

# Preserving Biodiversity

A call to Action for German Businesses





## Preface

# Biodiversity loss is seriously threatening livelihoods and economies

Nature is an essential prerequisite for the preservation of humankind. Ecosystems provide us with vital “services” such as air purification, climate regulation, food, medicine, and even cultural and psychological benefits. In addition, an intact nature protects us against the environmental disruptions that climate change brings (such as floods or extreme temperatures). Sadly, however, the stability and resilience of nature on our planet is in staggering decline, as we are losing biodiversity and destroying ecosystems at an alarming and unprecedented rate and scale. If humanity – by far the major contributor to biodiversity loss – continues on this path, we risk eroding the foundation on which we all depend, ultimately threatening the habitability of our planet.

As with climate change, a major push to combat the loss of biodiversity and halt the damages done to nature is long overdue. The world has seen populations of individual species drop by almost 70% since 1970 – while the human population has more than doubled during the same period. As our economies are major drivers of this loss of biodiversity, and more than half of the global GDP is dependent on nature as a “service provider,” the biodiversity crisis urgently requires the attention and action of the private sector. There is an enormous gap here: while the climate crisis has rightfully gained widespread attention, it is now imperative to address the biodiversity crisis with the same vigor.

With Germany being one of the world’s most powerful economies, German companies have enormous impact on biodiversity loss through both their in-house operations and global value chains. General awareness of this is sharply increasing at present, as became clear from the interviews we conducted for this study: in talking to 23 major German companies, we observed that an increasing number are recognizing the extent of both their influence and their dependence on nature, closely following upcoming regulations, and starting to take action.

The interviews also showed that we are just at the outset of a long journey. Incremental changes will not suffice to solve the biodiversity crisis – we will need fundamental changes in the realm of business. This will require visionary strategies and continuous implementation efforts; business models will need reassessment and realignment. Eventually, every single business will have to respond to the biodiversity crisis – either proactively or due to growing pressure from governments, consumers, and investors demanding change, as is currently happening with climate action.

Our report sheds light on this necessary action. The following chapters describe the roadblocks on the way to a solution and present an effective approach to help businesses from all sectors of the economy undergo their transformation: the WWF One Planet Business Framework for Biodiversity Stewardship. Incorporating and combining effective practices from various existing approaches and tools, this Framework encompasses five iterative steps that, when followed, guide companies in addressing biodiversity risks and making adequate contributions to the recovery of biodiversity. A meaningful first step is always to understand impacts and interdependencies as well as biodiversity-related risks and opportunities, for which companies can use the Bain Nature and Biodiversity Diagnostic Tool.

In our experience, early adopters of this approach can benefit in many ways: In addition to enhanced risk mitigation, they have a real opportunity to become more attractive to both investors and employees and, in the long-term, to access and exploit new business opportunities. While this will probably not happen overnight, some of the examples in this report show what is possible even today.

Our future, the habitability of our planet, and, ultimately, our own well-being depend on the actions we take now. By prioritizing nature in business decisions, developing sustainable practices, and fostering collaboration, we can create a future where nature and business can coexist as partners in our strive for a life worth living. With this report, we hope to demonstrate that, if we pull together, we have the power to challenge and adjust our actions and choices in meaningful ways, thus living up to our responsibility to ensure a resilient and vibrant planet for generations to come.



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## Executive summary

# Biodiversity loss is threatening our planet – businesses are key players in halting and reversing it

**The foundation of life on earth is at risk, threatening our economic systems and humanity at large**

- ▶ We are currently witnessing the sixth mass extinction in the history of our planet. Populations of mammals, birds, amphibians, reptiles, and fish have globally declined by 69% on average since 1970. In Germany, 34% of native animal species and 26% of plant species are in danger of going extinct.
- ▶ Key drivers of this biodiversity loss are changes in land, freshwater, and sea use, resource exploitation, pollution, invasive species and diseases, and climate change. Human activities in particular put increasing pressures on biodiversity: we have altered three-quarters of the land-based and about two-thirds of the marine environment in the past 50 years.
- ▶ In the near term, the biodiversity crisis is putting more than half of the global GDP at risk, as that is the part depending on nature's goods and services. The World Economic Forum considers the biodiversity crisis one of the top 5 risks for the global economy.

**German companies surveyed are aware that they have substantial impact on biodiversity along the different segments of the value chain; some are attempting to take first actions**

- ▶ Biodiversity is a top priority for companies; however, it is not yet as important as climate change and digitization. This will likely change as the topic gains more traction, leading to increasing demand from society and pressure from regulators and NGOs.

- ▶ With a strong manufacturing industry, an export-oriented economy, an important financial center, and a strong demand for agricultural imports (livestock feed, fruits and vegetables, coffee, cacao etc.), Germany has a strong impact on the drivers of biodiversity loss. This impact is not limited to its corporations' own operations but is particularly relevant in upstream and downstream activities within value chains.
- ▶ Our evaluation sheds light on the impacts of major German industries. It shows the importance of engaging value chains to reduce adverse impacts and to drive restoration and protection of biodiversity, especially in the secondary and tertiary sector. The identification of places and activities that contribute most to a company's impacts on biodiversity is critical to allow for a focus of corporate resources on value chain stages where actions are most urgently needed to preserve biodiversity and lower business risks. Next to engagement in value chains, businesses should critically examine and possibly adjust their business models and business decisions (e.g., product design and durability, portfolio etc.) once identified where nature is most adversely impacted.
- ▶ Interviews with more than 20 senior sustainability executives from industry-leading companies show that the majority of companies are aware of both their impacts and dependencies on biodiversity. Some have also started to take first steps but acknowledge that the extent of action is only low to medium so far
- ▶ While many companies have started to analyze and mitigate their biodiversity impacts, we see few companies that systematically integrate risks and opportunities in their approach.

### **Reasons for companies to act: risk mitigation, preservation of nature – and the chance to exploit new business opportunities in the future**

- ▶ Based on the interviews conducted, most of the biodiversity efforts of German companies seem to be driven by intrinsic motivation. Risk mitigation plays an increasingly important role.
- ▶ Businesses that manage their impact on biodiversity have the chance to gain competitive advantages through access to growing markets, increasing demand for sustainable products, lower costs, advantageous financing, and better reputation.
- ▶ In the long run, biodiversity management is expected to become a general imperative, as risks will continue to grow and stricter regulations are about to evolve.

### **Despite several roadblocks to biodiversity action, solutions do exist. Some German companies have embarked on their biodiversity stewardship journey**

- ▶ According to the German companies we interviewed, key obstacles to biodiversity action are a lack of standardized metrics and measurement approaches, competition with other topics for attention and resources, and the difficulty to drive the necessary action in supply chains.

- ▶ Despite these roadblocks, a number of German companies from different industries have started working to reduce the pressures they exert on biodiversity. And indeed, companies should not lose any more time waiting for further regulations and measurement approaches but seek to take preemptive measures and adopt existing approaches.
- ▶ Valuable guidance for businesses in planning, implementing, and scaling up meaningful biodiversity-related action is available. Above all, they include ambitious integrated frameworks such as the WWF One Planet Business Framework for Biodiversity Stewardship: the framework structures the corporate biodiversity stewardship journey, bundles key sustainability approaches (e.g.: science-based targets for nature, nature-related financial disclosure) and defines clear ambition levels for targets, thus supporting effective biodiversity management.

**In the long run, incremental changes will not be enough to tackle the global biodiversity crisis and put nature on a path to recovery.** Companies will need to rethink and transform their business models to live up to the global goal of “living in harmony with nature” set out by the Convention on Biological Diversity (CBD). Those taking action now will be able to substantially mitigate their biodiversity risks, exploit new business opportunities, and become more attractive for employees, investors, and other stakeholders.



# Study participants

The study draws upon the insights of 23 German companies that participated in our research. They were selected based on their relevance for predefined focus industries. To ensure a comprehensive and well-rounded analysis, we conducted interviews with a range of professionals, including Chief Sustainability officers and sustainability specialists. We would like to express our gratitude to these companies and individuals for their time and valuable contributions to our study. The following companies have been actively involved in this study:

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Agriculture, forestry and fishing



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Construction and real estate



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Electricity production and distribution



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Financial services



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Food and beverage products



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Manufacturing of machinery  
and electronics

**SCHAEFFLER**



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Manufacturing of  
pharmaceuticals and  
chemical products



**MERCK**

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Mining, smelting and refining



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Retail and wholesale (food  
and non-food)



**OTTO**

**REWE**  
GROUP

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Transportation and logistics



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Others





## Chapter 1

# The foundation of life is at serious risk

**Biodiversity and ecosystems support human societies by providing ecosystem services: enabling food and wood production, providing access to clean water, absorbing emissions, and mitigating risks of natural disasters. Human activities have put the natural variety of life on our planet under extreme pressure. Biodiversity is now a top risk to the global economy, as more than 50% of global GDP depends highly or moderately on nature's goods and services.**

### Key takeaways

- ▶ Over the past decades, biodiversity has been under unprecedented pressure, as evident from increased degradation as well as loss of habitats and species around the globe. Since 1970, populations of mammals, birds, amphibians, reptiles, and fish have declined by an average 69%. We are facing the sixth global mass extinction, with millions of species at risk.
- ▶ In Germany, 34% of native animal species and 26% of plant species are endangered.
- ▶ This growing pressure on biodiversity is caused by human activities. Key drivers are changes in land, freshwater and sea use, resource exploitation, pollution, invasive species and diseases, and climate change.
- ▶ Biodiversity loss constitutes a threat not just to businesses but to humanity itself. Businesses, the economy at large, and society rely on nature's goods and services for remaining functional. Human-induced pressure on nature – and the institutional failure to reverse biodiversity loss – puts \$44 trillion of economic, nature-dependent value (more than half of global GDP) at risk.
- ▶ Biodiversity is closely connected to other environmental and social sustainability topics, especially climate change. To solve the biodiversity crisis, it is imperative that businesses, civil society, and individuals address these sustainability challenges holistically.

## Biodiversity is the foundation of human life on earth

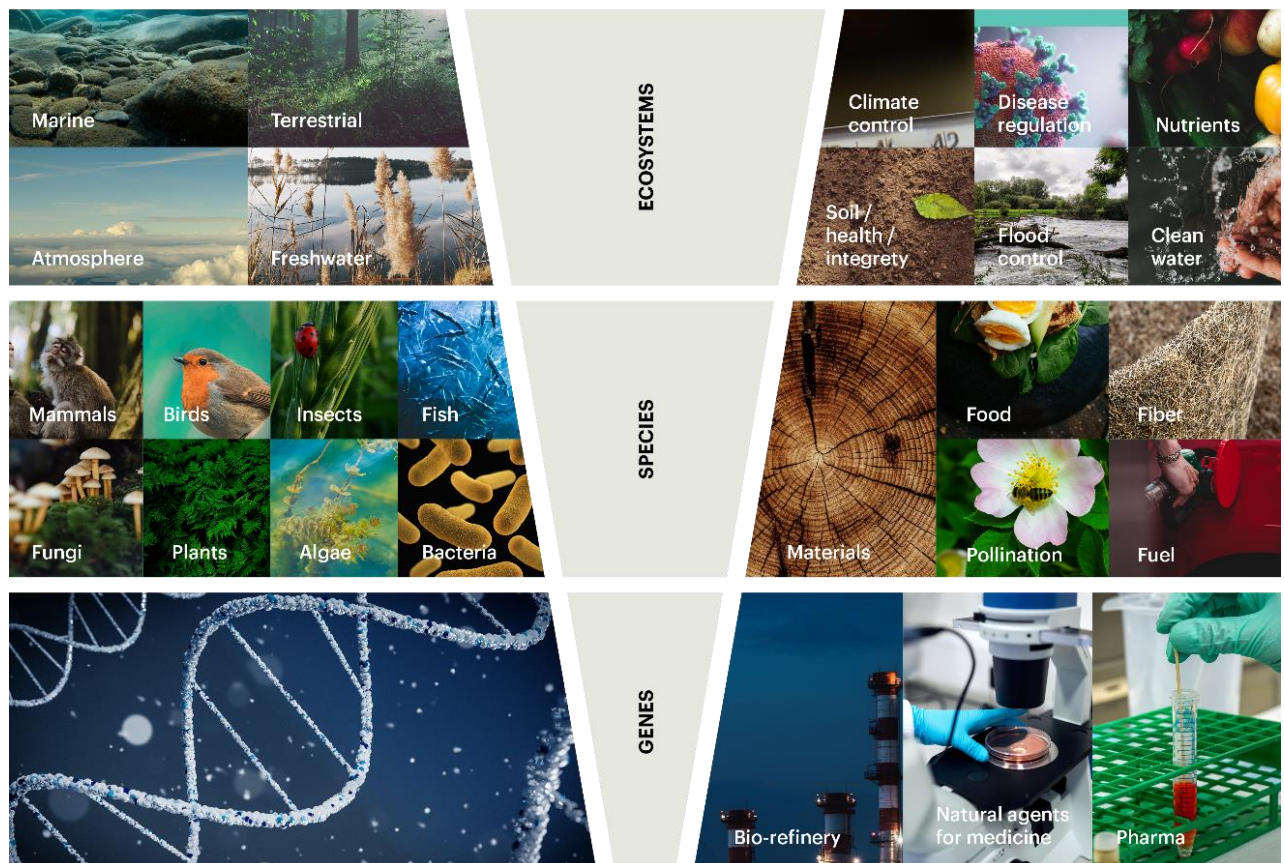
Ecosystems, species, and genes: biodiversity is defined as the variety – at all levels – of life on Earth. Its importance to human society cannot be overstated.

Besides representing a value of its own, biodiversity also supports humans, societies, and businesses with natural goods and services that our very existence depends on (exhibit 2). The benefits provided by the natural environment and healthy ecosystems are referred to as ecosystem services.

**Exhibit 1: Biodiversity is crucial for all aspects of life – spanning across ecosystems, species, and genes, it provides humans with critical natural goods and services**

### BIODIVERSITY COMPONENTS

### BENEFITS TO HUMANS (EXAMPLES)



Source: IPBES (2019 a)

We typically distinguish between (1) provisioning services (or ecosystem goods) such as food, raw materials, and energy; (2) regulating services such as carbon sequestration, pollination, and pest and disease control; (3) cultural services such as recreational experiences; and (4) supporting services, by which we mean underlying natural processes such as photosynthesis or the water cycle.<sup>1</sup> While we often assign monetary value to ecosystem goods such as food and raw materials – and less often to the services nature provides –, these are no less critical for human life.

## **Biodiversity is at serious risk, both globally and in Germany**

**The hazards for biodiversity have rapidly grown in recent decades. Industrialization and overconsumption of natural resources have driven an unprecedented loss of species and habitats – both globally and in Germany.**

In the past 50 years, our planet has witnessed an unprecedented and well documented loss of biodiversity. The globally monitored population of mammals, birds, amphibians, reptiles, and fish has declined by 69% on average since 1970<sup>2</sup>; a million species worldwide are at risk of extinction.<sup>3</sup> Largely caused by human activities, species are going extinct far more rapidly these days: extinction rates are now 100-1,000 times higher than the average rates over the past tens of millions of years.<sup>4</sup> In addition, 75% of the world's ice-free land surface has significantly been altered through human activity<sup>5</sup>, specifically urbanization and agricultural land use change.

This loss of biodiversity is not only occurring in “far-away” regions – it also happens in our vicinity. Despite various conservation efforts, biodiversity in Germany has declined significantly over the past century. Key drivers such as urbanization, intensive land use, soil sealing, and nitrogen and pesticide pollution have led to a destruction and fragmentation of habitats. According to the German Red List Centre, 33% of vertebrates and 31% of plant species are currently endangered<sup>6</sup>. In fact, among the OECD countries, Germany has the second highest share of mammals threatened by extinction.<sup>7</sup> Bird and insect species are at even greater risk in Germany: the total amount of insects has declined by 75% in just 27 years.<sup>8</sup> Only 6.5% of the land area in Germany has been designated as nature conservation areas<sup>9</sup> – far from the 30% target for 2030 recently set and agreed upon under the Kunming-Montreal Global Biodiversity Framework<sup>10</sup>.

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<sup>1</sup> The National Wildlife Federation (no date)

<sup>2</sup> WWF (2022 a)

<sup>3</sup> IPBES (2019 a)

<sup>4</sup> Dasgupta (2021)

<sup>5</sup> IPBES (2019 a)

<sup>6</sup> WWF (2022c)






<sup>7</sup> OECD.Stat (2023)

<sup>8</sup> FONA (2022)

<sup>9</sup> BFN (2019)

<sup>10</sup> European Commission (2022)

**Exhibit 2: Biodiversity loss stems from five main global direct drivers linked to human activities**

<p><b>A</b></p> <p><b>Changes in land, freshwater, and sea use</b></p>		<p>Modification of nature by complete removal, fragmentation, or reduction in quality of ecosystems, caused by activities such as unsustainable agriculture and forest management, infrastructure, construction, and extraction of metals and minerals.</p>
<p><b>B</b></p> <p><b>Direct resource exploitation</b></p>		<p>Direct exploitation through unsustainable hunting, fishing, and harvesting practices as well as water, soil, and organic resource extraction, and indirect exploitation when resources are unintentionally removed (e.g., bycatch in fisheries).</p>
<p><b>C</b></p> <p><b>Pollution</b></p>		<p>Direct impact on ecosystems and species by, e.g., oil spills, incineration, and chemical substances used in production sites, microplastics, pesticides, and excess nutrient loads.</p>
<p><b>D</b></p> <p><b>Spread of invasive alien species and diseases</b></p>		<p>Non-native species competing with native species for space, food, and other resources, preying on native species or spreading non-native diseases. Such species/diseases can spread involuntarily via ballast water or via imported living material, e.g., exotic garden plants.</p>
<p><b>E</b></p> <p><b>Climate change</b></p>		<p>GHG emissions causing increased temperatures, which result in extreme weather events that require species to adapt (if possible) and lead to seasonal events such as migration and reproduction occurring at the wrong time.</p>

Source: Adapted, based on IPBES (2019a)

Biodiversity loss is largely caused by five direct global drivers, all of them linked to human activity: (a) extensive changes in land, freshwater, and sea use, (b) resource exploitation, (c) pollution, (d) invasive species and diseases, and (e) climate change<sup>11</sup>. The degradation of biodiversity has a severe impact not only on ecosystems and species, but also on modern societies, including businesses, which both impact and depend on functioning and stable ecosystems. Businesses and society at large are extracting more goods and services from nature than ever before, and the

<sup>11</sup> IPBES (2019b)

overconsumption of natural resources comes at the expense of nature's biodiversity and resilience. The Earth Overshoot Day marks the date when humanity's demand for ecological resources and services in a given year exceeds what Earth can regenerate in that year. In Germany, this day was on May 4 in 2023 (compared to August 2 for the full globe), which means that for the remainder of the year, Germany is effectively diminishing ecological resources and accumulating ecological debt.<sup>12</sup>

In addition to the five direct drivers of biodiversity loss, there is a number of underlying, indirect drivers. As described in WWF's Living Planet Report, these include human population growth, technological development, unsustainable business models, and overconsumption.<sup>13</sup> With the exception of population growth, all of them are closely linked to business activity. Indirect drivers are socio-economic factors that affect biodiversity primarily by accelerating the impact of direct drivers, e.g., human population growth is accelerating all direct drivers of biodiversity loss. It is beyond the scope of this report to describe each indirect driver for German sectors in detail, but it is quite obvious that system-level changes and solving issues such as overconsumption are crucial in reversing nature loss.

