - allowing for early identification and proactive action

#### Connected traps

With automated emptying and resetting - physical visits being limited

### Software

- Technicians are alerted when pest activity begins. Pest infestations can be prevented before they become severe
- Online system, registering and uploading pest control treatments, creating full transparency on pest activity
- Data can be used for auditing purposes
- Predictive treatment and dynamic optimization of trap placement based of data



There is significant value creation potential through transforming companies. Operational improvements encompass all measures aimed at improving the efficiency and profitability of business operations. They can include, for example, acquisitions, factory closure/relocation, supply chain optimization, and energy use reduction. As operational improvements increase EBITDA growth rates and margins, they are also likely to increase the Enterprise Value of a business in a sale or IPO.

Whilst measures to mitigate biodiversity impacts can be relatively easily included in most of these levers, the opposite is also true, insofar as many value creation levers can in fact be themselves employed to actively improve a company's impact on biodiversity. Some examples include:

- Working Capital Optimization - the reduction of inventory or stock reduces the need for large storage facilities and thus the conversion of natural land into warehouses (e.g., a company switching to lean manufacturing with on-demand production of clothes)
- Waste reduction - not only does waste reduction improve operational efficiency but it also helps meet growing sustainability expectations among consumers and potential business partners, thus creating a favourable image of the company.
- Product innovation - to tackle "resource scarcity"<sup>104</sup> and turn constraints into opportunities by redesigning goods and services to limit or eliminate the need for scarce natural resources. For example, to deal with cobalt shortages as well as negative consequences of cobalt extraction on biodiversity (ranging from habitat destruction to water pollution), Panasonic has reduced the cobalt content of its vehicle batteries to less than 5%, and the company expects to develop cobalt-free batteries within the next two to three years.

## Case Study - Product innovation: 80 Acres



- Founded in 2015 and headquartered in the US, 80 Acres operates 8 indoor farms in the US and grows a variety of fruits and vegetables using a combination of artificial intelligence, robotics, and other innovative solutions in vertical farms, sometimes reaching 10 levels of cultivating space.
- BeyondNetZero, General Atlantic's climate venture, invested in 80 Acres in 2021 with the aim of helping the company continue to expand its footprint and develop new products.
- 80 Acres uses innovative technology and analytics to increase the yield of its crops and provide customers with natural and affordable products all year round.
- In addition to contributing to the improvement of food safety in local areas where its farms are located, the company also helps to reduce the impact of agricultural activities on both resources and land use by striving to use 100% renewable energy and 95% less water than a traditional farm per pound of produce, and growing up to 300 times more food per square foot.
- In vertical farms, crops are planted on top of one another in vertically stacked layers, thus reducing the surface area required for cultivation and addressing one of the key challenges posed by traditional agriculture: habitat and land conversion due to agriculture's significant land requirements.
- This example shows that innovation, despite not being the only solution to prevent biodiversity loss, can contribute to limiting biodiversity pressures while also improving a company's productivity and thus value creation potential.

104. BCG, Solving the Puzzle of Sustainable Resource Scarcity, 2021



## Mitigating and compensating for manageable risks - Solarpack Case Study



- Solarpack is a multinational solar power plant developer with a presence in Europe, North America, Latin America, Asia and Africa
- EQT Infrastructure invested in Solarpack in 2021
- Geotechnical, hydrological and related environmental studies to make sure there is no significant impact on natural resources such as soil quality, water courses, animal and plant life, archaeological heritage, landscape, local communities, etc.

### Compensation of negative biodiversity impacts:

- As a solar infrastructure developer, Solarpack is a clear example of a company with positive carbon materiality, but whose activities - primarily through land-use change - are liable to have a negative biodiversity materiality
- For infrastructure developers, it is often difficult to completely avoid land-use change and hence some impact on biodiversity. Consequently, measures to understand, and subsequently reduce and compensate for their biodiversity impact are crucial.
- Solarpack's sustainability strategy incorporates several of such measures.
- To compensate for the biodiversity impact of its solar projects, Solarpack spent ~€375,000 in 2021 to biodiversity protection on project sites. In Chile, artificial shelters were created to serve as a settlement area for amphibians, whilst in Spain, Solarpack have allocated ~2 hectares of site land to natural ecosystem restoration.
- Furthermore, Solarpack has piloted agrovoltaic projects - a concept that aims to produce solar energy and agricultural products using the same amount of land, while optimizing links between the two industries. Agrovoltaics hence reduces land-use change, whilst bringing alternative economic benefits to farming

### Reduction of negative biodiversity impacts:

- The cumulative result of these initiatives is that, in 2021, Solarpack did not record a single incident that could have impacted biodiversity
- When selecting project sites, Solarpack conducts several assessments to minimize the environmental impact of its solar plants. These include:
  - Avoiding locating solar projects in protected areas/protected species habitats

Finally, regardless of one's materiality exposure, every business can begin to take steps to address its impact on biodiversity and its risk exposure. Especially since even the lightest biodiversity strategies can, for example, mitigate the risk of damage to property (e.g., by guiding the company to relocate its factories), or increase the price of land or property sold (through improved land fertility, conversion to organic farming, or planting of trees to limit soil erosion) and thus increase the underlying earnings growth (non-operational loss and gains) of a company.

