



Nature and Business:  
Navigating Risks and Opportunities  
in a Changing Landscape  
A Guide for Companies to Thrive  
in the Era of Nature Emergency

# Contents

Foreword	4
Executive summary	7
Navigating Biodiversity Compliance in an Era of Tighter Regulation	9
<b>Chapter I – The Nature Emergency</b>	15
Introduction to Biodiversity and its Importance	15
Nature & Economy	18
Nature & Society	19
Risks and Opportunities	21
<b>Chapter II – Business Impact and Dependencies on Nature</b>	23
The Impact of Business on Nature	30
Nature-Related Dependencies and Business Vulnerabilities	34
Public and Private Sector’s Role in Tackling Biodiversity Loss	37
<b>Chapter III – The Business Case for Nature Survey</b>	39
About the Survey	40
Executive summary of the market research	42
Deep dive into the survey results	54
<b>Chapter IV - A Call to Action</b>	60
Biodiversity Roadmap	62
<b>Conclusions</b>	66
<b>Appendix I – Actions and Tools to Tackle Nature Emergency</b>	67
<b>Appendix II – Taking the Next Step for Nature: Impact and Dependency Measurement – TNFD</b>	70
<b>Endnotes</b>	75

# Foreword

**Over the past 50 years, experts have documented a substantial loss in biodiversity.** This is putting at risk entire ecosystems on which our species depends for its own existence, for food, medicines and shelter, and so on. It is not a surprise therefore that the World Economic Forum calls biodiversity loss as one of the greatest global risks faced by humanity. Biodiversity loss is not only a crisis in itself. It also exacerbates the urgent issue of climate change by reducing the Earth's ability to store carbon and increasing its vulnerability to climate-related impacts.

Our actions during this decade and the ones that follow ones could either restore ecological balance or bring ecosystems to a point of collapse. However, there is good news hidden in these facts: we still have a chance to change how this story unfolds.

To confront the interconnected crises of biodiversity loss and climate change, we need to rethink what we consider "business as usual". Tackling the biodiversity crisis will require cooperation at all levels of society, from intergovernmental agreements down to local community actions by implementing conservation efforts, sustainable resource management, as well as policy-making that prioritizes the protection and restoration of natural ecosystems.

This report includes a comprehensive market study spanning various sectors to analyze how companies impact biodiversity. We delve into the critical questions of whether companies are aware of the risks associated with biodiversity loss and if they are already experiencing the consequences. This study serves as a wake-up call to the corporate world, emphasizing the need for increased awareness and collective efforts to address these urgent issues.

Finally, we present a roadmap towards a sustainable future that serves as an outline for strategies and solutions for companies to reduce their impact on biodiversity, while also harnessing the potential benefits that stem from biodiversity conservation. This roadmap is designed to guide businesses towards a more responsible and environmental-conscious approach.

As we navigate a path towards addressing biodiversity loss and climate change, it is imperative to remember that this formidable task is one that, as demonstrated by conservationists, policymakers, and ordinary citizens worldwide, is not insurmountable.



**Tayanah O'Donnell**  
Partner,  
Deloitte Australia

# Foreword

**The renewable energy sector is one of the key priorities in all strategies for mitigating climate change and reducing CO2 emissions.**

While the transition from conventional energy sources to renewables is crucial for a sustainable future, it is equally important to ensure that this transition respects and protects biodiversity.

"Energy created with Respect for nature" is the mission statement of our company, which we firmly believe in and live by every day. That is why Respect Energy initiated the creation of this report. Our main objective is to draw the attention of businesses to measures aimed at countering biodiversity loss by raising awareness of its significance. Cross-sectoral and cross-national. We believe that education and sharing of good practices are the first and one of the most important steps in the conservation of biodiversity.

At Respect Energy, we have set ourselves ambitious goals from the very beginning to create a better future for our planet. Being an energy company that acknowledges the negative impact of traditional energy sources on the climate and the environment, we have created our business as a one-stop shop in the field of 100% green, renewable energy. Our vision is to deliver solutions that not only meet today's needs, but also leave the world in a better condition for future generations.

While the transition to renewable energy sources is crucial for mitigating climate change, it must proceed in a way that protects the planet's rich and diverse ecosystems. By minimising habitat disruption, mitigating collisions with wildlife, implementing biodiversity-friendly land use practices and engaging in biodiversity offsetting, the renewable energy sector can lead the way in demonstrating that clean energy and nature conservation can go hand in hand.