Despite the severity and inherent risks associated with the nature crisis, biodiversity has historically received less attention than other global threats, most notably climate change. This is now changing, as (a) the post-2020 Global Biodiversity Framework (GBF) has provided a series of new global targets (agreed upon as of December 2022); (b) the Science-Based Targets Network (SBTN) is providing a framework for target-setting, and (c) there is an increasing number of standards for risk assessment and disclosure. Additional targets have been provided by emerging frameworks such as the Taskforce on Nature-related Financial Disclosure (TNFD), as well as by new regulations (e.g., the Corporate Sustainability Reporting Directive CSRD, as further elaborated on in Chapter 5). These targets are gaining relevance, as they are gradually adopted by the private sector.

According to reports by the World Economic Forum, over 1,000 global experts and leaders expect biodiversity loss and related environmental risks to evolve into one of the most critical threats to the global economy within the coming decade (exhibit 4).<sup>14</sup> What is more, studies indicate that a failure to reverse the development before 2030 could push the biodiversity loss beyond irreversible tipping points where essential ecosystem services would start collapsing, putting more than half of the global GDP at risk.<sup>15</sup> This underlines why businesses need to improve their understanding of the impact of biodiversity loss, their role in reversing the current trend, and the measures they can take.

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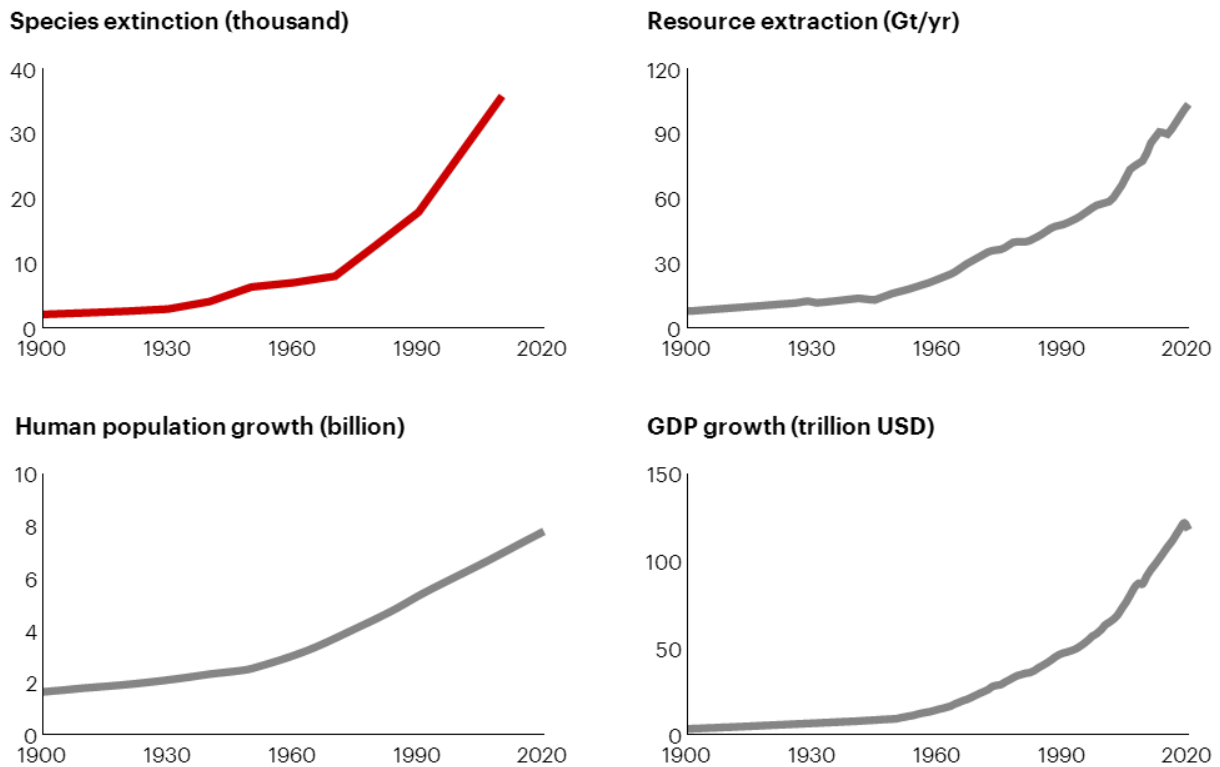
<sup>12</sup> Earth Overshoot Day (2023)

<sup>13</sup> WWF (2022a)

<sup>14</sup> WEF (2023)

<sup>15</sup> WEF (2020a)

**Exhibit 3: Overexploitation of natural resources accelerates species extinction<sup>16</sup>**



Source: Scott (2008), Krausmann, et al. (2018), Maddison Project Database/ World Bank (2017), United Nations Population Division (2019)

**Why tipping points matter so much: The Amazon rainforest at risk**

A tipping point is a “critical threshold beyond which a system reorganizes, often abruptly and/or irreversibly,”<sup>17</sup> leading to a noticeable deterioration in living conditions for humans and many other species that depend on the current ecosystem balance. One example of a tipping point heavily impacting the climate – and biodiversity – is the Amazon rainforest dieback, a point at which the Amazon rainforest’s self-sustaining ecosystem will collapse.

Currently, the Amazon creates its own weather patterns by recycling the forest’s moisture, generating as much as 45% of its total precipitation. This hydrological virtuous cycle is

<sup>16</sup> Human population growth, economic growth, and consumption have fueled a 3x increase in global resource extraction by humans across supply chains between 1970 and 2020. In that same time interval, the global population of mammals, birds, amphibians,

reptiles, and fish has declined at a similar alarming rate. GDP data for 1900-1950 is extrapolated based on available data for 1900, 1913, 1940 and 1950.

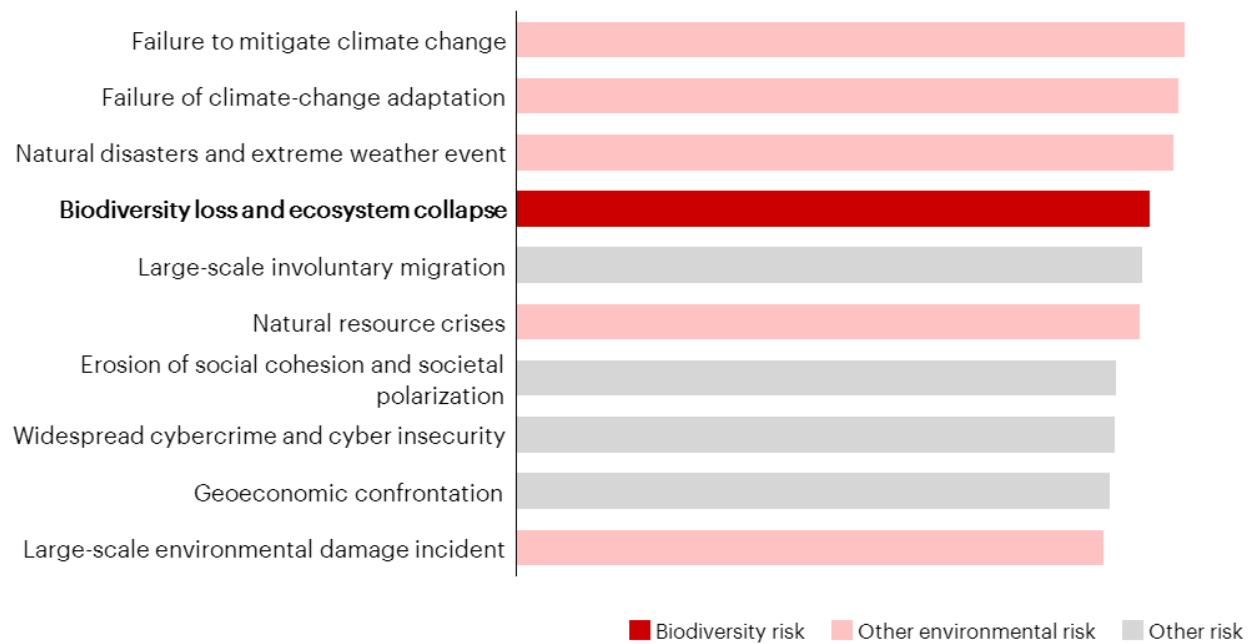
<sup>17</sup> IPCC (2023)



increasingly disrupted by climate change and forest losses, mainly due to deforestation (between 2005 and 2017, EU imports alone led to the deforestation of 3.5 million hectares, emitting 1,807 million tons of CO<sub>2</sub><sup>18</sup>). Scientists like Carlos Nobre fear that if once the rate of deforestation reaches 20 to 25% of the original surface area (present: ~20%<sup>19</sup>), the hydrological cycle will collapse, turning the rainforest into scrubby savanna in a matter of decades. Apart from an enormous loss of biodiversity, this would also substantially affect the local and global climate, further reinforcing the vicious cycle of forest loss in the Amazon rainforest and beyond.<sup>20</sup>

**Exhibit 4: Biodiversity loss is a top risk to the global economy**

Top 10 global risks ranked by severity over the long term (10 years), average score on a scale 1-7



Source: WEF (2022)

<sup>18</sup> WWF (2021a)

<sup>19</sup> Amazonia (2022)

<sup>20</sup> Lovejoy et al. (2018)

Biodiversity loss is clearly a pressing issue and awareness of its impacts is increasing among both businesses and consumers. That said, biodiversity has not yet received the resources and attention that the severity of the situation requires.

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*"The extent and urgency of the biodiversity crisis is currently not fully reflected in public or business sustainability discussions."*

Alexander Liedke, Head of Responsible Sourcing, Lidl Dienstleistung GmbH & Co. KG

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### **Biodiversity is closely related to other major sustainability topics**

**The biodiversity crisis is strongly linked to topics such as the climate crisis, and must therefore be tackled jointly with those topics. An integrated approach will both accelerate sustainable development and reduce the cost of risk mitigation.**

The UN's Sustainable Development Goals (SDGs) provide a key framework for identifying and prioritizing sustainability efforts, both for businesses and for society at large. The 17 SDGs outline what we need to achieve to create "a better and more sustainable future for all" across themes relating to the biosphere, society, and economy.<sup>21</sup> The biosphere, consisting of all parts on Earth where life exists, is the most fundamental component, with goals including access to clean water, halting climate change, and maintaining biodiversity through SDG 14: "Life below water" and SDG 15: "Life on land."

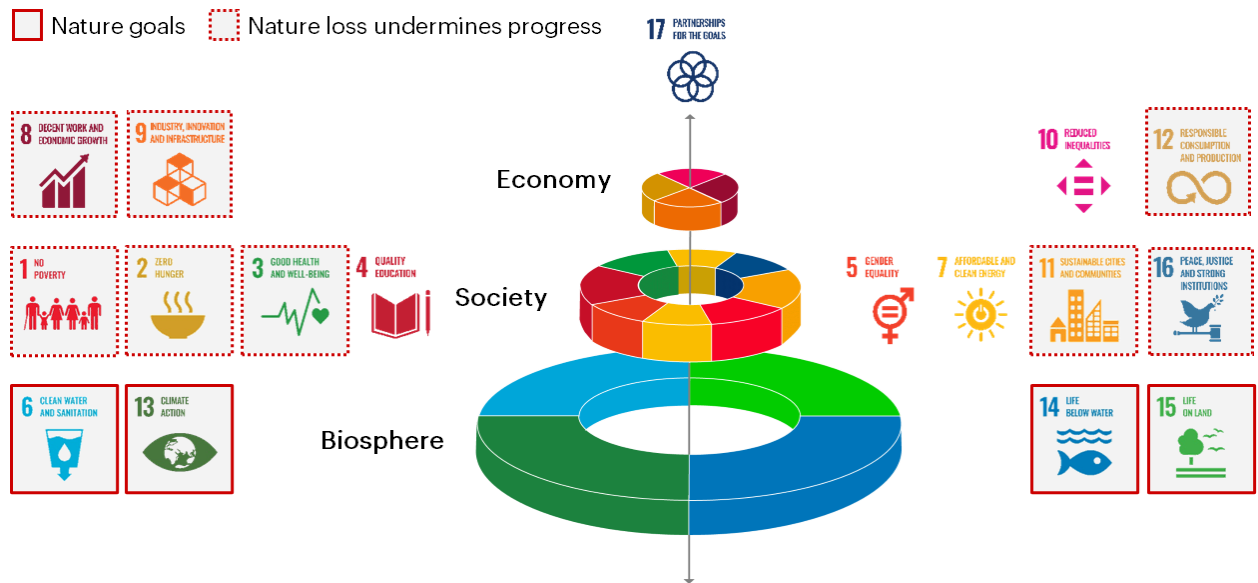
An intact biosphere is crucial for maintaining an intact society and economy (exhibit 5). If biodiversity loss continues, and if we fail to achieve the goals related to the biosphere, all other SDGs related to society and economy will become unreachable. According to IPBES, current negative trends in biodiversity will undermine progress towards 80% of the SDG targets set for poverty, hunger, health, freshwater, cities, climate, oceans, and land. To give an example, biodiversity loss is putting at risk the progress toward SDG 2: "Zero hunger," as the capacity of agricultural systems to adapt to changing conditions and shocks, such as climate change or outbreaks of pests is undermined.<sup>22</sup>

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<sup>21</sup> United Nations (no date)

<sup>22</sup> Welthungerhilfe (2021)

**Exhibit 5: Biodiversity is highly interconnected with multiple SDGs – the Sustainably Development Goals of the UN**



Source: Adapted from Stockholm Resilience Center (2016)

In short, our planet is affected by a double crisis, biodiversity and climate change, which are clearly interconnected. Climate change is one of the key drivers of biodiversity loss, and biodiversity loss, in turn, is driving climate change (through deforestation, among other things).<sup>23</sup> Compared to pre-industrial times, the temperature on earth has already increased by 1.2°C; extreme temperature conditions and weather events are growing more and more common. Looking at the concrete effects of temperature increase, its impacts on biodiversity are clear:<sup>24</sup> increased warming makes a growing number of species lose much of their habitats (exhibit 6), a change that occurs faster than many species can adapt to escape from via migration. Unless we prevent global warming from exceeding 1.5°C, the temperature increase is expected to enormously accelerate the extinction of species. The higher the temperatures rise, the worse their impacts on life on earth. Unless we limit warming to a maximum of 1.5°C, climate change is likely to become a dominant cause of biodiversity loss.<sup>25</sup> For example, if the earth’s temperature increases by 2°C as opposed to 1.5°C, extinction risk will accelerate by at least 2x within the biodiversity hotspots.<sup>26</sup>

<sup>23</sup> WEF (2022)

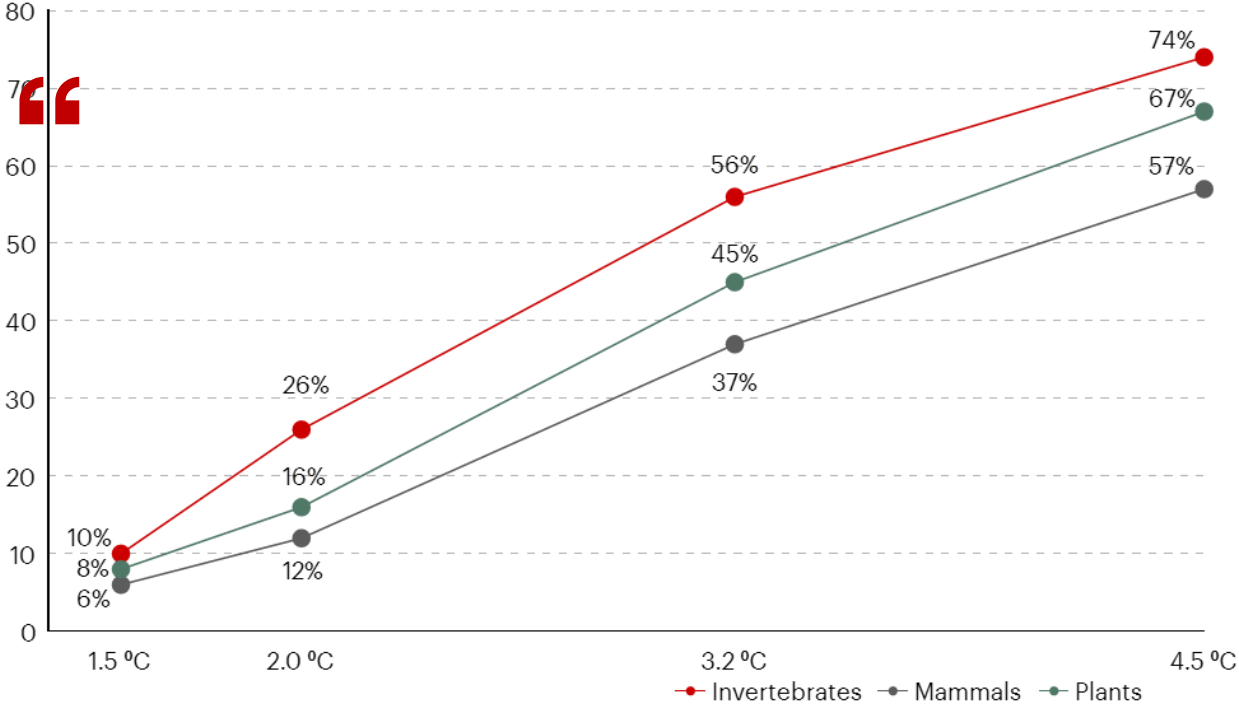
<sup>24</sup> World Meteorological Organization (2022)

<sup>25</sup> WWF (2022a)

<sup>26</sup> IPCC (2021)

**Exhibit 6: Higher temperature increases are accelerating biodiversity loss which in turn leads to lower a resilience to climate change pressures and lower carbon sequestration potential**

% of species that will lose at least half of their habitat (high risk of extinction) in different scenarios



Source: Warren, et al. (2018)

There is broad scientific consensus on the impact that climate has on biodiversity. The IPCC’s recent report also underlines the fundamental importance of protecting biodiversity, due to its key role in enabling climate-resilient development and reducing pressures related to climate change. As a concrete example, marine and terrestrial ecosystems remove nearly 50% of human-created CO<sub>2</sub> from the atmosphere.<sup>27</sup> Given these strong interdependencies, biodiversity conservation and restoration are the most promising approaches to halt climate change.