Even companies with an existing yet limited level of materiality (Business services, Technology, Media & Telecommunication) can join the race against biodiversity loss by engaging in collaboration, innovation, and monitoring. For example, in October 2021, Microsoft's "AI for Earth" project in China, carried out in collaboration with the Shan Shui Conservation Center (SSCC), was selected as one of the 19 "100+ Outstanding Biodiversity Positive Practices and Actions Around the World".<sup>105</sup> Launched in 2017, Microsoft's "AI for Earth" is a \$50 million, 5-year program aiming to provide access to Cloud and AI technologies to improve "the way people and organizations monitor, model, and manage Earth's natural systems in the key focus areas of Agriculture, Biodiversity, Climate Change and Water".<sup>106</sup>

In light of the risk that biodiversity loss poses, both for firms' investments and reputations, coalitions of major players in the financial sector have come together to form pledges and initiatives to stem biodiversity loss. The PE industry can both contribute to the debate, by leveraging existing finance initiatives as much as possible, and engage on biodiversity topics directly within the private markets.

### Some of the key initiatives to be aware of include:

- The Finance for Biodiversity Pledge
- The UN Principles for Responsible Investment
- The EU's Finance@Biodiversity Community
- The Business for Positive Biodiversity Club
- The Finance for Biodiversity Initiative



<sup>105</sup> <https://news.microsoft.com/apac/2021/10/11/microsoft-ai-for-earth-named-as-one-of-100-outstanding-biodiversity-positive-practices-and-actions-around-the-world/>

<sup>106</sup> Ibid

## The importance of biodiversity communication strategies

As emphasized in the UN One Planet Biodiversity Communication Toolkit, good communication strategies can play a pivotal role to help raise awareness and “promote shifts in consumer behaviour, business practices and policy towards more sustainable, environmentally friendly solutions”.<sup>107</sup> Indeed, implementing an effective comms. strategy will allow PE firms to maximise the benefits of incorporating nature-related considerations into their investment cycle. Indeed, it is through strong communication and regular reporting of their biodiversity strategy that a firm can:

- Create a competitive brand and sustainable product differentiation that can improve firm and portfolio value
- Attract (or at least de-risk) capital conversations with environment/biodiversity - or more generally ESG-oriented lenders and investors
- Improve firm (and fund) reputation and recognition

There are three common challenges associated with communicating and reporting on biodiversity strategies for PE firms, multiple solutions exist to overcome them.

### **Challenge 1: Biodiversity reporting may be perceived as a confusing ‘extra’ on top of other ESG reporting**

#### **Solution:**

- A firm’s biodiversity strategy constitutes one part of its broader ESG strategies. We hence suggest that firms integrate all biodiversity reporting into their existing ESG reporting frameworks. To this extent, biodiversity reporting - like wider ESG reporting in general - should focus in particular on communicating the value created as a result of a firm’s biodiversity strategies.

### **Challenge 2: Biodiversity is a complex issue with no single metric or target to report on**

#### **Solution:**

- Given the numerous drivers of biodiversity loss, each of which can be measured using several different metrics, PE firms developing biodiversity strategies will likely encounter questions regarding which targets and metrics to report on. There is no ‘one size fits all’ answer to these questions. Many equally valid metrics and KPIs can be reported on. The most important thing that PE firms can do in this respect is work to ensure that all biodiversity reporting that they conduct is science-based, using scientifically recognized tools, metrics and targets. PE firms only need to communicate relevant, material biodiversity pressures, and relevance and materiality will vary based on the company.

### **Challenge 3: There are no clear stakeholder expectations (neither from investors nor portfolio companies) regarding what should be reported on.**

#### **Solutions:**

Although stakeholder expectations for biodiversity reporting are currently relatively unclear, typical good practices for wider ESG comms. should be applied to biodiversity reporting as well. To this extent, it is important to be transparent on one’s biodiversity plan, the progress being made and any limitations one may face. Likewise, it is good practice to remain humble about achievements, acknowledging that integrating biodiversity into a firm’s ESG strategies is a long journey.