<sup>27</sup> IPCC (2022)

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*"We need comprehensive sustainability strategies that embrace the interconnections between sustainability issues, such as climate change and biodiversity loss, and their social consequences."*

**Andreas Gehlhaar, Head of Sustainability and Environment, Deutsche Bahn AG**

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However, there are also key differences between the two, and measures to combat global warming and biodiversity loss may even conflict with each other at times (for instance, offshore wind turbines save CO<sub>2</sub> emissions but can destroy marine habitats). Between the two, biodiversity loss appears to be the more complex challenge at first: (a) it requires locally focused approaches (local species, local composition of ecosystems, multiple interdependencies) – while CO<sub>2</sub> emissions can be reduced through various cross-regional measures (nature-based solutions, direct air capture);<sup>28</sup> (b) biodiversity requires multiple metrics and more sophisticated measurement systems compared to just one global metric – CO<sub>2</sub> equivalents – for climate change; (c) the cause-and-effect dynamics of biodiversity loss are non-linear, whereas with climate change, more emissions will generally accelerate global warming. However, regardless of these complexities and the less advanced stage of biodiversity-management, the key drivers of biodiversity loss are well known – so we can and should reverse nature loss today.

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*"At times, there is a conflict between biodiversity and climate action, e.g., roof greening vs. installation of solar panels."*

**Dr. Karin Hinrichs-Petersen, Head of Environmental Protection, Aurubis**

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<sup>28</sup> IPBES-IPCC (2021)

## Businesses depend on healthy ecosystems

According to WEF, more than 50% of the global GDP is estimated to be highly or moderately dependent on nature and the services it provides. And businesses impact nature in the places they operate and throughout their value chains.

Human activities directly affect nature. In fact, much of the dramatic biodiversity loss we see is caused by business operations – in particular of companies operating in the agricultural, forestry and industrial sectors. And it is not only through their own operations that businesses affect nature, but also through their value chain activities, which often reach across the globe.

The issue is all the more urgent, as businesses heavily depend on nature. They depend on the availability of its resources, on its services (such as pollination), and on the infrastructure and nature experience needed, e.g., for tourism and business travel. As a consequence, the current rate of biodiversity loss gravely affects the economics of corporations, posing a major threat to the economy and the role businesses play in it. (This interdependency between business activity and nature, to the extent that it directly affects companies' finances, is usually referred to as double materiality.)

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*"The business risk of not acting on biodiversity is extremely high for us. We need a vital and diverse nature to provide key ingredients for our products."*

Georg Hoffmann, Head of Sustainability, Ritter Sport

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In fact, if we fail to reverse the current trend before 2030, biodiversity loss would be pushed beyond irreversible tipping points – which, in turn, would place over 50% (\$44 trillion) of the global GDP at risk<sup>29</sup>. So, it is evident that companies need to act quickly to combat biodiversity loss.

One prerequisite for targeted action is a clear and comprehensive view of the pressures that business operations put on nature. The next chapter will therefore shed some light on German companies' impact on biodiversity.

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<sup>29</sup> WEF (2020b)



## Chapter 2

# German businesses impact biodiversity at home and abroad

German businesses' operations exert pressure on nature both directly through their domestic operations and through their supply chains around the globe. These up-, mid- and downstream impacts have been assessed for major sectors and industries. Many companies have started to act on biodiversity conversation, some have made the crucial step and work together with suppliers and buyers at scale.

### Key takeaways

- ▶ Germany is one of the world's biggest economies, and Germany's impact on biodiversity is correspondingly strong. Its unique structure and composition of industry clusters comes with powerful levers to affect – but also improve biodiversity, both in the country and abroad.
- ▶ Companies' impact on biodiversity is not limited to their own operations, but also comes from the activities along their upstream and downstream value chains.
- ▶ Industries affect biodiversity in different ways: those in primary sectors usually have a strong direct impact, while those in secondary and tertiary sectors tend to have mostly indirect impacts through their supply chains.
- ▶ In most commodities industries, direct environmental impacts are much greater for supply chains than for business sites in Germany. In addition, it is also important to consider use-phase and downstream impacts (e.g. food-waste or micro plastic). These impacts tend to receive less attention; in fact, only a minority of companies interviewed currently include their full value chains in their biodiversity impact assessment.
- ▶ The great majority of German businesses interviewed stated that they are aware of both their impact on biodiversity and their dependency on nature. Some have started taking first steps, but said the extent of their actions is only low to medium so far.
- ▶ While many companies have started analyzing and mitigating their biodiversity impacts, we see only few that systematically consider risks and opportunities in their approach.

## German businesses place substantial pressure on biodiversity

Germany is one of the world's largest economies, and its impact on biodiversity is correspondingly strong. Its unique structure and composition of industry clusters comes with powerful levers to affect, but also improve biodiversity, both in the country and abroad.

Germany is the country with the largest population in Europe, and one of the world's strongest economies, accounting for ~3% of the global GDP<sup>30</sup> and ~8% of global exports.<sup>31</sup> Germany is also one of the world's largest contributors to global deforestation, due to agricultural imports driving the loss or degradation of forests in producing countries.<sup>32</sup>

**Export-oriented economy:** Germany has a strongly export-oriented economy. While the country was the global export champion from 2002 to 2008, it currently ranks on third place behind China and the US.<sup>33</sup> Besides automobiles and machinery, Germany also exports all kinds of other goods. One is agricultural goods: the German agricultural industry ranks third on global agricultural exports; for sweets, cheese, pork, and agricultural technology, Germany is export champion. In fact, one-third of all revenues in the agricultural sector comes from exports.<sup>34</sup>

While this could be regarded a great economic success, it causes severe pressure on biodiversity, both in Germany and abroad. More than half of the country's area is used for agricultural purposes,<sup>35</sup> along with the increase of harmful farming practices – in particular, vast amounts of pesticides and fertilizers being used, producing corresponding residues –, this creating growing problems for plants and animals. Not only in Germany but also in other countries, as the agricultural sector relies on critical inputs from abroad. To name just one example: the production of soy to feed animals<sup>36</sup> is one of the key drivers of global deforestation.

**Strong manufacturing industry:** The most important industry in Germany, in terms of economic value, is the manufacturing industry: in 2021, it accounted for ~27% of gross value added.<sup>37</sup> The industry heavily relies on global supply chains, as both raw materials (e.g., from mining activities) and complex technical inputs often come from abroad. As a result, German manufacturing sector is putting massive pressure on biodiversity, both domestic and abroad, translating into a great responsibility to reduce that impact and drive positive change in its value chains.

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<sup>30</sup> Statista (2022)

<sup>31</sup> BPB (2017)

<sup>32</sup> WWF (2021a)

<sup>33</sup> BPB (2023)

<sup>34</sup> BMEL (2020)

<sup>35</sup> Umweltbundesamt (2018)

<sup>36</sup> WWF (2022b)

<sup>37</sup> Deutschland.de (2023)



**Continental Europe's most important financial center:** In view of its size and stock exchanges, and as home to the Frankfurt headquarters of the European Central Bank, Germany is continental Europe's most important financial center. By incorporating biodiversity considerations into their investment strategy and decision-making processes, financial institutions can support biodiversity conservation and restoration efforts.

**Consumers with high purchasing power:** Not only exports but foreign trade in general plays an important role in Germany, with ~35% of domestic demand being covered by imports. As a resource-poor country, Germany relies on imports of energy<sup>38</sup>, but also on many biodiversity-critical end products such as cacao, coffee, palm oil, soy, and sugarcane.<sup>39</sup> Due to their purchasing power, German consumers have considerable influence on businesses, and thus, indirectly, on global biodiversity through their purchasing decisions.

## Why the value chain is so important to correctly evaluate a business's biodiversity footprint

When it comes to biodiversity, only a minority of German companies take into account all upstream and downstream activities along their value chains. That, however, is where the main action is, as an analysis of an exemplary food and beverage retailer reveals

The Natural Capital Protocol, a broadly accepted biodiversity framework, outlines three levels of biodiversity impact:

1. **Upstream ("cradle to gate"):** Covers the sourcing of raw materials and production of components (or ingredients) that occur prior to a company's core operations
2. **Direct operations ("gate to gate"):** Covers the impact generated on the sites controlled by the company and its subsidiaries (e.g., land-use change through infrastructure)
3. **Downstream ("gate to grave"):** Covers the impact from all activities linked to the distribution, purchase, recovery, recycling, and final disposal of the company's product

So, when we speak of the direct biodiversity impact of businesses, we relate to the effects of their own operations, while indirect impacts refer to the activities in businesses' upstream and downstream value chains (see exhibit 9 for an example). Interestingly, while the direct impact may vary widely across industries, all of them have some extent of indirect impact caused, e.g., by built environment and the transportation of goods.

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<sup>38</sup> BPB (2023)

<sup>39</sup> WWF (2022b)

For obvious reasons, the upstream and downstream parts of value chains – and their impacts – are particularly important for economies that, like Germany, are strongly involved in global trade. In a dedicated analysis, the Environmental Atlas Germany examined eight selected German industries and found that their environmental impacts are much greater in their supply chains than they are in the industries' own operations. Also, substantial portions of the gross value added in industries' supply chains is generated abroad: for the automotive, chemical, and food retail industry, for instance, these shares are 45%, 70%, and 40%, respectively.<sup>40</sup>

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*"The majority of our biodiversity impact lies in our supply chain; hence, it is not enough to look at our own operations only, but necessary to assess the full value chain."*

**Ulrike Sapiro, Chief Sustainability Officer, Henkel**

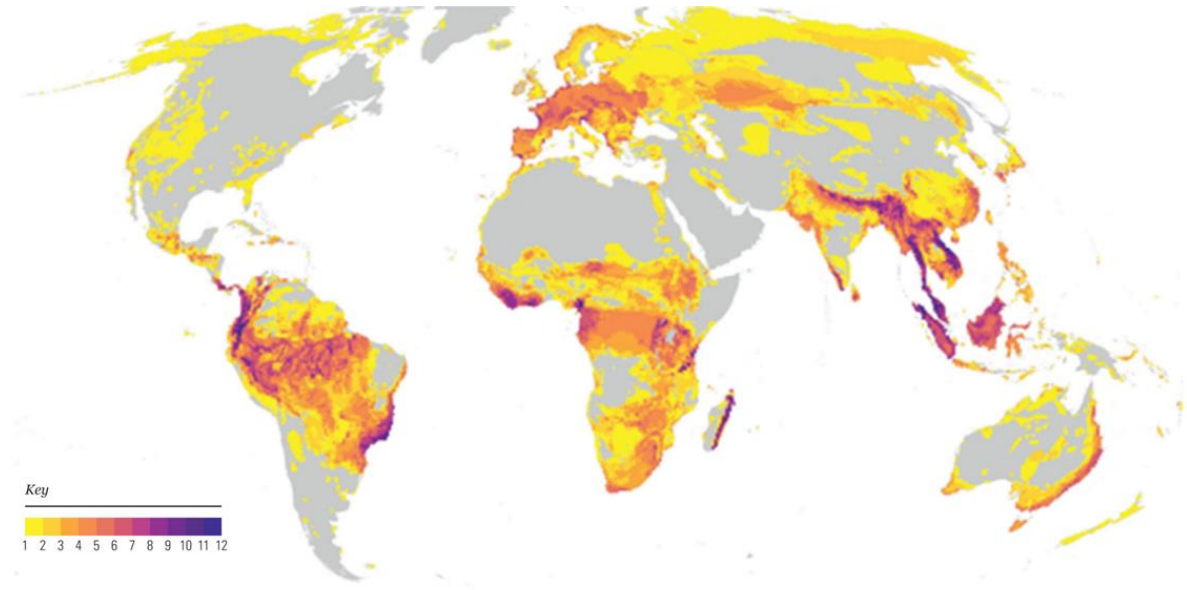
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Therefore, any measures to reduce German industries' biodiversity impact absolutely have to include their supply chains, both domestic and abroad. This is currently not the prevailing practice: According to the data German companies voluntarily disclosed under the Carbon Disclosure Project (CDP), only 24% of them include their value chain in biodiversity-related initiatives. It seems that when companies monitor their biodiversity impact, they often concentrate on their in-house operations, both in goal-setting and in reporting – which also means they are missing out on the (often much greater) improvement potential existing in natural-resource or direct-supplier management.

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<sup>40</sup> Jungmichel et al. (2017)

**Exhibit 7: High-priority areas for risk mitigation<sup>41</sup>**



Source: WWF (2022a)

And when companies do include value-chain activities in their considerations, their biodiversity-related targets are often restricted to direct suppliers, rather than spanning the entire chain and including key upstream sections (such as raw materials) as well. This is all the more unfortunate as many of the global regions with the most species at risk – or “high-priority hotspots of risk,” as the WWF calls them – are located outside Germany, the largest ones even outside Europe (see exhibit 8).<sup>42</sup> It is clear, therefore, that the greatest lever for German businesses to avoid/reduce negative impacts is in including their value chains in biodiversity action.

<sup>41</sup> The Himalayas, Southeast Asia, the east coast of Australia, the dry forest of Madagascar, the Albertine Rift and Eastern Arc Mountains in eastern Africa, the Guinean forests of West Africa, the Atlantic Forest, the Amazon basin and the Northern Andes

into Panama and Costa Rica in South and Central America were all deemed ‘high-priority areas for risk mitigation’ for all taxonomic groups across all threat categories

<sup>42</sup> WWF (2022 a)

**Exhibit 8: How a food & beverage retailer impacts biodiversity (exemplary and simplified)<sup>43</sup>**

	Raw material extraction	Upstream suppliers	Direct suppliers	Distribution and retailing	Consumption and disposal
ACTIVITIES	Production of agricultural goods (cultivation of wheat, oil seeds, vegetables, forestry, livestock farming, etc.), fishing, etc. Extraction or production of energy sources and mineral raw materials (e.g. crude oil, metal ores, etc.)	Production of intermediate products (such as oils, concentrates, various auxiliary materials such as preservatives, etc.) and various packaging materials (such as paper or plastics), but also the production of electricity as well as fuels and combustibles.	Meat and dairy processing, production of convenience products, beverage production, etc. Further direct suppliers to retailers (such as real estate lessors, power suppliers, manufacturers of investment goods or service providers).	Wholesale and retail trade of food, beverages, and tobacco products in non-specialized stores (such as supermarkets), in specialty stores, and in markets for private consumption.	Transportation of the goods to the homes of consumers Organic food waste but also solid waste from packaging (plastics, etc.)
Impact on: Land, freshwater and sea use change	High	Medium	Medium	Low	Low
Impact on: Direct resource exploitation	High	Low	Low	Low	Low
Impact on: Pollution	High	Medium	Medium	Medium	High
Impact on: Invasive alien species and diseases	Low	Low	Low	Medium	Low
Impact on: Climate change	High	Medium	Medium	Low	Medium

Lower impact ●●●● Higher impact  
(Relative within each sector, not comparable across sectors)

<sup>43</sup> Adapted from Alig et al. (2019)

Consequently, companies need to identify the key stages and processes of environmental impact, so they can focus their resources on those stages of the value chain where actions are most urgently needed. As illustrated by exhibit 9 – the simplified example of a food and beverage retailer –, this is anything but trivial, given the fact that there are often six to eight value-chain stages between growing and consuming food.<sup>44</sup> Giving an overview of the company’s impact on biodiversity, the table reveals the great variety of steps and interdependencies, each with different effects on the five global drivers of biodiversity loss explained in Chapter 1.

As the graph shows, the majority of negative biodiversity impacts of the food & beverage value chain occurs upstream, i.e. in the agricultural industry. Agriculture is a major driver of changes in land, freshwater and sea use, with approximately half of all habitable lands allocated to this sector. Of this agricultural land (50%), 40% is dedicated to food production, while the remaining 10% is utilized for non-food purposes such as bioenergy.

Notably, within the food production realm, 82% is utilized for animal food production through grazing or the cultivation of feed crops for livestock, while a mere 16% is utilized for growing crops directly consumed by humans, such as fruits and vegetables<sup>45</sup>, highlighting the enormous land footprint of animal products. Another noteworthy point is that agriculture – in particular the large-scale agriculture used for cattle grazing, growing animal feed, and other purposes – is still a key driver of deforestation: in the tropics alone, it accounts for 70% of it.<sup>46</sup> What is more, intensive agriculture exploits and degrades soils, gradually eroding the very foundation it relies upon for production. Presently, around one-third of soils worldwide are degraded, and approximately 80% of farmland shows moderate to severe erosion.<sup>47</sup> Moreover, agriculture accounts for up to 92% of the global water footprint, with livestock production contributing nearly one-third of this volume.<sup>48</sup> The sector is also a leading polluter of rivers, aquifers, lakes, and coastal waters, due to the extensive use of agrochemicals such as pesticides and fertilizers, organic matter runoff, drug residues, and sediment.<sup>49</sup> Moreover, agriculture is a driver of the intentional and unintentional introduction of invasive species and diseases. Research shows that agricultural land use and urban spread are a catalyst for invasive alien species, while widely adopted monocultures are promoting the spread of insect pests.<sup>50</sup> Lastly, when it comes to climate change, the food sector consistently ranks as a significant contributor, with estimates ranging from 25% (IPBES) to 30% (IPCC) of global greenhouse gas emissions. This is due not only to crop production, livestock emissions and fertilization, but also to the degradation of vital carbon sinks such as soils and forests.<sup>51,52</sup>

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<sup>44</sup> Bain (2022a)

<sup>45</sup> Poore et al. (2018)

<sup>46</sup> FAO (2020)

<sup>47</sup> Dasgupta (2021)

<sup>48</sup> Hoekstra et al. (2012)

<sup>49</sup> FAO (2017)

<sup>50</sup> Pellegrini et al. (2021)

<sup>51</sup> IPBES (2019a)

<sup>52</sup> IPCC (2019)

## How major German industries impact biodiversity, directly and indirectly

The agriculture industry has the highest direct impact on German biodiversity. In particular export-oriented industries need to focus on their value chains.

According to what we know about the planetary boundaries, the integrity of our biosphere is at risk. It is therefore crucial that every single business in every sector understands their biodiversity impacts and starts managing and reducing them. As some sectors and industries are more relevant than others in terms of their global footprint and their potential to drive change, we selected a set of focus industries for this study based on two criteria: their relative importance for the domestic economy, and their direct or indirect impact on biodiversity loss. As pointed out earlier, industries in the primary sectors (where gross value added is usually rather small) tend to have high and mainly direct impacts on nature, while industries in the secondary and tertiary sectors mostly have indirect impacts through their respective supply chains.<sup>53</sup>

Exhibit 10 shows the ten German industries most relevant to biodiversity impacts. The extent of their direct biodiversity impact was determined based on secondary research (e.g., ENCORE, WWF Biodiversity Risk Filter), while their indirect biodiversity impacts were defined via the interviews we conducted across industries.

**Financial services:** The German financial sector is one of the largest in Europe, accounting for 3.8% of the German GDP (2021)<sup>54</sup> and employing over one million people.<sup>55</sup> Even more importantly, the finance sector provides the necessary funding to turn investment opportunities into tangible realities. This makes it highly relevant for the efficient functioning of the German economy<sup>56</sup> as it provides incentives to invest into sustainable business models and channels these green investments. In doing so, financial institutions face three main challenges:

1. Understanding biodiversity dependencies and impacts and related risks in their lending and other financed portfolios accurately
2. Understanding whether and where value will emerge during the transition
3. Taking a long-term, forward-looking perspective when thinking about biodiversity and ecosystem services.

The finance industry has a strong incentive to include biodiversity in its investment criteria, as the loss of biodiversity and the effects of eroding ecosystem services constitute tangible risks for financial institutions. Central banks and financial supervisors have become increasingly aware of the risks involved, and start formulating their expectations on how to integrate nature-related risks in forward-looking risk assessments. Particularly in Europe, a number of central banks have started assessing the risks associated with biodiversity loss in their national banking portfolios. Based on

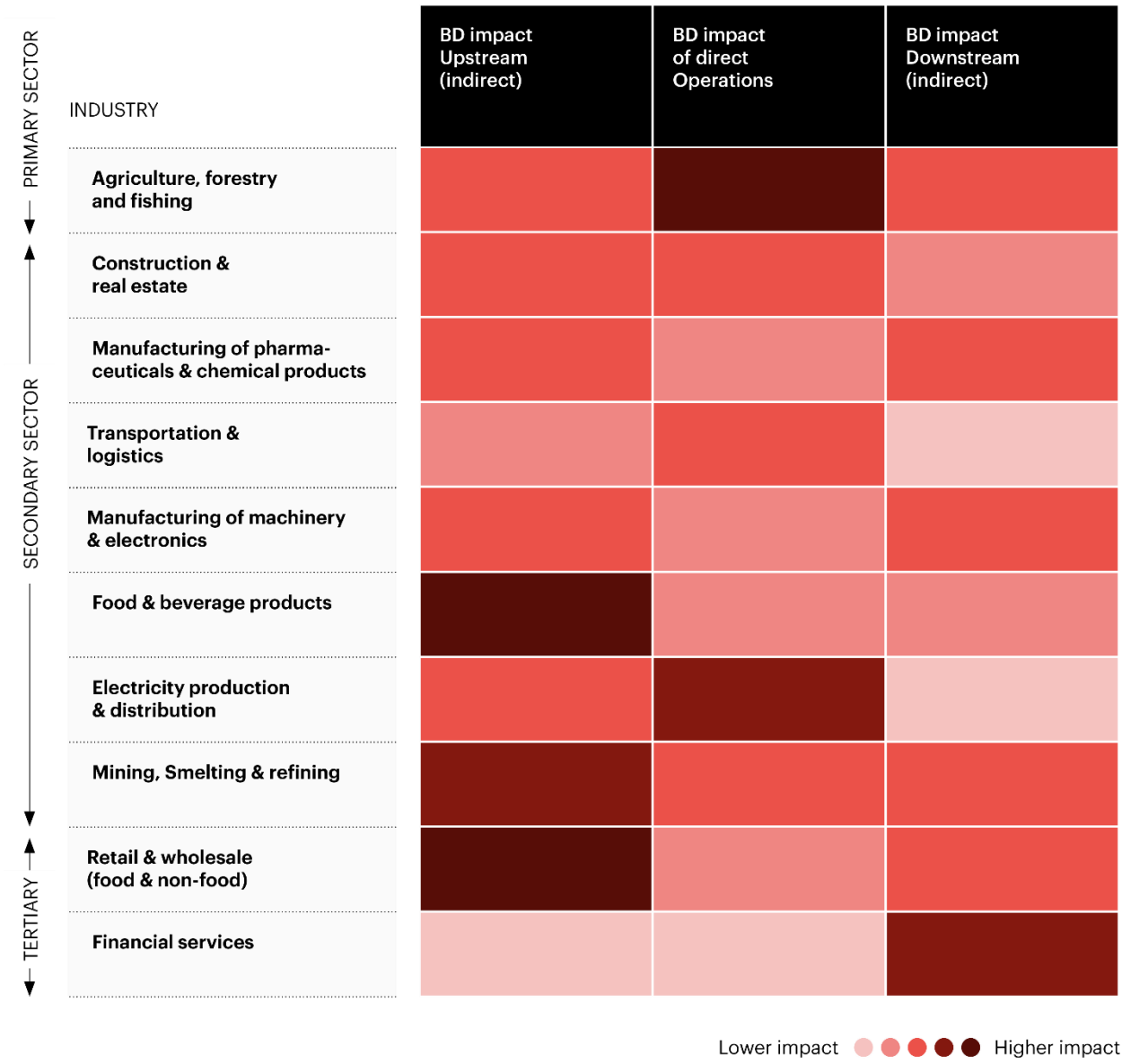
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<sup>53</sup> Sector definition: Primary: extraction of raw materials;  
Secondary: Manufacturing; Tertiary: Services  
<sup>54</sup> Statista (2021)

<sup>55</sup> Germany Finance (2021)  
<sup>56</sup> Nature Positive (no date)

the lessons learned from climate action over the past 10 years, it is expected that nature-related aspects will gain traction much faster and more consistently this time.

**Exhibit 9: Selection of most relevant German industries and their impact on biodiversity**<sup>57,58,59</sup>



**Note:** Direct impact based on secondary literature and WWF expert opinion, indirect based on WWF expert opinion. The impact estimation is not specific for Germany, but is rather universally valid.

<sup>57</sup> Alig et al. (2019)  
<sup>58</sup> WWF Biodiversity Risk Filter (no date)

<sup>59</sup> ENCORE (no date)

The same is true for regulatory requirements. The Sustainable Finance Disclosure Regulation (SFDR) requires certain providers of financial products (in particular funds and fund-linked insurances) to disclose what is called Principal Adverse Impacts and, with them, the “share of investments in investee companies with sites/operations located in or near to biodiversity-sensitive areas where activities of those investee companies negatively affect those areas.” Also, the EU Taxonomy for sustainable activities requires companies to disclose the share of “sustainable investments” in their portfolios, based on a detailed catalogue of criteria. These criteria allow for screening economic activities against six environmental goals, including the “protection and restoration of biodiversity and ecosystems” as goal #6. To meet each of these criteria, economic activities must not materially jeopardize any of the six environmental goals. Moreover, taxonomy quotas must be disclosed for financial products subject to SFDR, and as of August 2022, financial advisors must actively ask their clients whether and to which extent they want to invest into taxonomy-aligned activities, and whether and how they wish to consider Principal Adverse Impacts. In addition, banks need to disclose their Green Asset Ratio (GAR) based on the EU Taxonomy. Similar rules apply to the insurance sector.

Biodiversity and ecosystem are also considered in the Corporate Sustainability Reporting Directive (CSRD). The Delegated Act<sup>60</sup> implementing the legislation includes the European Sustainability Reporting Standards (ESRS) E4 Biodiversity and Ecosystems. Companies and financial institutions in scope of the regulation are required to assess and disclose their material impacts, dependencies, risks, and opportunities both within their own operations and along their value chains (more details on ESRS in Box 2). Furthermore, with the Corporate Sustainability Due Dilligence Directive (CSDDD) currently being negotiated between the European Parliament, the European Commission, and the European Council, corporate entities in scope will be required to act once they identify such material impacts.

In short, it is crucial for banks, investors, and insurers to understand the impact and dependencies of natural capital and business activities. Failing to do so increases credit risks for banks (i.e., defaults on loans to companies), market risks for investors (i.e., losses from stocks and bonds), and operative risks for insurers (i.e., liability and reputational risks as well as losses from high compensation claims).

**Mining, smelting and refining:** In 2016, Germany was the world’s second largest importer of iron and steel products<sup>61</sup> and, as such, co-responsible for environmental destruction and emissions during the extraction and processing of these materials. Approximately 30 highly polluting industrial installations in Germany account for approximately one-third of emissions within the industrial sector, nearly half of them produce iron or steel.<sup>62</sup>

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<sup>60</sup> European Commission (2023)

<sup>62</sup> WWF (2023)

<sup>61</sup> International Trade Association (2016)



The high emissions produced in Germany's industrial sector, as well as the import of materials to create steel and aluminum products, contribute to global warming and environmental destruction. The mining, smelting, and refining industry has a direct negative impact on biodiversity, due to the destruction and degradation of habitats and pollution. Key drivers include land clearance and deforestation, soil and water contamination due to improper management of chemicals and exposed heavy metals, air and noise pollution due to blastings and work with heavy machinery, and excessive freshwater use.<sup>63</sup> The overall picture gets even worse when taking into account indirect impacts of said industries, such as mining-related infrastructure, settlements, agriculture through settlement, water and soil contamination, and illegal logging.<sup>64</sup>

**Construction and real estate:** The construction and real estate industries affect biodiversity in Germany by transforming natural habitats into urban living and commercial spaces. The damage is twofold: in addition to direct impacts such as the fragmentation of habitats and soil sealing, there are indirect impacts related to the extraction of raw materials. Key drivers are changes in land, freshwater and sea use, and while much of the impact of existing buildings and infrastructure has already happened, ongoing construction projects cause continuous land conversion.<sup>65</sup>

Built environment for commercial, logistics, or housing purposes directly impacts biodiversity due to the clearing of construction space. Such alterations often require the complete transformation of natural forests, meadows, and other open or closed habitats, leading to severe degradation. Another effect is the fragmentation of habitats, for example when building complexes are erected across natural areas, or when structures constitute obstacles that keep species from moving about freely, which often severely impacts their health and wellbeing, their reproductive capacity, and ultimately their survival. Additionally, large areas paved with asphalt or covered with buildings keep rain water from penetrating the soil and returning to the groundwater, thus disrupting the natural water cycle. This, too, affects the respective habitats: both those that depend on water resources and those that are flooded with the excess water.

Last but not least, the construction sector accounts for 40% of the global flow of raw materials,<sup>66</sup> indirectly affecting biodiversity through the extraction of rocks and minerals. As with other forms of extraction, this threatens habitats that hold these resources. In particular sand is an input material commonly used in construction, such as for cement and concrete.

**Electricity production and distribution:** The energy sector in Germany has important impacts on biodiversity both directly, through the construction of production facilities and infrastructures (e.g., clearing of forest for powerlines), and indirectly through fuel sourcing as well as emissions contributing to global warming. Different types of energy production each have their own particular challenges, but all of them can reduce the pressure they place on biodiversity. For instance, both fossil fuels and biofuels used as input in energy production harm biodiversity: burning these fuels

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<sup>63</sup> WWF (2018)

<sup>64</sup> WWF (no date a)

<sup>65</sup> WWF (no date b)

<sup>66</sup> The Business & Biodiversity Resource Centre (no date)

contributes emits greenhouse gases and drives climate change, indirectly contributing to biodiversity loss.

The biodiversity impact of the industry's supply chain is another point worth noting. In Germany, coal mining activities exert pressure on nature because, among other things, they lower the groundwater level.<sup>67</sup> In other parts of the world, our demand for crude oil is a direct cause of habitat fragmentation due to drilling and extraction activities. Biofuels have harmful effects, too, as they are often based on agricultural or forestry products grown in monocultures, using substantial amounts of pesticides. As demand for renewable energy and batteries increases, the sourcing of rare earth elements and minerals is a growing concern, as related mining activities place significant pressure on local biodiversity.

**Machinery and electronics:** The manufacturing of machinery and electronics is the largest sector of the German economy in terms of revenue. Many of Germany's industrial companies are major players which operate globally, contributing to negative biodiversity impacts all around the globe. As industrial production strongly depends on raw material extraction and processing, this causes severe pressures on biodiversity – in particular along companies' supply chains (cf. mining and smelting sector above), but to some extent also directly. Due to the many inputs required for producing industrial goods, the sector is a significant driver of the activities of extractive industries. Metals, minerals, and rocks are especially important, but so are plastics based on oils and various fibers, as well as other agricultural and forestry products. Many industrial processes also require significant water resources or large amounts of energy, which can severely affect biodiversity in the respective regions – usually in other parts of the world. Production of industrial goods and materials comes with effluents such as oil, heavy metals, or other chemicals. Unless controlled and disposed of correctly, these substances can cause harm to sensitive habitats, posing a serious risk to nature.

## **German businesses are growing aware of the importance of biodiversity**

**The great majority of German businesses participating in the study state that they are aware of both their impact and dependency on biodiversity and nature. Some have also started to take first steps but acknowledge that the extent of action is only low to medium so far.**

Of the 23 companies interviewed, the majority stated they were “aware or highly aware” of their biodiversity impact and dependency on nature. Also, most respondents seem to have a realistic perception of their companies' impact on nature. They acknowledge that while their direct impact might be modest (on average 2.5 out of 5), their indirect impact is usually quite significant (on average 3.4 out of 5), even though the companies might not always have a detailed understanding how that impact manifests itself. Moreover, the interviewees showed a realistic understanding of how big of a threat the biodiversity crisis is to their companies' business (on average 3.2 of of 5).

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<sup>67</sup> NABU (no date)

While most of the companies interviewed have taken first steps to reduce their impact on biodiversity (e.g., establishing sourcing criteria, pilot projects), only around half of them have committed to one or more time-bound and measurable biodiversity targets. Industry variations do exist, however. For instance, of the companies interviewed, those operating in the food and beverage value chain – especially when close to consumers and the general public – tend to engage in more biodiversity activities. Also, certain industries, such as the energy sector, historically receive regulatory guidance regarding their biodiversity impact, providing them with a better understanding of the measures necessary to avoid and reduce their impact.

Asked about the extent to which their company is taking action to reduce its biodiversity impact, interviewees gave an average ranking of 3 (on a scale of 1 to 5) – so companies are aware that there is significant upside potential and much greater efforts and investments will be required going forward. This is confirmed by the data voluntarily disclosed by German companies under the Carbon Disclosure Project (CDP) in 2021, which indicated that businesses were still in the process of ramping up their biodiversity efforts. For example, of the German companies disclosing under CDP, about two-thirds claimed to have made public commitments and/ or endorsed initiatives around the conservation of biodiversity, or are planning to do so over the next two years; similarly, two thirds claimed to be engaging their upstream and/or downstream value chains in these activities, or planning to do so over the next two years (see exhibit 10).

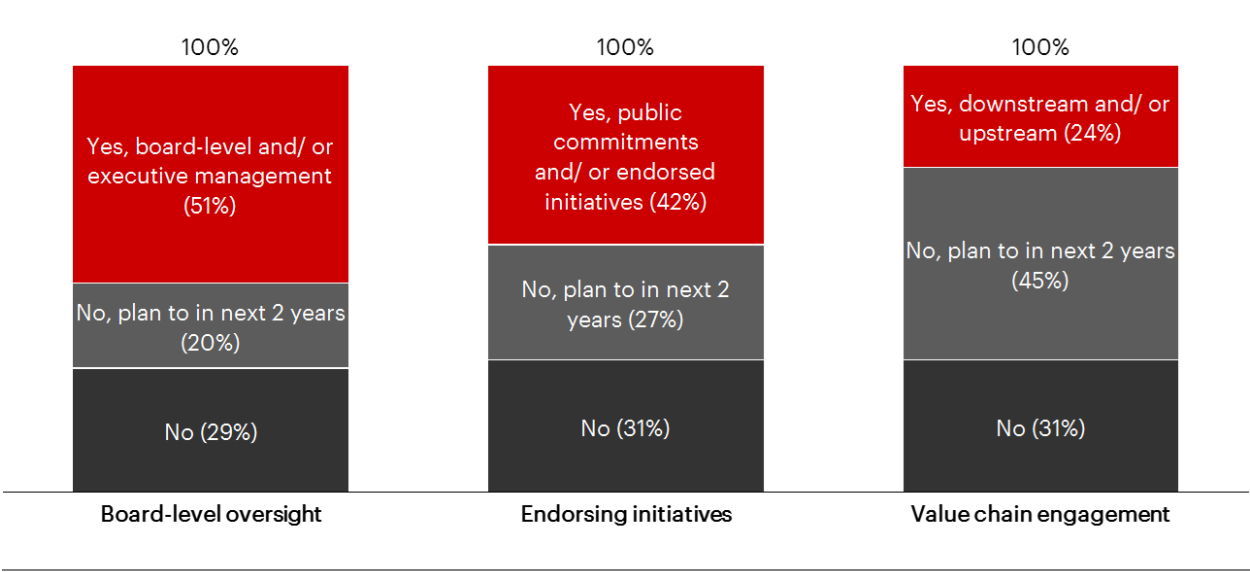
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*"We are aware of various measures we can take to support biodiversity, but as many of them can hardly be standardized, they are applied only locally and in specific cases. This makes it challenging to scale up our biodiversity efforts."*

**Norbert Rieger, MD Residential Environment, Vonovia**

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**Exhibit 10: The majority of companies disclosing under CDP has started to act, but only a minority is taking their value chain into account (CDP biodiversity statistics of German companies)**



Note: Data collected in 2021, published in 2022; Source: CDP



## Chapter 3

# By reducing their biodiversity footprint, companies can mitigate risks and tap opportunities

German companies can benefit from their biodiversity efforts by reducing the transition, physical, and reputational risks related to biodiversity loss. In addition, they have a chance to tap into the opportunities resulting from access to growing markets, growing demand for sustainable products, enhanced efficiency, advantageous financing conditions, and a better reputation.

### Key takeaways









- ▶ With guiding regulations and other external pressures being limited at present, most of the biodiversity efforts of German companies are driven by intrinsic motivation. In the interviews conducted for this study, risk mitigation was given as a key motive, while new business opportunities do not seem to be a main driver at this point.
- ▶ In this initial stage, risk avoidance will likely play the most important role in motivating businesses to step up their biodiversity action, as the direct and indirect impacts of biodiversity loss are increasingly reflected in growing costs of natural raw materials and services, business disruptions, tightening regulations, reputational consequences, and changing market conditions.
- ▶ However, businesses that actively reduce their impact on nature and engage in transformative change can also reap benefits, such as lower costs due to reduced material use, brand enhancement, market expansion, product innovation, and financing opportunities.

## Biodiversity loss is a serious business risk and is projected to increase

According to scientific research, we may experience an unexpected and accelerating decline in the quality, quantity, and resilience of nature.<sup>68</sup> This decline involves a variety of physical and transition risks that pose serious threats to German businesses in the mid- to long-term.

Many businesses in Germany are starting to see biodiversity-related risks materialize through e.g., changes in public perception and consumer behavior, reduced productivity, declining reliability of

**Exhibit 11: Biodiversity loss poses major business risks for German companies<sup>69,70</sup>**

<p><b>Physical Risk</b></p> 		<p>Decline in ecosystem services and increased exposure to natural hazards. Can result in increased cost of inputs, lack of natural goods, loss of productivity, as well as disruption of operations as resilience to climate-related natural hazards is reduced.</p>
<p><b>Regulatory Risk</b></p> 		<p>Additional costs and business disruption caused by tighter regulations, for example, through tougher reporting, licensing, industry standards, taxation, and penalties.</p>
<p><b>Reputational Risk</b></p> 		<p>Loss of brand value due to biodiversity negligence or misconduct, and access to financing becoming more difficult due to increased investor scrutiny.</p>
<p><b>Market Risk</b></p> 		<p>Increased cost or lost revenue due to market dynamics being unfavorable to businesses not adapting fast enough.</p>

<sup>68</sup> TNFD (2023)

<sup>69</sup> WWF Biodiversity Risk Filter (no date)

<sup>70</sup> TNFD (2023)

raw material sourcing, legal ramifications from adverse impact on nature, and tightening regulations. That said, many companies still lack an accurate understanding of the risks that biodiversity loss involves for their business – only 39% of Europe’s largest companies have reported on biodiversity risks in 2022.<sup>71</sup> Businesses should therefore work to understand their dependence and impact on biodiversity, and prepare accordingly. Exhibit 12 provides an overview on the most relevant biodiversity risk types.