Furthermore, given that biodiversity remains a relatively immature topic, a firm’s biodiversity reporting may also have an educational component to it - touching upon the necessity of addressing the biodiversity crisis, and why the firm’s biodiversity commitments address material issues in the value chain and contribute to reversing biodiversity loss. Similarly, due to the emerging nature of the topic, it is likely that the expectations of firms’ biodiversity reporting will evolve relatively regularly, and firms should work to match their reporting practices according to these changing expectations, especially in a context of increasing pressure from the UN General Secretary calling for “zero tolerance on greenwashing”.<sup>108</sup> In that sense, firms can refer to best practices on climate and net zero claims, published at COP27 in the report *Integrity Matters*.<sup>109</sup>

Finally, as with wider ESG reporting, biodiversity reporting may adopt specific language for each relevant stakeholder being addressed. For example, PE firms can adapt messages to:

- Their portfolio companies (referring to key issues and related quick-wins to create a sense of ownership for both short and long-term biodiversity initiatives)
- Their investors (emphasizing long-term outcomes for both biodiversity and value creation opportunities)
- Wider society (regularly communicating on acquired company-level impacts, targets and progress made to improve transparency)

<sup>108</sup>. <https://news.un.org/en/story/2022/11/1130317>

<sup>109</sup>. *Integrity Matters: Net Zero Commitments by Businesses, Financial Institutions, Cities and Regions from The United Nations’ High-Level Expert Group On The Net Zero Emissions Commitments Of Non-State Entities*, November 2022

## The PE industry agenda on nature and biodiversity

This guidance aims to support the private equity sector's journey towards a nature-positive investment approach. It highlights the value creation opportunities derived from biodiversity, whilst stressing that incorporating biodiversity into decision-making processes is both important and feasible. For PE firms wanting to commence their journey to incorporating nature into the investment cycle, we suggest these best practice steps:

### Suggested best practice steps to incorporate nature into PE

The outcome of step one determines the extent to which the other steps should be implemented



#### Conduct a firm and portfolio biodiversity materiality assessment and apply industry screens

to understand the baseline and prioritise efforts, and identify potentially relevant funds, sectors and companies



#### Assess nature-related risks and opportunities in the acquisition phase

to identify their nature impact, dependency and value creation potential



#### Consider investing in companies that develop or have the potential to develop nature-based solutions and contribute to a nature-positive economy

to help close the biodiversity funding gap, leverage market opportunity, and aim to enhance value



#### Consider defining a nature strategy focused on value creation and risk mitigation with corresponding targets for portfolio companies where material

to start their transformation towards nature positivity and tie ambition for nature to their value creation objectives