## Overview of relevant biodiversity regulation and reporting standards

The regulatory landscape for environmental aspects is rapidly evolving, with a surge in new laws and regulations both at the EU and German levels. For the field of biodiversity, world leaders in 2022 signed the landmark Kunming-Montreal Global Biodiversity Framework (GBF), which sets new goals and targets for protecting and restoring nature. For instance, Target 2 aims to ensure that by 2030, a minimum of 30% of degraded terrestrial, inland water, and marine and coastal ecosystems undergo effective restoration. Target 15 emphasizes the need for legal and policy measures that require large and transnational companies, as well as financial institutions, to consistently monitor, assess, and disclose their biodiversity impacts. This includes informing consumers to encourage sustainable consumption, reporting on regulatory compliance, reducing negative biodiversity impacts, increasing positive impacts, mitigating business-related biodiversity risks, and promoting actions that foster sustainable production patterns.<sup>72</sup>

To translate this framework into action, countries are developing biodiversity strategies. At the EU level, the EU Biodiversity Strategy for 2030 forms part of the European Green Deal and includes the proposed Nature Restoration Law.<sup>73</sup> The EU Commission's proposed Nature Restoration Law sets legally binding targets for restoring degraded ecosystems and could be an important instrument for implementing the 2022 Global Biodiversity Framework in Europe. Complementary initiatives further support biodiversity conservation – first and foremost, the EU Deforestation-Free Regulation (EUDR), which aims to ensure that EU citizens consume only products that do not contribute to global deforestation or forest degradation, and the Green Claims Directive, which establishes minimum norms for substantiating and communicating environmental claims by companies. In Germany, the National Strategy on Biological Diversity 2030 (NBS 2030) aims to implement the new Kunming-Montreal Global Biodiversity Framework (GBF) under the UN Convention on Biological Diversity (CBD). Once adopted, the NBS 2030 will be the German government’s central strategy for nature conservation. It is designed to replace the National Biodiversity

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<sup>71</sup> KPMG (2022)

<sup>72</sup> Convention on Biological Diversity (2023)

<sup>73</sup> European Commission (no date)

Strategy adopted in 2007, the goals of which have been insufficiently achieved, or failed, for the most part. NBS 2030 will address all issues important to biodiversity conservation, restoration, and sustainable use of nature, stipulating new targets and measures to achieve them.

On the disclosure and reporting side, various voluntary and mandatory standards are currently being developed and introduced by governmental authorities and NGOs. At the European level, the EU Commission recently adopted the European Sustainability Reporting Standards (ESRS), to be applied by all companies in scope of the Corporate Sustainability Reporting Directive (CSRD). These disclosure requirements aim to enable users of sustainability statements to understand how companies affect biodiversity and ecosystems, and how they are organized to manage the topic. Finally, the Corporate Sustainability Due Diligence Directive (CSDDD) is currently under negotiation. Its specifications will require businesses to take targeted measures, if and when they identify material adverse impacts on biodiversity along their value chain. This is a strong regulatory push for businesses operating in EU markets to engage in biodiversity-related action.

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*"We are working on biodiversity in the background to be prepared for the ESRS and the next wave of regulation."*

**Michael Drozd, Senior Manager Sustainability, Merck**

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At the global level, the International Financial Reporting Standard (IFRS) is in the process of developing the International Sustainability Standards Board (ISSB), which will cater to investors demand for high-quality sustainability reporting. At present, however, the draft for the ISSB only proposes non-mandatory biodiversity disclosures.<sup>74</sup> On the other hand, the Global Reporting Initiative (GRI), a leading organization for the development of internationally recognized sustainability reporting guidelines, developed a standard covering biodiversity impact disclosure as early as 2016. The document is currently undergoing revision and will be effective from 2024.<sup>75</sup>

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<sup>74</sup> International Sustainability Standards Board (no date)

<sup>75</sup> Collaborating Centre on Sustainable Consumption and Production (no date)



Companies can also receive practical help on analyzing and disclosing biodiversity-related risks, impacts, and interdependencies: guidance is offered by the Task Force on Nature-related Financial Disclosures (TNFD), which uses an approach developed by the Task Force on Climate-related Financial Disclosures (TCFD). In the future, with increasing attention on biodiversity, nature-related disclosure is likely to gain more prominence and may become mandatory for more companies.<sup>76</sup>

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*“The maturity of the biodiversity debate may be 20 years behind the climate debate, but it will be catching up quickly. We eagerly observe the advancements of TNFD and SBTN and how they are driving the discussion.”*

**David Radermacher, VP Sustainability, E.ON SE**

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<sup>76</sup> Center for Corporate Reporting (2023)

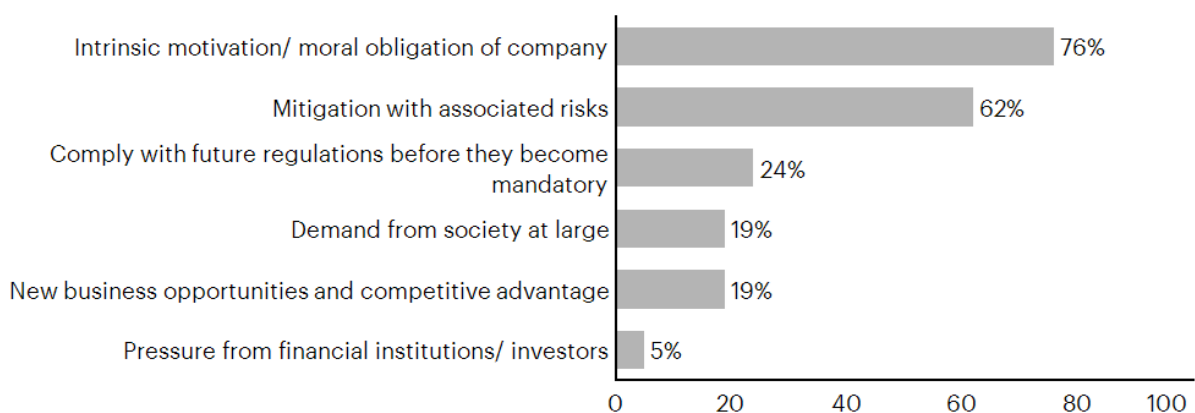
## German companies struggle to identify business opportunities

When asking about the reasons that companies acted on biodiversity, two patterns emerged (see exhibit 12).

Firstly, interviewees said their companies mainly acted out of intrinsic motivation and a sense of moral obligation, rather than being under external pressure from financial investors or society at large – a finding that may partially be explainable by social desirability bias.

### Exhibit 12: Currently, German companies on biodiversity mainly because of an intrinsic motivation and risk mitigation

% of interviewees rating a reason as most important to act on biodiversity



Source: Bain analysis, based on 23 conducted interviews

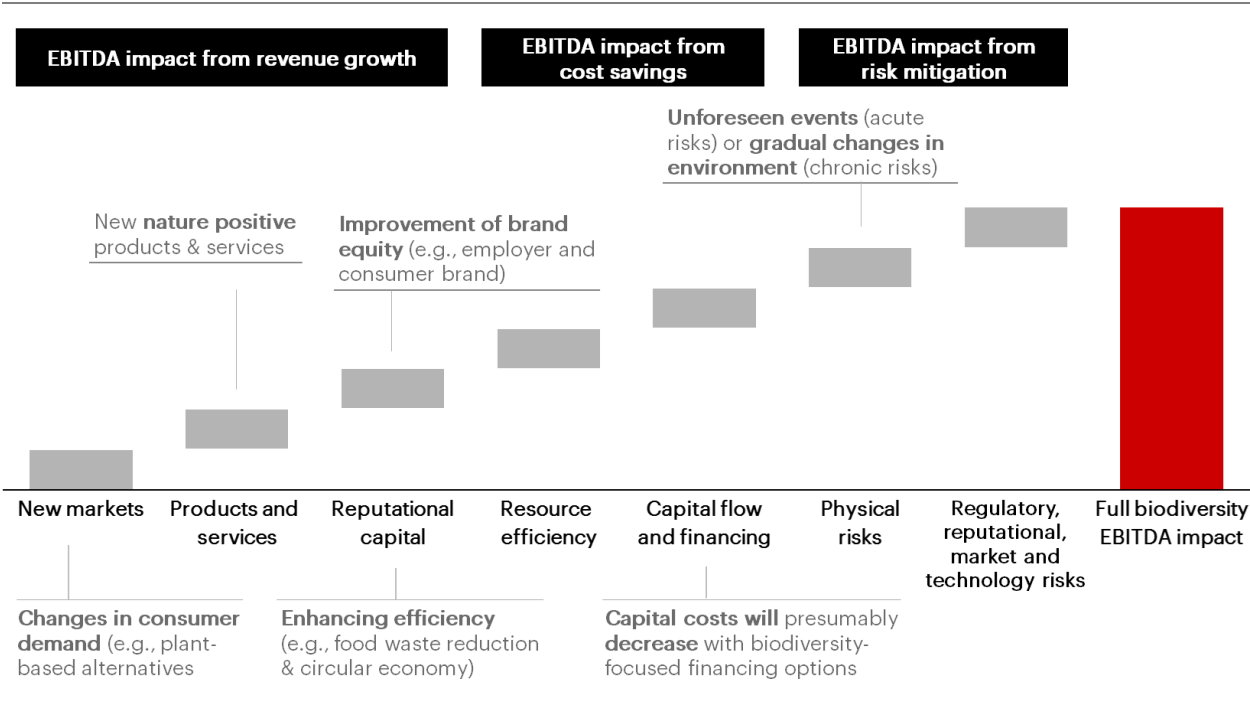
Subsequent discussion with financial institutions further confirmed that biodiversity is not a major concern yet, and that investors' focus is still largely on climate change.

*"Biodiversity competes for resources, funding, and management attention with other priorities. We, as an economy, need to urgently acknowledge its relevance and maturity and make it part of our operations."*

Jörg Eigendorf, Chief Sustainability Officer, Deutsche Bank

The second pattern concerned key motives. Of the companies interviewed, many depend directly on natural resources. As our interviews showed, these companies consider the mitigation of risks associated with biodiversity impacts (such as physical or reputational risks; see exhibit 12 for further details) far more important than the chance to identify new business opportunities. As a matter of fact, companies generally struggled to identify valuable business opportunities, with reasons including a perceived lack of consumer awareness, perceived unwillingness to pay price premiums on the consumers' part, and a lack of investable biodiversity projects.

**Exhibit 13: Reducing the biodiversity footprint can improve a company's market position in many ways (illustrative)<sup>77</sup>**



Source: Bain analysis, based on TNFD (2023)

That said, we may soon see a shift here. As with climate change and other ESG topics, a case for business opportunities can be made (see exhibit 14); so it is highly probably that the ranking of company motives for biodiversity action will shift towards business opportunities and the mitigation of transition risks over the mid- to long term.

In the following sections, our report will shed some light on how biodiversity action can help reduce risks but also have a positive impact on both top- and bottom-line.

<sup>77</sup> Exemplary illustration, not based on real data

## Reducing impact on nature can create business opportunities

While risk avoidance is still one of the main reasons for German businesses to take biodiversity action, such efforts can also come with tangible financial benefits.

In view of the growing environmental challenges we face, nature-based solutions are gaining increasing recognition. The International Union for Conservation (IUCN) defines them as “actions to protect, sustainably manage, and restore natural as well as modified ecosystems that address societal challenges effectively and adaptively, simultaneously benefiting people and nature.”<sup>78</sup>

Regardless of their clear environmental benefits, however, providers of nature-based solutions tend to face financing challenges.<sup>79</sup> This is in line with what our interviewees told us: according to their statements, many companies struggle to see relevant business opportunities in biodiversity-related efforts; instead, they tend to regard them as a “hygiene factor” and a “license to do business”.

In hopes to change this perception, this chapter outlines five areas from which business opportunities might arise when tackling the biodiversity crisis.

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*“Systematically acting on biodiversity can be an additional differentiator for companies with already ambitious climate action.”*

Leonhardt Jancso, Head of Sustainability, BayWa Global Produce

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**Innovative approaches:** When looking to capitalize on biodiversity, innovation plays a crucial role. However, in many cases, incremental innovation – aiming to improve existing business practices – will probably not suffice: companies may need to adopt a more disruptive approach, perhaps even “reinvent” their core operations to better serve the fundamental needs of society and the planet. Examples show that this can pay out well.

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<sup>78</sup> IUCN (no date)

<sup>79</sup> European Investment Bank (2023)

One example – though not from the corporate world – is the WWF’s Nature Pays program. Following the basic notion that conservation can thrive when communities directly benefit from it, the program pursues a fresh and unconventional approach to conservation efforts: by establishing so-called Community Conservation Enterprises – all small, locally run businesses –, the program provides livelihood opportunities for local people, while at the same time actively contributing to the preservation of habitats and biodiversity. Effectively enabled and empowered, these enterprises become core elements in safeguarding some of the world’s most biologically diverse landscapes, seascapes, and river basins<sup>80</sup>. Now, while it may not be feasible for large corporations to put nature at the core of their business, it may well be worthwhile applying more radical ways of thinking when developing new products or ventures. Keeping within planetary boundaries will only be possible if we have the courage to make more profound changes.

**New, emerging markets:** Biodiversity-related changes in consumer demands and sentiments can change the dynamics in overall markets, for instance by providing access to new markets or market locations. Factors such as growing concerns about the environment, human health, and animal rights are raising the general interest in foods, ingredients, and beverages derived from non-animal sources, including alternative proteins. Besides changed customer preferences, price remains a crucial growth driver, especially for products with great price elasticity such as foods and beverages. Companies at the forefront of these developments will therefore be able to tap into new markets and customer segments, and gain a competitive advantage over their competition.

As an example, plant-based meat substitutes have on average been higher-priced than animal meat since their introduction to the market. However, as suppliers and producers experience growth and accumulate, they are likely to reach the cost tipping point and finally become cheaper than animal products in the coming years. The industry price point for meat and meat alternatives will decrease below the current price of meat, which, in turn, will drive up consumers’ acceptance of meat substitutes. Major plant-based meat players such as Impossible Foods and Beyond Meat are pushing to achieve price parity with animal meats, with Beyond Meat aiming to underprice animal meat in at least one category by 2024.<sup>81</sup> These price reductions are fueling the segment growth of alternative meat products, which have already moved from a niche product for a small population segment to a broadly accepted product, appealing to people with an interest in health, animal welfare, and environmental aspects. In fact, growth rates for plant-based meat products have surpassed those of the overall US meat category seven-fold over the past three years.<sup>82</sup> Due to the great price elasticity of plant-based meats, reducing prices further to achieve price parity with animal meat could help grow market shares up to 20% in some categories. This market share growth for meat alternatives holds significant economic opportunities for insurgents and early adopters – apart from bringing great relief for both climate and biodiversity. In fact, according to an analysis for 2025, every percent of animal meat displaced with alternative meat products could reduce GHG emissions by

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<sup>80</sup> WWF (no date c)

<sup>81</sup> Good Food Institute (2021)

<sup>82</sup> Bain analysis based on Nielsen US data (2022)

182 million tons of CO<sub>2</sub>, the equivalent of 45 million cars on the road today, and save 260 million cubic meters of water, equivalent to 104,000 Olympic-sized swimming pools.<sup>83</sup>

**Capital flow and financing:** Access to finance is also likely to improve for “green” solutions. Although the total assets invested in biodiversity funds (~\$1bn)<sup>84</sup> remain far below those committed to climate funds (~\$400bn in 2021)<sup>85</sup>, they have tripled in the past year. Green or blue bonds can be ways to secure funding for biodiversity-friendly projects, while higher environmental ratings may provide access to capital at better rates. For example, 85% of limited partners in the private equity space are using ESG principles as part of their investment approach.<sup>86</sup> In 2019, public top-quartile ESG performers had a significantly higher total enterprise value-to-EBITDA multiple than the average in several sectors, including oil and gas, packaging, paper and transportation.<sup>87</sup> That said, our interviews showed that biodiversity is not yet a high priority for financial institutions and that the finance-related benefits of acting on biodiversity are still modest for companies.

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*"If we fail to effectively act on climate and on biodiversity, our refinancing will get more expensive over time. It's simple as that!"*

**Dr. Tobias Bahr, Head of Group Environment, Volkswagen**

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**Products and services:** In view of increasing customer demand for products and services that help to protect, manage, or restore nature, the creation and delivery of such products are likely to gain economic value.

Goldbeck, a construction company, offers customers “green building standards.” The company is registering growing customer interest in sustainable building practices, as expressed by more than 10% of its customers so far. Goldbeck offers these sustainable standards in the form of add-on modules, which customers can select along with their construction orders for industrial buildings. These add-on modules range from energy-optimized shells and efficient building technology to nature-based external facilities, including biodiversity-enhancing measures such as rooftop landscaping, green facades, and green outdoor areas offering habitats to birds and insects. This way, not only can customers choose how “sustainable” they want their building; they can even get a sustainability certificate (such as DGNB Platinum, LEED, or BREEAM) for their building.<sup>88</sup>

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<sup>83</sup> Economist (2019)

<sup>84</sup> Environmental Finance (2023)

<sup>85</sup> ESG Clarity (2022)

<sup>86</sup> Bain & Company (2022a)

<sup>87</sup> Bain & Company (2020)

<sup>88</sup> Goldbeck (no date)

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*"Our aim is to make biodiversity-enhancing actions a standard practice in our projects. We anticipate that an increasing portion of our clients are willing to pay for these measures."*

**Michael Ruland, Head of Civil and Environmental Engineering, Goldbeck**

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A recent Bain & Company study looked into the potential to sell sustainable products at a higher price point, focusing on the European consumers market: As it turned out, roughly 75% of respondents claimed to be willing to pay higher prices for sustainable products, although more than half of them set the limit to that willingness at a 10% price premium.<sup>89</sup> (Also, there seems to be quite a gap between proclaimed attitudes and behaviors.) Research by NYU has come to similar conclusions, suggesting that sustainably marketed products grow faster than conventional products, even if they are higher priced.<sup>90</sup> In some cases, companies can use certificates and labels to improve their customer value proposition and charge a green premium.

**Resource efficiency:** Efforts to reduce the negative impact on nature within companies' own operations or value chains can help them achieve other benefits as well, such as improved operational efficiency or reduced costs. The food industry, for example, has considerable negative impact on biodiversity through land use and intense farming practices. Furthermore, approximately one-third of all food worldwide ends up in the trash.<sup>91</sup> Improving the global food production system and cutting down food loss by 50% – one of the UN's SDGs – would reduce the industry's adverse impact on nature and provide a \$600B business opportunity.<sup>92</sup> Solutions to reach this reduction target include improvements in packaging to reduce losses in transport, analyses of agricultural data, and circular-economy approaches such as adequate redistribution of unwanted products or alternative uses (e.g., as fertilizers).