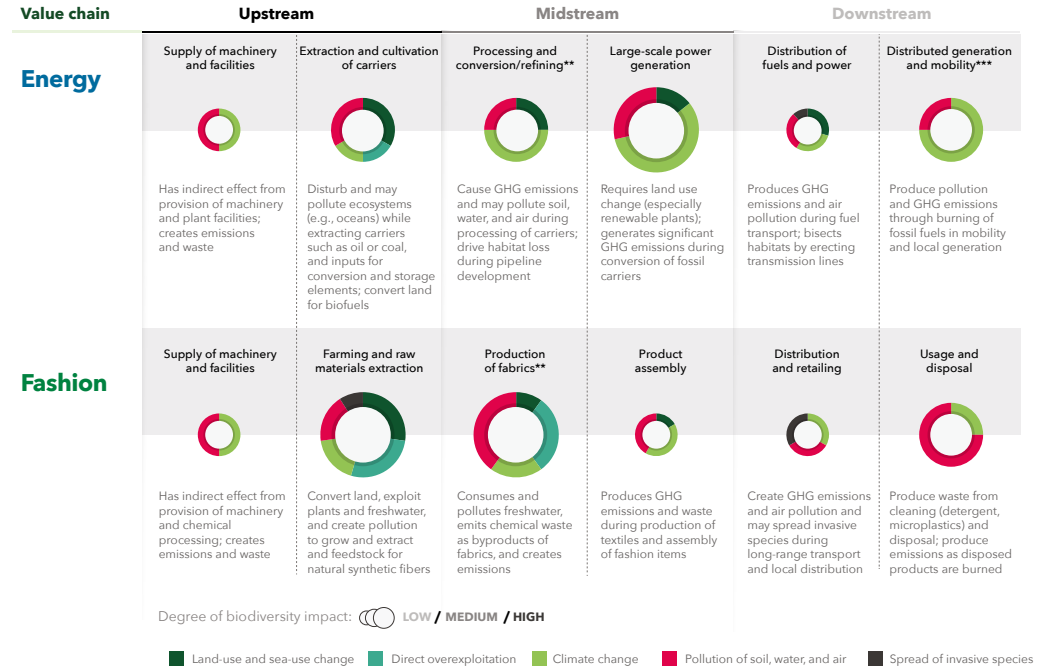
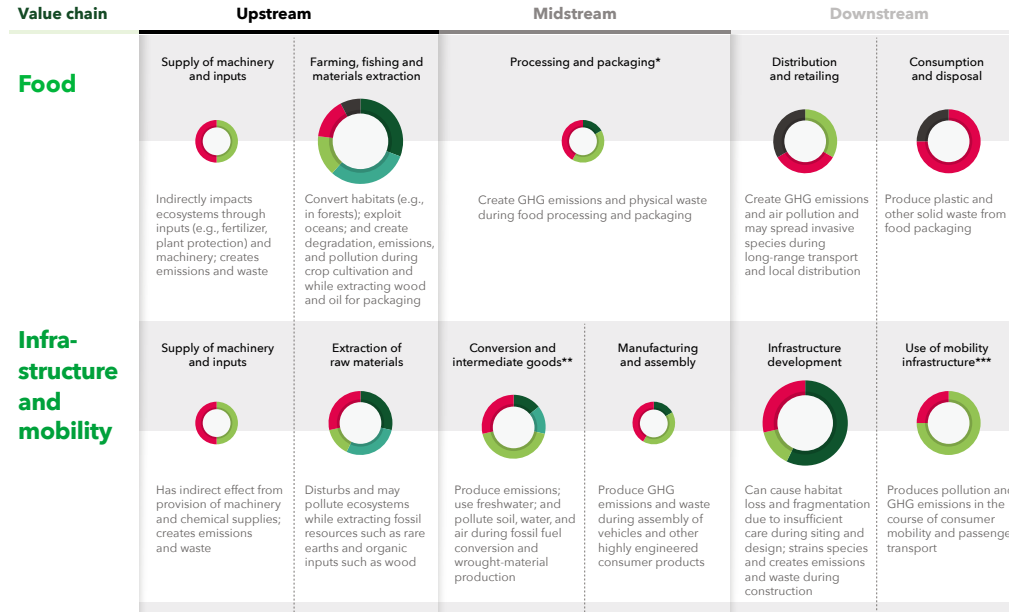


#### Mobilize the organization & grow internal capabilities

to help ensure a common understanding and approach to environmental impact and risk assessment throughout the firm

# Appendix

## Biodiversity Impact of Four Major Value Chains



1. Source: BCG analysis.  
 2.  
 3. \* Includes transport of crops, livestock, and raw materials.  
 4. \*\* Includes transport of raw materials.  
 5. \*\*\* Both energy and infrastructure value chains can influence the impact of mobility

**Non-exhaustive list of tools and metrics cited by key science-based frameworks or business coalitions for nature leveraged in this report**

- **BFFI** - Biodiversity Footprint Financial Institutions (CREM and PRé Sustainability, together with ASN Bank)
- **BIA-GBS** - Biodiversity Impact Analytics powered by the Global Biodiversity Score (Carbon4Finance and CDC Biodiversité)
- **CBF** - Corporate Biodiversity Footprint (Iceberg Datalab and I Care Consult as scientific partner)
- **GBSFI** - Global Biodiversity Score for Financial Institutions (CDC Biodiversité)
- **GID** - Global Impact Database, Biodiversity Impact Data (Impact Institute)
- **ENCORE** - Exploring Natural Capital Opportunities, Risks and Exposure (UNEP-WCMC, UNEP FI & NCFA)
- **IBAT** - Integrated Biodiversity Assessment Tool (BirdLife International, Conservation International, IUCN, UNEP-WCMC)
- **GHPG Tool** - Greenhouse Gas Protocol Tool (including Scope 3 Evaluator)
- **GBIF** - Global Biodiversity Information Facility
- **InVEST** - Integrated Valuation of Ecosystem Services and Tradeoffs
- **UNBL** - UN Biodiversity Lab spatial data analytics platform
- **Resource Watch** - Collections of curated data on the major challenges facing human society and the planet
- **EXIOBASE (MR EE SUT/IOT)** - Multi-regional Environmentally Extended Supply and Use / Input Output database
- **Trase.earth** - Mapping of supply chains of forest-risk commodities
- **CDP** - Carbon Disclosure Project
- **Iris+** - Measurement of the social, environmental and financial performance of an investment
- **SHIFT** - Sustainability, Help, Information, Frameworks/Findings and Tools platform
- **Biodiversity Guidance Navigation Tool** - Interactive questions to undertake biodiversity-inclusive natural capital assessments, supporting resources, tools and methodologies







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