One example of various efforts to improve the production of oranges, tangerines, and clementines, using less water and pesticides, is the "citrus project," a collaboration of EDEKA and WWF. Launched in 2015, this project aims to make the conventional cultivation of oranges, tangerines, and clementines more environmentally friendly, currently working with 26 selected farms (total cultivation area: approx. 1700 hectares) in the Spanish regions of Andalusia, Valencia, and Catalonia. Specifically, the project pursues four goals: (1) preserving and promoting biodiversity and existing ecosystems, (2) substituting and reducing pesticides, (3) promoting soil fertility and adopting more responsible fertilization practices, and (4) ensuring a more responsible use of water both on the farms and in river basins. Over the years, a range of measures have been designed,

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<sup>89</sup> Bain & Company (2023)

<sup>90</sup> NYU-Stern (no date)

<sup>91</sup> The World Food Programme (2020)

<sup>92</sup> Bain analysis based on World Bank (2023)

monitored, and evaluated. For example, the project monitors species populations (fauna and flora) on the farms and tracks water and pesticide usage. **In 2021, project farms saved around 1.67 million liters of water in irrigation and 10,600 kg of pesticides.** The project follows an integrated, and impact-oriented approach, aiming to ensure a more sustainable design of conventional cultivation and reduce its overall ecological consequences. Beyond the farm level, this also includes community-based actions at the landscape level with several stakeholders (following the Water Stewardship approach).

**Reputational capital:** Biodiversity-related action can lead to improvements not only in a company's impact on nature but also for its reputation and brand equity – both in the consumers and the labor market. In terms of employer branding, companies with higher ESG scores achieve greater employee satisfaction and attractiveness to talent. What is more, Bain's research shows that consumer brands that are perceived as sustainable grow two to five times faster than their peers, with the 10% for which sustainability is a core element of value growing fastest of all.<sup>93</sup> Clearly, successful biodiversity action can be a differentiator for a company's consumer and employer branding and significantly improve its reputation.

E.ON SE, one of Germany's leading German utility companies and Europe's largest electricity grid operator, is one case in point. The company is working to create and maintain valuable biotopes below those of its high-voltage lines that run across forest areas, with an overall length of 13,000 kilometers. The surface area concerned is equivalent to 100,000 soccer fields. The key principle of this ecological corridor management, as E.ON calls it, is to remove only vegetation that poses a direct threat to power lines, while trying to leave slow-growing trees, bushes, and shrubs unharmed. Also, pruned twigs and leaves are left on the ground as nesting material for animals. These measures help increase the diversity of both flora and fauna below said powerlines.<sup>94</sup> E.ON is seeing tangible benefits from its ecological corridor management, especially when participating in public bids at the municipal level.

In addition to the opportunities listed above, companies can also exploit synergies by tackling different environmental issues jointly, such as biodiversity and climate (see Chapter 5).

While companies have started working to reduce biodiversity risks and tap into related opportunities, they face a range of roadblocks. In the next chapter, we will examine the factors that are slowing down businesses on their way to managing their impacts on biodiversity, and outline potential solutions to overcome them. Chapter 5 will focus on practical steps businesses can take to manage their biodiversity impact, providing a range of concrete examples from the companies interviewed and others.

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<sup>93</sup> Bain & Company (2022b)

<sup>94</sup> E.ON (2021)





## Chapter 4

# Roadblocks to and existing solutions for biodiversity action

German companies cite a lack of standardized approaches, competition with other topics, and the difficulty to drive initiatives in supply chains as key obstacles to biodiversity action. Solutions do exist, however. Companies can use frameworks, learn from pilots and peers, work with partners, and pursue an integrated approach. The important thing is they start today.

### Key takeaways

- ▶ Asked about obstacles to biodiversity action, German companies most frequently cited a lack of standardized metrics and measurement approaches; getting sufficient internal resources, as several topics compete for attention; driving action in supply chains (due to complexity and poor traceability; and a lack of regulations and reporting requirements).
- ▶ Solutions to the most relevant roadblocks include leveraging existing and upcoming frameworks, collaborating, adopting a holistic sustainability strategy, and drawing from the experiences gathered and lessons learned in climate action.
- ▶ Companies need to address biodiversity at C-level and commit adequate resources to develop effective strategies.

The good news is: It is still possible to halt and reverse nature loss. But time is running out; we urgently need to stop the overexploitation of nature’s resources. To achieve lasting improvement and relieve the pressures of our activities on biodiversity – and thus the very foundations of human life –, systemic, profound and comprehensive change will be essential.

In our conversations with sustainability experts and executives at major German companies, we found that while biodiversity is of increasing importance to most, it is yet to become a top priority on a par with topics such as climate change or digitization. Also, as biodiversity is still an emerging field, companies interested in acting on it perceive its complexity and the lack of broadly tried and proven approaches as main roadblocks. Other obstacles mentioned included difficulties to obtain sufficient internal resources – given the competition for attention among several topics –, the challenge of driving initiatives in supply chains (due to complexity and poor traceability) and a lack of guiding regulations and reporting requirements (see exhibit 15 on next page).

Solutions do exist already, however, and are available for companies to use. Not surprisingly, some of these solutions need tailoring to company- and industry-specific conditions; others also require close collaboration with external stakeholders such as legislators, NGOs, and organizations of civil society.

This chapter will provide more details on perceived roadblocks and existing solutions.

**Exhibit 14: German businesses face a multitude of roadblocks in their biodiversity efforts**

% of interviewees rating a roadblock as most important barrier for more biodiversity efforts



Note: Multiple answers possible; Source: Bain analysis, based on 23 conducted interviews

## 1. Lack of standardized metrics and measurement approaches

“If you can’t measure, you can’t manage it.” This popular saying applies to biodiversity as well – at least that is how it seems. An overwhelming 90% of interviewees cited a perceived lack of standardized metrics and measurement approaches as the most relevant roadblock to biodiversity action. Many businesses seem insecure regarding both, how to measure biodiversity and how to put figures to it.

And indeed, measuring biodiversity is a challenge because relevant factors are location-specific and complex, covering a large variety of ecosystems, species, and genetic variations and the dynamic interrelationships between them. As a consequence, it would be impractical to rely on a single unit of measurement for biodiversity in its entirety (whereas climate change can be broken down into a single and meaningful global unit of measurement: CO2 equivalents). For these reasons, a host of different, partly local methodologies for measuring biodiversity emerged over the years, few of which were truly scalable and financially efficient. The sheer quantity and variety of these approaches may feel overwhelming, causing companies to hesitate to take action – for instance, to set targets or to launch biodiversity measures in their supply chains.<sup>95</sup>

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*“It is important to establish standardized metrics and KPIs for biodiversity to create transparency and simplify the process of measuring biodiversity. Today, this is a wide manual effort and requires significant resources.”*

**Melanie Kubin-Hardewig, VP Group Corporate Sustainability, Deutsche Telekom**

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What is more, while physical measurements are available, most of nature’s services have no or only limited financial market value today, which is why they are often undervalued or left out of value assessments altogether. One key driver of these difficulties is the absence of market prices, or, where they do exist, their inadequacy in fully accounting for externalities.<sup>96</sup> As a consequence, quantifying – or rather, monetarizing – biodiversity-related risks and opportunities is laborious and prone to errors, which also hampers companies’ ability to drive action within their supply chain.

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<sup>95</sup> European Commission (2021)

<sup>96</sup> Royal Society (no date)

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*"The lack of standardized biodiversity measurement makes driving action through the supply chain difficult."*

**Klaus Kunz, Head of ESG-Strategy, Bayer AG**

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**How to overcome:** To measure and report on their biodiversity impact, business can leverage existing methodologies and collaborate with industry peers and NGOs. Some have also developed their own technological solutions. While there are no metrics used universally, initiatives such as the Taskforce on Nature-related Financial Disclosure (TNFD) and the SBTN provide guidance on developing measurement frameworks, or on setting targets for biodiversity-related activities such as land and freshwater use. By collaborating with NGOs and industry peers, businesses can gain access to the latest-stage knowledge and also contribute to shaping these standards.

In any case, companies should not wait for the “perfect” measurement methodologies and metrics to emerge. In view of the urgency, it is imperative that they start acting immediately, focusing on areas such as product design, resource management, or procurement. The major drivers of biodiversity loss (such as changes in land and sea use or pollution) have been clearly identified and documented by science; also, we know that most species thrive in areas where there is little to no human intervention, due to reduced levels of pollution and reduced disruptions of natural cycles and processes.

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*"We believe that technology, such as computer vision cameras and AI algorithms, combined with historical information about the ecosystem, can help us establish a baseline to measure our progress against."*

**Kunal Chandra, Chief Strategy and Sustainability Officer, RWE**

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## 2. Competition for attention and resources

There is a multitude of sustainability-related issues that require companies' attention in their day-to-day operations. Due to resource limitations, they must prioritize and focus on the most important and urgent issues. For several years, climate change was generally regarded as the most pressing ecological issue, not least due to increasing requirements from regulators and investors as well as greater consumer awareness. By contrast, in the case of biodiversity loss, there is quite a gap between the urgency and severity of the issue and the attention it receives (cf. chapters 1 and 2), seeing as the integrity of the planet's biosphere is at high risk already. This attention gap is reflected in inadequate funding with the biodiversity funding gap amounting to approximately USD 700 billion annually<sup>97</sup>, while the cost of inaction is much higher.

Our interviewees stated that biodiversity efforts require additional financial and human resources; too often, what companies actually invest remains far below what would actually be needed. The lack of capacity makes it difficult to address several concerns simultaneously. That said, it is of utmost importance to address the different environmental topics simultaneously: Since they are closely interlinked, tackling them in an integrated effort can offer substantial combined benefits, while working on them separately can force decision-makers to make tradeoffs, adding another layer of complexity. (Example: offshore wind parks are considered beneficial for the climate, but might harm biodiversity).

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*"Understanding the interdependencies of different sustainability topics such as climate change and biodiversity and its measures will enable us to steer these topics together. This will make it easier from a resource-perspective."*

**Tobias X. Gruber, Division Manager Sustainability, Otto (GmbH & Co KG)**

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As our interviewees further pointed out, sustainability competes not only for internal attention and resources but also for customer attention. While consumers' awareness and understanding of environmental and sustainability issues is generally growing, they still perceive climate change to be the "bigger" issue. Therefore, and due to the inherent complexity of biodiversity, companies find it difficult to educate consumers about biodiversity, according to what our interviewees told us.

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<sup>97</sup> BNP Paribas (2023)

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*"Customers are overwhelmed by the multitude of the various sustainability topics such as climate, human rights or biodiversity. It is especially difficult for retailers to communicate complex topics like biodiversity effectively to every single customer."*

Lisa Morawietz, Head of Sustainability, REWE Group

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**How to overcome:** It will be crucial for companies to adopt more integrated sustainability strategies, prioritizing actions that tackle several sustainability problems simultaneously. By reviewing their portfolios of sustainability initiatives and understanding the dependencies between biodiversity, climate change, and other sustainability topics, companies can make informed decisions and adapt or replace initiatives that conflict with biodiversity goals.

### 3. Challenging to drive action in supply chains

To drive significant impact and reduce the biodiversity footprint of products and services, German companies need to involve their supply chains. This is challenging, due to the complexity and multi-layered structure of supply chains, which often include numerous stakeholders, diverse geographies, and complicated relationships between suppliers and buyers. Ensuring that biodiversity considerations are integrated into every step of the supply chain requires robust traceability mechanisms, which are currently lacking in many cases according to interviewees (e.g., more than one-third of companies say their supply chain monitoring technology falls short of providing real-time insights<sup>98</sup>). Insufficient traceability makes it challenging to identify the origin of raw materials, assess the associated impacts on biodiversity and take respective actions.

One way to improve companies' control over their supply chains is by procuring commodities directly from the source; however, this is not always feasible. ESG considerations are only among several strategic priorities (cost, service, resilience) – at the same time, supplier research, negotiations and relationship management are labor-intensive, especially when dealing with numerous small-scale suppliers (for example, Goldbeck works directly with over 40,000 suppliers). This is further exacerbated by the fact that biodiversity is highly local in nature, so suppliers of different commodities or located in different regions might require different measures. In addition, interviewees cited knowledge gaps and suppliers' risk aversion as a problem. Where solutions are available, suppliers might not be aware of them; and even if they know about those solutions and

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<sup>98</sup> Bain & Company (2021b)

have the financial means, implementing changes in processes and business models poses a big risk for businesses fully relying on one or few commodities.

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*“Biodiversity is a complex topic and we face the challenge of finding the necessary expertise and scientific knowledge in all countries in order to implement our ambitious global commitments.”*

**Lisa Dr. Nicola Kimm, Chief Sustainability Officer, Heidelberg Materials AG**

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**How to overcome:** Companies need to collaborate with their supply chains to develop sustainable practices and protect biodiversity. The collaboration can also extend beyond their own value chain, including companies of other sectors or even competitors. Ideally, partners collaborate in a landscape/basin approach, ensuring that biodiversity is addressed comprehensively and in consideration of the respective context.

For maximum effectiveness, companies’ biodiversity action should not be limited to setting ambitious standards for suppliers: they should also seek to support suppliers (for instance, through training) and to implement incentive systems that reward sustainable practices. In cases where suppliers consistently fail to meet these standards, companies might even have to consider severing these ties.

To further support their efforts, companies should educate their customers about the importance of biodiversity, promoting more eco-friendly consumption habits. For instance, by offering subscription-based models for renting rather than buying items, suppliers could help reduce their adverse impact on nature and incentivize customers to make sustainable choices. In general, when seeking to identify and initiate biodiversity action, companies can draw from the experiences gathered with reducing their Scope 3 GHG emissions.

#### **4. Difficulty to identify concrete business opportunities**

While the business value of mitigating biodiversity-related risks has been made apparent, the potential for value creation often seems more difficult for companies to identify. Our interviewees stated that customers, in particular business clients, show little willingness to pay higher prices for ecofriendly products. In the best of cases, customers pay part of the price premium while suppliers need to cover the difference themselves – at least for the time being. In the longer run, this might change as sustainability and biodiversity management will become part of companies “license to operate”.

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*“Price remains the key negotiating criterion in B2B business; biodiversity is a potential add-on but is not driving an increasing willingness to pay.”*

**Stefan Kauß, Head of Safety and Sustainability, Bitburger Braugruppe**

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On the B2C side, responses in our survey were mixed: While most interviewees perceive consumers’ willingness to pay extra for ecofriendly products to be limited, some believe that at least a percentage of consumers are willing to pay a green price premium, especially if it comes with extra benefits. (Some studies support this latter observation, provided the premium is not too high; cf. Chapter 3).

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*“Consumers are aware of sustainability topics, including biodiversity, and their purchasing behavior is evolving, but they are not ready to pay significantly more for a more sustainable product, especially not in everyday purchases. We cannot expect consumers to be heroes when they buy their everyday shampoo. The onus is on us as brand owner to give consumer products that fulfil their needs, including sustainability.”*

**Ulrike Sapiro, Chief Sustainability Officer, Henkel**

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In general, the companies interviewed appear to struggle to identify business cases for biodiversity action. One key point frequently mentioned is the lack of reliable metrics for measuring impact: as interviewees pointed out, having to rely on assumptions makes business cases less robust. The fact that some biodiversity measures require substantial upfront investments raises the barrier further.

That said, interviewees were confident that the additional cost would level out in the long end, even though value creation levers tend to have longer payback periods than they do for other topics. With regard to the latter, a Bain study found that it takes farmers over four years to break even when adopting regenerative practices, making financial incentives and support essential.<sup>99</sup> Quite obviously, these longer payback periods can create particular difficulties when investors and

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<sup>99</sup> Bain & Company (2021a)



executive incentives focus on the near term. Companies should therefore consider adjusting these incentives to reflect a longer-term perspective.

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*“Investments in biodiversity do not yield economic benefits right away. Nonetheless, we are driving this topic in the whole company.”*

**Bernhard Leuchner-van Nieuwenhuyse, Head of Environmental Protection, Schaeffler**

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In general, our interviews showed that financial markets are only just beginning to value biodiversity action. And a study conducted across the European Union, which looked at more than 1,300 projects for nature-based solutions, revealed that the funding for these initiatives primarily comes from public sources. Only a small fraction, approximately 3%, received significant financing from the private sector<sup>100</sup> – which is responsible for most of the pressure on nature. This must obviously change.

**How to overcome:** It will be key to successful biodiversity action that businesses see a clear connection between positive biodiversity impact and tangible business value. Companies should seek to identify opportunities for value creation by improving their core operations towards biodiversity-friendly practices, while fostering innovation and unlocking new finance sources. In addition, they should identify restoration projects that contribute to their strategic biodiversity targets. Lastly, companies should keep monitoring grassroots initiatives, as those can provide inspirations regarding innovative, genuinely sustainable business models.

As mentioned before, not all biodiversity-related initiatives yield short-term financial benefits. The fact remains, however, that the issue of biodiversity is quickly gaining importance and related initiatives will soon be crucial for business success. Companies should therefore regard biodiversity initiatives as preservers and enablers for long-term value.

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<sup>100</sup> European Investment Bank (2023)

## 5. Lack of truly effective guiding regulation and reporting standards

There is a range of international agreements and national policies on biodiversity. Sadly, it seems they have not been effective enough in protecting nature and driving the urgently needed changes (although this will hopefully change soon; see box 2). Companies perceive the lack of clear rules and regulations, beyond the rather loosely set policies currently in place, as a barrier to initiating and driving all necessary and feasible biodiversity measures. Interviewees also emphasized that, to prevent the problem from merely being shifted from one country to the next, consistent regulations across geographies would be crucial. Without a level playing field on a global or at least a regional scale, early movers might be put at a disadvantage and thus be more hesitant to take transformative and large-scale action. Most interviewees strongly agreed on this point, emphasizing the importance of regulations to drive necessary change.

Moreover, business reporting on biodiversity is currently inadequate with regard to both the quality of information disclosed and the insight it provides on biodiversity-related business risks and opportunities.<sup>101</sup> This limitation is partly due to a lack of consistent and unanimously accepted reporting standards (see Chapter 3). Establishing such standards would provide companies with stronger guidance on how to report on biodiversity, including its risks and opportunities, and alleviate concerns about being accused of greenwashing.

Companies interviewed also stressed the growing imbalance between the time and resources needed for sustainability measures and the time and resources needed for measuring results and reporting on them. While this balance will need to be considered when developing new policies, it is clear that the necessary resources and expertise in companies will need to increase in proportion to environmental concerns and problems.

**How to overcome:** With significant changes in global and national policies to be expected, companies should seek to play a proactive role in supporting and lobbying for stronger biodiversity regulations (e.g. the Nature Restoration Law). By collaborating with NGOs and contributing industry-specific expertise to policy development, companies can remain abreast of the changes and develop strategies to mitigate risks. Moreover, businesses that have been proactive in addressing their environmental impact may reap benefits from these regulations, reducing their potential cost disadvantages against less-environmentally-conscious competition.

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<sup>101</sup> European Commission (2021)



## Chapter 5

# Sustainability frameworks, a valuable help and guidance

Companies have a key role to play in halting biodiversity loss and restoring natural ecosystems. Given the current rate of the ecosystem degradation and loss of species, companies urgently need to act: adopt proven biodiversity management practices, work to achieve measurable outcomes and impacts quickly. Integrated frameworks such as the WWF One Planet Business Framework for Biodiversity Stewardship provide valuable help in identifying key action fields and approaches for meaningful biodiversity action, supporting companies in planning and implementing appropriate measures. Some German companies have already started.

### Key takeaways

- ▶ The WWF One Planet Business Framework for Biodiversity Stewardship is a management framework for transformation planning and action. It provides detailed guidance along five key steps: Assess, Embed, Implement, Advocate and Achieve.
- ▶ For each step, specific tools, standards, and guidance materials are available for companies to get started and implement biodiversity management practices. Approaches featured include science-based targets for nature (SBTN) and the recommendations for reporting and disclosure based on the ideas of the Taskforce on Nature-related Financial Disclosures (TNFD).
- ▶ Many of the companies we interviewed have started taking first steps in managing their material pressures on biodiversity. Companies addressing biodiversity risks and seizing opportunities early on can be leaders in the transition towards the recovery of nature.

Considering the speed of biodiversity loss and its consequences for nature, humans, and the economy, it is imperative and urgent that businesses initiate pointed efforts towards reducing their biodiversity impacts. While conservation efforts are still not very advanced in most industries, and not all roadblocks identified in Chapter 4 have found a solution yet, the German companies interviewed signaled their willingness to increase their biodiversity efforts.

To support businesses in measuring, managing, and reporting on their biodiversity-related actions and impact, leading international organizations have created appropriate frameworks and standards. One of them is the WWF One Planet Business Framework for Biodiversity Stewardship – a management framework for transformational planning and action on biodiversity, incorporating several powerful approaches and tools such as SBTN and TNFD. The framework comprises five steps that companies should take iteratively and continuously (see exhibit 16):

1. **ASSESS** the value chain to understand the material connections between nature, people and business.
2. **EMBED** leading sustainability practices into the business’s strategic direction and the way the business model works.
3. **IMPLEMENT** solutions across and beyond the value chain to improve outcomes and impacts for nature, people and business.
4. **ADVOCATE** for systemic transformational change by mobilizing and engaging with key stakeholders.
5. **ACHIEVE** outcomes and impact for meaningful contributions to nature’s recovery, respect of human rights and enabling economic prosperity.

This chapter explains each of these steps, adding real-life examples of corporate action.

## 1. Assess: Guidelines and digital tools help getting started

To start off, companies will need an understanding of what their material impacts and dependencies on nature are, at what points along the value chain (upstream, direct operations, downstream) these impacts and dependencies are located, and how critical they are to the respective ecosystems and the company. Initiatives such as the Science Based Targets Network and the ENCORE Partnership<sup>102</sup> provide guiding documents and screening tools to answer these questions.

Our interviewees pointed out a perceived lack of standardized methodologies and metrics to measure biodiversity. Unlike climate, biodiversity encompasses a variety of factors, for some of which there are no standardized indicators and metrics yet. That said, a variety of approaches is already available across sectors. For example, SBTNs Technical Guidance on Step 1 Assess<sup>103</sup>

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<sup>102</sup> Encore (no date)

<sup>103</sup> SBTN (2023)

provides a set of specific indicators and metrics that businesses can use to quantify material pressures on biodiversity.

**Exhibit 15: The WWF One Planet Business Framework for Biodiversity Stewardship – a holistic and ambitious management framework for transformational planning and action on biodiversity**



Source: WWF Germany

Equipped with this kind of guidance, companies should be able to determine the biodiversity-related indicators relevant for their business, identify suitable methods for data collection, then expand their data monitoring processes to include biodiversity aspects. It is safe to assume that the list of indicators and metrics will grow over time.

Since the conditions and significance of biodiversity vary around the world, companies need to prioritize actions in those locations where high risks to nature (and/or their related business activities) are particularly high. There is a growing number of digital tools businesses can use to assess the state of nature in the vicinity of their operations and generate clear biodiversity-related risk scores. For example, the WWF Biodiversity Risk Filter, a global screening tool, provides access to over 50 datasets describing the global state of nature. As such, it can help companies understand and address their biodiversity dependencies, impacts, and associated risks (see Box 3).

German industry giant Henkel, a supplier of consumer goods and adhesive technologies, is currently conducting a global biodiversity assessment to obtain a data-based understanding of its operations' impacts, dependencies, and risks with regard to biodiversity. In the course of this assessment project, information and data are gathered from all central functions and partners in Henkel's supply chain, using frameworks such as SBTN and TNFD to ensure specific and actionable insights. Henkel intends to use these insights to design its biodiversity strategy.

Other companies have started assessing their local biodiversity impacts in specific parts of the value chain. German retailer Kaufland, for instance, works with two of its agricultural suppliers in a pilot project to evaluate the biodiversity performance of farms in the supply chain. The company also involved two scientific partners – the Global Nature Fund and the Bodensee Foundation –, which developed the so-called Biodiversity Performance Tool (BPT) specifically for the project. Using 78 indicators to identify strengths and weaknesses, the tool provides the basis for setting up an individual action plan that will allow the company to improve its management of species and habitats. As the tool regularly tracks progress, it also provides external auditors with access to real-time raw data. Kaufland aims to expand and refine the tool for further assessments in collaboration with other partners.<sup>104</sup>

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*“Assessing the state of biodiversity and identifying the right levers to improve it is often difficult for farmers. Therefore, we developed the Biodiversity Performance Tool (BPT) with reputable scientific partners and the steadfast support of the Bodensee Foundation.”*

**Lavinia Ahmad, Head of Sustainability, Kaufland Germany**

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<sup>104</sup> Kaufland (no date)

## A first glance on biodiversity and water risks with the WWF Risk Filter Suite

WWF's Risk Filter Suite comprises two free online tools: the WWF Water Risk Filter and the Biodiversity Risk Filter. These tools allow companies and financial institutions to upload and manage their data on a central and secure online platform, and assess data-based biodiversity and water risks.

The **WWF Biodiversity Risk Filter** is a screening and prioritization tool, designed to serve as a starting point for companies wishing to address biodiversity dependencies, impacts, and risks in their in-house operations and their value chains. The tool is structured along four key steps: informing, exploring, assessing, and responding. The first three of the tool's modules were launched in January 2023.

- The Inform module provides companies with an overview of sector-level impact and dependencies.
- The Explore module adds a spatial component, allowing companies to identify biodiversity high-risk areas around the globe.
- The Assess module combines sector-level materiality data with relevant biodiversity data to allow a more detailed assessment of risk and opportunity types across the geographies of a company's value chain. Underlying causes can be investigated and focus areas prioritized.
- The Respond module, which will be launched at a later stage, will support businesses in identifying company-level response options to minimize their biodiversity-related risks. The module offers recommendations fitted to specific issues and locations.

The **WWF Water Risk Filter**, enables companies and investors to explore, assess, and respond to water risks. One example of its successful incorporation in a sustainability strategy is the collaboration of WWF Germany with the German-based EDEKA group, one of the purposes being to identify and address water risks for each of EDEKA's suppliers. In line with that goal, the retailer now requires all of its fruit and vegetable suppliers to record their water risks using the EDEKA Water Risk Tool, a slimmed down and adapted version of the WWF Water Risk Filter. So far, the water risks of more than 16,000 farms have been assessed using EDEKA's Water Risk Tool, and farms have been given recommendations for appropriate mitigation measures.<sup>105</sup>

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<sup>105</sup> WWF (2021c)

WWF makes the Risk Filter Suite available to anyone interested, to apply the tool and use results free of charge, in order to support transformative sustainable change. For companies wishing to get support in selecting sites and value chains, assessing risks, and/or better understanding the outputs to prioritize next steps, WWF offers such support in the context of a partnership.

## 2. Embed: Companies have begun incorporating biodiversity in their strategies

Excellent sustainability practices should be embedded in companies' strategic direction and the way their business model works. Key aspects include developing cultural awareness and specific skillsets for dealing with biodiversity-related risks, integrating sustainability into the organizational structure, and determining biodiversity targets as well as the strategies to achieve them.

In terms of target setting, there are different approaches to choose from, depending on the needs, material issues, and capacities of a company as well as available methodologies. For example, the Science-Based Targets Network (SBTN) launched a first set of science-based targets for nature in 2023 (covering freshwater and land); the network invites companies to submit their targets for validation in early 2024. The initial set of targets for land<sup>106</sup> require companies to avoid the conversion of natural habitats, reduce their land footprint, and engage in value chain-adjacent landscapes. Such targets have high priority for an ambitious biodiversity-related management as they address the largest driver on biodiversity loss: (changes in) land use. Some German companies have already set specific deforestation and conversion-free targets.

In early 2021, German retailer Lidl set itself the target to achieve deforestation- and conversion-free supply chains by 2025. The food retailer places a special focus on critical raw materials such as soy, palm (kernel) oil, cocoa, beef, and cellulose. Lidl investigates the ecological impacts of its operations, identifies risks, and transparently publishes the origins of its raw materials. In addition, the company plans to establish stricter ecological and social standards through certification of agricultural goods, reduce its sourcing of critical raw materials, and promote more sustainable alternatives in its assortment (e.g., via its vegan home brand).

In these efforts, Lidl follows the guidelines of the Accountability Framework Initiative (Afi). The organization provides standardized terminologies and guidelines to help companies develop credible targets, policies, and practices, and to integrate initiatives in their business activities. Afi's guidelines describe basic sustainability requirements such as protecting and conserving areas of High Conservation Value (HCV) and High Carbon Stock (HCS), but also with regard to respecting human rights, specifically those of indigenous peoples and communities affected by deforestation,

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<sup>106</sup> SBTN (no date)



farming and land cultivation. Based on the requirements determined by AFi, companies can achieve ethical supply chains free of deforestation and conversion.

As of December 30, 2024, the European Union Deforestation Regulation ([EUDR](#)) will come into force. From that point on, companies failing to ensure deforestation-free supply chains for their key products and commodities will face penalties. Additionally, to ensure adequate contributions to addressing the third-largest driver of biodiversity loss, companies should use the Science-Based Targets framework to set themselves climate-related targets. The Science-Based Targets Network is working to gradually expand its methods, in order to include guidance on further drivers and improved integration of biodiversity aspects. In cases where SBTs for Nature are not appropriate, companies can opt to set contextual targets based on local insights, in addition to setting site-level targets (see, e.g., WWF's guidance on contextual targets for water<sup>107</sup>). As mentioned before, strategies to achieve targets include supplier engagement, more ecofriendly sourcing, and alternative, more circular business models.

In chapter 4, we talked about the competition for attention among several sustainability issues, above all, climate change. It is clear that balancing these priorities is a challenge when resources are limited. To address this dilemma, companies can explore potential synergies and overlaps between climate change and biodiversity in their strategy work and target-setting. For example, businesses relying on land-intensive operations and/or supply chains need to account for their land-based emissions and commit to a zero-deforestation target when setting Science Based Targets for Climate. Both aspects are directly linked to economic activities that drive significant biodiversity loss. In cases like these, Science Based Targets for climate will overlap with biodiversity-related targets, providing a basis for a more ambitious and integrated approach to sustainability management, explicitly accounting for biodiversity. Box 4 provides examples as to where subsequent climate and biodiversity-related interventions are co-beneficial, and where more attention should be dedicated to reducing trade-offs. Companies may also be able to use learnings from their decarbonization journey to accelerate their transition towards a more nature-positive business. These learnings can refer to target-setting, reporting and disclosure, and/or ensuring appropriate commitment in the organization. In the end, a profound biodiversity engagement needs adequate attention, resources and expertise.

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<sup>107</sup> WWF (no date d)

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*“We won’t solve the climate crisis without addressing biodiversity loss because we cannot ignore the massive carbon-storage potential of the biosphere. We should treat these topics as complementary instead of competitive.”*

**Jörg Eigendorf, Chief Sustainability Officer, Deutsche Bank**

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### **Biodiversity and climate change are synergetic to some degree**

As mentioned several times before, climate and biodiversity are interlinked. Research by IPBES, the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, and IPCC, the Intergovernmental Panel on Climate Change, shows that many interventions are beneficial for both climate and biodiversity (see exhibit 18). This is especially true for biodiversity interventions, most of which have positive effects on climate actions. For example, well-designed restoration of high-carbon-storage ecosystems provides a critical habitat for species and improves genetic and species diversity, while at the same time helping to halt climate change through higher carbon storage.

German retailer REWE has developed a biodiversity strategy that includes supporting the Nature and Biodiversity Conservation Union (NABU)-Climate Fund in revitalizing moors. Moorlands are important carbon sinks and have the potential to store more carbon than forests. However, due to human activities such as drainage and peat extraction, 95% of natural moorlands in Germany have been destroyed. The NABU-Climate Fund supports initiatives that involve re-wetting degraded moorlands, which helps restore their carbon storage capacity<sup>108</sup>, therefore, being synergetic for both climate and biodiversity.

In developing strategies, companies should be mindful of trade-offs between different types of potential interventions, where positive outcomes in either biodiversity or climate may be accompanied by negative outcomes in the other. This is particularly evident in system-shifting climate change interventions, such as those in the energy sector, which can pose risks for bio-diversity.<sup>109</sup> A notable example are hydro-power plants, which can have a negative

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<sup>108</sup> Rewe (no date)

<sup>109</sup> IPBES-IPCC (2021)

impact on aquatic ecosystems by altering fish migration routes and increasing the mortality for animals passing the turbines, spillways or bypasses.<sup>110</sup>

Overall, there are numerous interventions potentially co-beneficial for climate and biodiversity. In planning concrete measures, it will be important for corporate decision-makers to map key trade-offs, in order to better understand and manage potential risks of one for the other, and to prioritize levers with positive impact on both. A soon-to-be-released feature in the WWF Risk Filter Suite will help companies in this respect, making clear how they can achieve multiple environmental outcomes with investments in conservation and restoration – including both climate and biodiversity.

In cases where it is difficult to get top decision-makers' buy-in to putting biodiversity onto the corporate agenda, it will be important to invest in corporate awareness and capability-building on biodiversity – only then will there be a real chance of integrating the topic in corporate strategies and targets. In essence, truly effective biodiversity management will always require corporate values, norms, and behaviors to support sustainable outcomes. One key aspect of a culture that promotes the integration of biodiversity is engaging and educating employees on the importance of biodiversity and the role that the company can play in conservation efforts.

Ritter Sport has actively educated its employees on biodiversity for more than eight years. Besides sharing their own biodiversity efforts, the company also works to foster the general understanding of the topic through tangible, specific measures; for instance, by having an employees' cafeteria offer local or more plant-based foods, or by conducting ecological projects (such as renaturing a degraded area) with company trainees.

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*“Education is one of the main roadblocks to achieving the nature-positive transformation. We need to educate employees, suppliers, as well as the general public to succeed.”*

**Georg Hoffmann, Head of Sustainability, Ritter Sport**

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<sup>110</sup> Boes et al. (2021)

To further accelerate the transition to sustainable and ecofriendly operations, companies should align their sustainability targets with their (executive) compensation KPIs.<sup>111</sup> In Germany, nearly all DAX companies link their top executives' pay to at least one ESG element, while more than 50% of the DAX40 include all three ESG criteria.<sup>112</sup> Of the S&P 500 companies, 70% adopted ESG metrics into their executive incentive plans in 2022.<sup>113</sup> Top-executive buy-in is absolutely crucial for the success of companies' biodiversity efforts, no matter how large the business and where it is located. The interviews highlighted that in companies with a high maturity of biodiversity efforts, it typically starts with the CEO prioritizing biodiversity and gaining support from the board of directors before mandating the CSO.

### **3. Implement: German companies contribute to conserving biodiversity**

As mentioned before, companies' biodiversity measures need to encompass their value chains. Where exactly they should begin – whether in their operations and/ or their upstream and/or downstream value chains – depends entirely on where they identify the most material pressures on nature.

The German railroad company Deutsche Bahn has started implementing measures to reduce the adverse effects on biodiversity of pollution. The company has committed to stopping to use pesticides containing Glyphosate as of 2023. As root growth in railway beds can lead to failures and downtimes, controlling the vegetation is a prerequisite for secure railway operations, which is why Deutsche Bahn used to be the largest buyer of glyphosate in Germany. Now, the company is implementing a new, sustainable vegetation management concept comprising several approaches, such as digital vegetation control, mechanical (hand-operated) processes, and use of alternative pesticides.<sup>114</sup>

With a view to the fact that companies in the secondary and tertiary sectors see the severest biodiversity impacts in their upstream and downstream value chains, German chocolate manufacturer Ritter Sport is vertically integrating parts of its cacao production: cacao farming is transferred to its own Nicaragua-based farm named El Cacao. According to the company, 400 skilled workers were employed who rethought every aspect of cacao production. The aim was to grow cacao under socially and ecologically sustainable conditions, but also to do so at competitive prices and superior quality. The El Cacao plantation spans 2,500 hectares and Ritter Sport expects the cacao plants on the farm<sup>115</sup> to supply around 20-25% of the company's raw cacao volume.<sup>116</sup>

Other companies are adopting more ecofriendly procurement practices, giving preference to raw or processed materials that are certified or labelled. One prominent certification mechanism is FSC (promoting responsible management of forests). Otto (GmbH & Co KG), a German online retailer,

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<sup>111</sup> Harvard Business Review (2023)

<sup>112</sup> Technical University of Munich (2023)

<sup>113</sup> Borneman et al. (2022)

<sup>114</sup> Deutsche Bahn (2020)

<sup>116</sup> Ritter Sport (no date)

aims to increase the share of fibers with lower environmental impact (compared to conventional ones) to 65% by 2025, and the share of sustainably-sourced cotton (i.e., organic, recycled, and from the Cotton Made in Africa initiative) in their textiles to 100%, while using FSC®-certified wood exclusively for furniture. The company is also testing innovative materials such as mushroom leather and compostable shipping bags.<sup>117</sup>

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*“We have been committed to certification for materials such as cotton and wood for decades and also form alliances with other companies, for example about FSC-certification. Cotton made in Africa (CmiA) certification is also important for us internationally, as they support agricultural practices in Sub-Saharan Africa as an internationally recognized standard for sustainable cotton from Africa.”*

**Tobias X. Gruber, Division Manager Sustainability, Otto (GmbH & Co KG)**

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A key advantage of such Voluntary Sustainability Standards (VSS) is that they might already have the recognition and trust of consumers, besides offering guarantees around environmentally friendly practices, resulting in significant time and resource efficiencies on the buyers' side. Furthermore, these standards test approaches as to their feasibility for the market, paving the way for new official regulations. There are also shortcomings, however. For example, the VSS space lacks standardization given the variety of different modes of communication, assurance models, and scopes. In addition, some labels rely on simplified metrics, meaning they do not fully capture the complex interactions and dynamics of biodiversity) and/or involve various verification and enforcement challenges.<sup>118</sup> Product-specific input tracing is therefore preferable, provided it is technically possible and financially feasible.

### **Encouraging biodiversity-friendly practices through the Bio certification**

Organic farming and the Bio certification have made notable progress in reducing adverse effects.<sup>119</sup> The certificate was established in 2001, its aim being to promote food that has been produced and controlled according to EU regulations for organic farming. The certification

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<sup>117</sup> Otto (no date)

<sup>118</sup> SECO (2021)

<sup>119</sup> Ökolandbau (2021)

guarantees that the products are produced in an environmentally friendly manner and observing animal welfare requirements. Since its establishment, 6,768 companies have registered a total of 102,170 products for the use of the official Bio certificate in the respective database (figures as of December 31, 2022). Especially companies in the processing and trade sectors utilize the label, thanks to its high level of recognition. According to the results of the representative survey on the Nutrition Report 2022, 60% of respondents “always” or “mostly” pay attention to the Bio certification when shopping, as it provides transparency and guidance for consumers amidst the jungle of organic labels.<sup>120</sup>

To encourage farmers to adopt the Bio certificate, the certificate itself is free of charge; costs occur during certification and if the certified entity develops and implements measures to align with the requirements. The advantage of using this certificate lies in its simplicity and non-bureaucratic process, inviting all market participants to join.<sup>121</sup> The Bio certificate is audited through a standardized process similar to that applied by the German TÜV (Technical Inspection Association). Those who produce, manufacture, import, trade and wish to label organic products must register with an authorized eco-control agency. Control centers in Germany are private enterprises, accredited by the Federal Agency for Agriculture and Food (BLE), and monitored by the respective local control authorities. Businesses undergo inspections at least once a year, typically registered in advance so the necessary documentation can be arranged. Unannounced random checks complement these controls. If there are grounds for suspicion – for instance, indicators pointing to the use of banned pesticides –, leaves or product samples are tested to detect and prove potential violations. Sanctions are implemented against businesses that violate EU legal regulations for organic farming, ranging from requirements and chargeable re-controls for minor offences to revoking the status as an organic/bio-business in severe cases.<sup>122</sup>

The prevalent adoption of the Bio certificate, both by suppliers and consumers, has significantly impacted sustainability and biodiversity. It has highlighted and supported a shift in society’s attitude towards greater environmental consciousness. Suppliers are now putting more emphasis on ecofriendly production methods, while consumers more often prioritize sustainable options. Since its introduction, the adoption of the bio-certificate has continually moved up, reflecting a growing commitment to sustainable practices and ecological balance.<sup>123</sup>

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<sup>120</sup> BMEL (2020a)

<sup>121</sup> Ökolandbau (no date a)

<sup>122</sup> Ökolandbau (no date b)

<sup>123</sup> BMEL (2020b)

A holistic and ambitious biodiversity strategy should involve collaboration with other stakeholders in landscapes, river basins, or seascapes outside the value chain. Such collaborations are a crucial element for various reasons. Landscapes, for example, often involve diverse land uses and conflicting demands of different users, particularly when activities like agriculture, energy production, and mining compete with environmental and biodiversity objectives. Consequently, isolated actions will usually not produce the desired effects for the conservation and recovery biodiversity. Instead, collaborative efforts and integrated thinking among multiple stakeholders are necessary to manage various land uses, promote equitable and sustainable land utilization, and develop measures for mitigating biodiversity loss.<sup>124</sup>

One example for conflicting demands and engagement on the landscape level is Gerolsteiner, a renowned German mineral water brand. The company is protecting its 28 spring sources by engaging with local authorities and farmers, whom Gerolsteiner supports in implementing agro-ecological practices that benefit biodiversity and freshwater ecosystems. The limited use of pesticides and input of nutrients is beneficial for soil and water quality, for ecosystems as well as animals and plant species.<sup>125</sup> Gerolsteiner has also made sure that their mineral water catchment area is featured as a “mineral water protection area” on all political and geological maps. As a result, all deeper interventions in the ground, such as drilling or construction measures, are now subject to approval and must be coordinated with Gerolsteiner.<sup>126</sup>

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*“Only together can we protect our water. That's why we are looking for a long-term exchange with the farmers in our core source area. We like to be the driving force for water-friendly agriculture as this means environmental protection.”*

**Dr. Thomas Hens, Head of Technical Development and Resources, Gerolsteiner Brunnen**

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REWE’s sustainability efforts include biodiversity enhancement and sustainability with a focus on animal welfare, social conditions, climate protection, resource protection, and environmental conservation. To achieve these ambitions, REWE collaborates closely with farmers, NGOs, and foundations. In Germany, REWE Group supports fruits and vegetable farmers in implementing biodiversity-promoting measures, collaborating with different regional environmental NGOs, such as the NABU, and foundations that advise farmers on specific measures. In 2022, 550 farms participated.<sup>127</sup> In partnership with the nature conservation organization OTOP and farmers, REWE

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<sup>124</sup> Reed et al. (2015)

<sup>125</sup> Gerolsteiner (no date b)

<sup>126</sup> Gerolsteiner (no date a)

<sup>127</sup> Stiftung Rheinische Kulturland (no date)

implements biodiversity measures at apple orchards in Poland, such as flower strips, insect hotels, and bird houses.<sup>128</sup>

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*“A complex topic like biodiversity can only be tackled together. We are collaborating with many farmers, suppliers, NGOs and foundations in different projects. We need collaboration to strengthen sustainability rather than using those topics as a competitive advantage.”*

**Lisa Morawietz, Head of Sustainability, REWE Group**

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#### **4. Advocate: Pushing for global change**

To prevent a further escalation of climate change and irreversible nature loss, it is imperative that we, as a society, initiate a transformation of the systems that shape our world. Businesses hold an important position in driving these transformations and should actively champion systemic change by mobilizing and engaging key stakeholders.

One way to do so is to lead or participate in industry initiatives. At an international level, Business for Nature stands out as a prominent global coalition comprising over 80 partner organizations, such as NGOs, research institutions, and companies, focused on biodiversity. Their primary objective is to foster credible business actions and ambitious policy initiatives, with the ultimate goal of achieving a nature-positive economy for all by 2030. A German initiative providing a platform for businesses to exchange biodiversity-related practices is the Biodiversity in Good Company initiative. As one outcome of this initiative, companies participating in our study – such as Heidelberg Materials, REWE, Ritter Sport, and Volkswagen, among others – have committed to including the protection of biological diversity in their sustainability strategies.<sup>129</sup> Another example of active advocacy is the German construction company Goldbeck, which is working to change German industry standards to allow for more recycled matter in certain concrete types, in line with the circularity concept.

Another way for companies to accelerate the systemic transformation is to champion ecofriendly policy at the national, regional, and global levels, either independently or in collaboration with industry associations and coalitions. For example, in June 2023, more than 100 corporations (incl. Heidelberg Materials from this group of respondents) were speaking out in favor of the EU Nature Restoration Law, which aims to promote nature protection, restoration, and sustainable use of

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<sup>128</sup> Pro Planet (no date a)

<sup>129</sup> Biodiversity in Good Company



natural resources and to uphold, strengthen, and enforce climate- and nature-related legislation at EU level<sup>130</sup>. Establishing a policy environment that promotes biodiversity-friendly practices can be an important part of a company's biodiversity efforts – especially as it might also ensure a level playing field and industry-tailored regulations.

The German discounter Lidl, in cooperation with the non-profit GlobalGAP, released the industry's first biodiversity standard for conventional fruit and vegetable farming in Europe, by the name of Biodiversity Add-on. Initially applied to 250 producers in various countries, the standards will be expanded to all European fruit and vegetable producers. Biodiversity Add-on requires companies to have a biodiversity action plan, a minimum area dedicated to biodiversity, and effective protocols for soil and pest management. As part of Lidl's sustainability strategy, this initiative aims to identify and manage the risk to biodiversity from raw materials used.<sup>131</sup>

### **Taking action to challenge harmful subsidies**

At present, there is still a significant imbalance in lobbying efforts, with only a small fraction of companies actively engaging in advocating for new regulations or the adaptation of existing ones. Given that regulatory guidelines will probably play a significant role in solving environmental issues, there is a need for greater participation and proactive involvement of companies.

One pivotal area where collective action by German businesses would be powerful is around subsidies that contribute to over-extraction and exploitation of the biosphere. These harmful subsidies unintentionally exacerbate the environmental degradation, the loss of habitat, and the decline of species. Environmentally harmful subsidies in Germany negatively affect nearly all environmental resources – water, soil, air –, drive up land use, and destroy biodiversity.<sup>132</sup> Through these subsidies, the government is funding non-renewable electricity projects, the transportation sector, the construction sector, and the agriculture industry<sup>132</sup> – with a total annual amount of least €65 billion.<sup>132</sup> Globally, harmful subsidies are estimated to be costing around USD 500 billion per year – in stark contrast to subsidies targeted at promoting biodiversity, which, at approximately USD 0.89 billion per year, are a mere fraction of that.<sup>133</sup>

Yet another way for companies to drive transformational change is through comprehensive disclosure of their material negative and possibly positive impacts on biodiversity, biodiversity

<sup>130</sup> WWF (2023)

<sup>131</sup> Lidl (2022)

<sup>132</sup> Umweltbundesamt (2021)

<sup>133</sup> OECD (2019)

related risks and opportunities, strategies and targets to prevent negative impacts and restore biodiversity, and the actions they have taken. Through robust public disclosure, a company can demonstrate its commitment to biodiversity conservation. As of 2023, companies can use existing voluntary reporting standards, such as GRI, CDP, or the Taskforce on Nature-related Financial Disclosures (TNFD). However, with the adoption and release of the European Sustainability Reporting Standards (ESRS), European businesses will have to comply with a wide range of disclosure requirements as of 2025, including on biodiversity management, provided that biodiversity is material to their business.

## **5. Achieve: Scale outcomes and impacts to become a One Planet Business for biodiversity**

The maturity of a company's engagement on biodiversity depends not only on its ability to work on each of the four steps described above, but also on its ability to achieve biodiversity-related targets that are consistent with scientific knowledge, societal goals, and corporate best practices. Only then can businesses make meaningful contributions to global goals such as Nature Positive by 2030 and Full Recovery of Nature<sup>134</sup> by 2050. Based on the previous steps, WWF Germany's One Planet Business Framework derives a set of concrete corporate outcomes and positive impacts on biodiversity that businesses ultimately need to achieve to make adequate contributions to the recovery of nature.

The Achieve step does not formulate any additional requirements but highlights the difference between the progressive upscaling of measures across the four previous steps and the actual achievement of the biodiversity-related targets set. This step marks both an end and a new beginning of the biodiversity management cycle. An end in the sense that companies need to continuously evaluate the extent to which their actions have led to the achievement of their targets. A new beginning, as corporate engagement across the four previous steps is never a one-time deal, but an iterative process accompanied by continuous learnings through trial and error. Businesses should use their learnings from one iteration of the four steps as the basis for formulating improvements for the next iteration. This will require continuous adjustments and scaling of measures to achieve meaningful outcomes and impacts at scale.

Many companies have already started their biodiversity stewardship journey by assessing material pressures on biodiversity, conducting risks analysis for critical biodiversity impacts and dependencies, and deploying site-level biodiversity management systems. It is important to note, however, that companies do not become champions for responsible biodiversity management over night.

There are various reasons as to why the corporate actions outlined mark the beginning of a long-term journey rather than the final steps towards substantive outcomes.

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<sup>134</sup> Nature Positive (no date)

- In Step 3 “Implement,” for example, businesses typically begin by implementing a limited set of measures as part of a pilot phase. These measures are often too small in scale to have a noticeable effect on the overall corporate performance. However, if successful, they can form the basis for scaling up actions that will lead to substantial business outcomes and impacts on biodiversity.
- Due to resource constraints and/or methodological gaps, companies will often be unable to address all material biodiversity issues simultaneously. Also, if the greatest share of biodiversity issues is in their upstream value chain, companies will have less control over suppliers’ and sub-suppliers’ biodiversity management practices. Downstream, companies will need to be determined to act and willing to try out different paths, not all of which will lead to achieving ambitious targets. In these cases, it will often help to scale up proactive engagement and cooperation with suppliers and sub-suppliers. Also, engaging with other stakeholders outside corporate value chains, for example through collaborative multi-stakeholder initiatives at the landscape or seascape level, can be critical to expand outcomes and drive long-term systemic change.
- There will also be cases where individual corporate actions, or collective actions by multiple stakeholders in landscapes or seascapes, have been successfully implemented but fail to achieve their targets, i.e. the state of ecosystems, species, or ecosystem services does not recover as expected. Here, it will be necessary to identify and implement additional actions to achieve previously defined targets.
- Finally, corporate targets and actions need to match the urgency of tackling the biodiversity crisis. The benchmark of what constitutes a good biodiversity steward may change over time, based on new scientific knowledge, societal goals, or corporate best practices; this would require additional actions along the steps of the One Planet Business Framework.

One company that achieved significant corporate outcomes and positive impacts on biodiversity is PERÚ PURO. The company directly trades cocoa, coffee, and Brazil nuts grown by more than 60 smallholder families in Peru. Rare cacao and coffee varieties supplied to PERÚ PURO are grown in highly diverse agroforestry systems that conserve biodiversity and act as carbon sinks. Up to 70 different native tree species provide shade for coffee and cacao, depending on altitude. In the process, the high level of biodiversity and ecosystem services ensures higher yields, reduces the workload of smallholders and enables previously degraded agricultural land to be farmed in the long term. Brazil nut collection in intact lowland rainforests provides an alternative to the destructive use or clearing of these special ecosystems. Through its efforts, PERÚ PURO has achieved the protection of 1000 hectares of rainforest as a private reserve and established about 150 hectares of agroforestry systems. All projects are financed through the sale of high-quality products. Additionally, PERÚ PURO pays their long-time partners farm-gate-prices that are double the minimum organic fair trade price, and pre-finances about 50% of the harvest. In doing so, the company addresses material ecological and human-rights topics.

Companies that have not integrated biodiversity aspects in their business models from the outset will need to establish their long-term strategic biodiversity engagement along the four steps Assess, Embed, Implement, and Advocate, to be able to Achieve meaningful contributions to nature's recovery. Since implementation of a set of actions will not always or directly lead to achieving set targets, businesses will have to go through multiple iterations of the One Planet Business Framework, continuously re-evaluating the effectiveness of their strategies and implemented measures. Only then can they become a One Planet Business for Biodiversity.

### **German businesses need to act – now!**

According to our interviews, biodiversity is gaining traction among German businesses. Against the backdrop of biodiversity loss threatening the well-being of our planet, people, and economies, companies will now need to enter a phase of scaling up biodiversity-related actions based on ambitious strategies and targets.

Although biodiversity is multi-layered, and many companies are not entirely clear at this point on how it relates and affects their business activities, this report illustrates that there are several approaches available, developed by mandated and well-known organizations and initiatives, that businesses can use *today* to get started and step up their engagement on biodiversity. Among others, this includes conducting nature-based materiality and risk assessments, developing ambitious contextual and science-based targets, and making use of existing good practices to develop corporate strategies that take account of biodiversity aspects. In the long run, incremental changes will not be enough to tackle either the biodiversity or the climate crisis. Companies will need to rethink and adapt their business models to contribute adequately to the recovery of nature. This will require persistent individual and collective actions. Businesses should focus their engagement on their most material pressures on biodiversity, such as changes in land, freshwater, and sea use, overexploitation, pollution, or climate change. Companies that have begun taking action, or are in the process of developing and implementing meaningful responses will be a) better prepared for upcoming regulations, b) in a position to mitigate biodiversity-related risks, c) able to seize opportunities, and d) enhance their attractiveness for employees, investors, and other stakeholders.

Many initiatives and players such as Bain and WWF have positioned themselves to support companies in integrating biodiversity into their business practices. As pointed out, the WWF One Planet Business Framework for Biodiversity Stewardship is a management framework guiding companies through their transformational journey to contribute to the recovery of nature. Bain's diagnostic tool for Nature and Biodiversity can help companies gain an initial understanding of their biodiversity-related impacts and dependencies, risks and opportunities.

Ideally, private-sector engagement, societal initiatives, and adequate and effective regulation will jointly work to drive the much-needed transformative change across sectors to protect and improve the state of nature.

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### **WWFs expectations for an ambitious biodiversity management are not necessarily displayed in the quotes and practical examples provided by the interviewed companies**

To write this report, WWF, together with Bain and the Future Institute conducted interviews with various companies to gather insights and perspectives on the topic of biodiversity. WWF would like to point out that the corporate quotes and practical examples presented in this report serve to enhance the readers understanding of how companies currently think about and deal with biodiversity. The information and statements shared show a diverse range of corporate perspectives and engagements. WWF would like to emphasize that we welcome the increasing relevance of biodiversity in the development of corporate strategies. However, the corporate examples provided are not necessarily indicative of best-practice standards. The examples showcase the current biodiversity engagement of (mostly) large German companies to enrich the discourse surrounding the subject matter.

## About



### WWF

WWF Germany is an independent, non-profit, non-partisan foundation based in Berlin. The organization was founded in 1963 and is part of the WWF network consisting of national organizations and program offices operating in more than 100 countries. In line with the responsibility of all peoples to protect nature and the environment as an economic, social, scientific and cultural task, as proclaimed by the United Nations, WWF Germany has set itself the goal of promoting nature and environmental protection, science, education, and training in the field of nature and the environment. The mission of WWF Germany is to stop the global destruction of nature and the environment and to shape a future in which people and nature live in harmony. WWF Germany is active worldwide. [www.wwf.de](http://www.wwf.de)



### Bain & Company

Bain & Company is a global consultancy that helps the world's most ambitious change makers define the future. Across 65 cities in 40 countries, we work alongside our clients as one team with a shared ambition to achieve extraordinary results, outperform the competition, and redefine industries. We complement our tailored, integrated expertise with a vibrant ecosystem of digital innovators to deliver better, faster, and more enduring outcomes. Our 10-year commitment to invest more than \$1 billion in pro bono services brings our talent, expertise, and insight to organizations tackling today's urgent challenges in education, racial equity, social justice, economic development, and the environment. We earned a platinum rating from EcoVadis, the leading platform for environmental, social, and ethical performance ratings for global supply chains, putting us in the top 1% of all companies. Since our founding in 1973, we have measured our success by the success of our clients, and we proudly maintain the highest level of client advocacy in the industry. [www.bain.de](http://www.bain.de)



### FUTURE Institute for Sustainable Transformation

The FUTURE Institute specializes in sustainable transformation, creating and conveying knowledge to help organizations, industries, and value chains to move towards sustainability. The Institute was initiated by the Values Foundation (a non-profit organization), the innovation platform FUTURY, and the international business school ESMT Berlin. [www.futureinstitute.berlin](http://www.futureinstitute.berlin)

## Imprint

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