**Sebastian Jabłoński**  
Chairman of the  
Management Board  
of Respect Energy  
Capital Group

# Glossary of key terms

Term	Definition
<b>Biodiversity</b>	The variability among living organisms from all sources, including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems. Biodiversity is part of the natural capital.
<b>Biodiversity loss</b>	The decline in the variability and abundance of species in a particular habitat or on a global scale. It results from five key drivers: sea and land use change, pollution, climate change, direct exploitation of natural resources, and invasive species.
<b>Climate change</b>	A change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods.
<b>Double materiality</b>	Double materiality has two dimensions, namely: impact materiality and financial materiality. (see <a href="#">TNFD</a> for more information)
<b>Ecosystem</b>	A dynamic complex of plant, animal and microorganism communities and the non-living environment, interacting as a functional unit. (see <a href="#">TNFD</a> for more information)
<b>Ecosystem services</b>	The contributions of ecosystems to the benefits that are used in economic and other human activity. (see <a href="#">TNFD</a> for more information)
<b>Environmental impact assessment</b>	Processes used to evaluate the potential environmental effects of an organization's activities.
<b>LEAP Assessment</b>	An approach to setting up and utilizing an integrated internal process for identification and assessment of nature-related issues.
<b>Natural capital</b>	The stock of renewable and non-renewable natural resources (e.g., plants, animals, air, water, soils, minerals) that combine to yield a flow of benefits to people. (see <a href="#">TNFD</a> for more information)
<b>Nature-positive</b>	A high-level goal and concept describing a future state of nature (e.g., biodiversity, ecosystem services and natural capital) that is greater than the current state.
<b>Nature-related opportunities</b>	Activities that create a positive outcome for organizations and nature by avoiding or reducing impacts on nature or contributing to its restoration. (see <a href="#">TNFD</a> for more information)
<b>Nature-related physical risks</b>	Nature-related physical risks are risks resulting from the degradation of nature (such as changes in ecosystem equilibria, including soil quality and species composition) and consequential loss of ecosystem services that economic activity depends upon. (see full definition at <a href="#">TNFD</a> )
<b>Biodiversity hotspot</b>	A biogeographic region with significant levels of biodiversity that is threatened by human habitation. Key biodiversity areas - The most important places in the world for species and their habitats.
<b>Nature-related systemic risks</b>	Nature-related systemic risks are risks arising from the breakdown of the entire system, rather than the failure of individual parts. (see full definition at <a href="#">TNFD</a> )
<b>Nature-related transition risks</b>	Nature-related transition risks are risks to an organization that stem from a misalignment of economic actors with actions aimed at protecting, restoring, and/or reducing negative impacts on nature. (see full definition at <a href="#">TNFD</a> )
<b>The Taskforce on Nature-related Financial Disclosures (TNFD)</b>	An international initiative that provides a framework for organizations to address environmental risks and opportunities, with the ultimate goal of channeling capital flows into positive action.

# Executive summary

Human activities, driven by economic growth and the exploitation of nature, have led to a significant loss of species and ecosystems.

**The human population and the global economy rely on nature and healthy ecosystems which provide essential services and resources.**

Even after decades of scientific research we are all still learning about interconnections among species, ecosystems, climate and, inevitably, us. Biodiversity encompasses the diversity of life forms and their interactions across land, water, and air – spanning genes, populations, species and ecosystems, including forests, wetlands, oceans, and freshwater. In other words, biodiversity is an elemental constituent of ecosystems – ecosystems, in turn, maintain human development.

**We are observing a rapid decline in biodiversity in all parts of the world.**

This observed loss is primarily caused by five key drivers: sea and land use change, climate change, pollution, direct exploitation, and invasive species. All five forces can be linked, either directly or indirectly, to human activities and have significant repercussions:

- **Disappearing species** can disrupt entire ecosystems, affecting industries and communities.
- **The decline of nature** is far-reaching and impacts the global GDP and business operations.
- **The degradation of nature** can lead to conflicts, exacerbate gender inequality, and pose risks to public health.

## Business & Nature

To fully understand the impact of businesses on nature, and how nature impacts business operations, we have conducted an extensive cross-sectoral study of market. Our findings show that despite the growing evidence underscoring the importance of immediate and coordinated action, the market awareness of the biodiversity crisis is still low, while examples of good practices are limited.

## Biodiversity market research

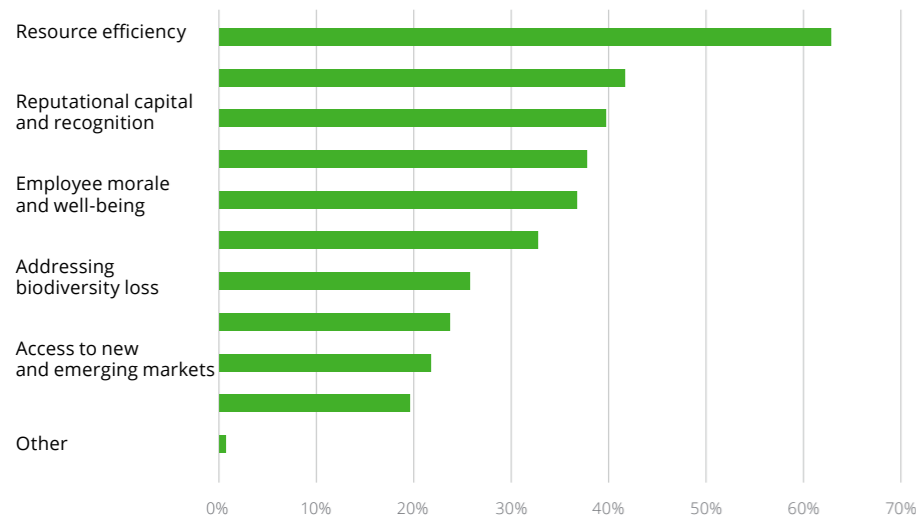
More than two-thirds of respondents claimed moderate to high awareness of potential business threats related to nature. However, only one in three companies include biodiversity aspects when conducting risk and materiality assessments.

**The pressure is rising.** Companies are aware of growing interest from regulators (52% of surveyed companies), investors (43%) and civil society (43%) to act on biodiversity related issues.

Current mandatory regulations so far do not cover the diversity aspect, either in scale or in detail, when compared to climate change regulations. However, given the increasing number of voluntary frameworks, like the recent TNFD and SBTN publications, and looking ahead to the forthcoming regulations such as CSRD ESRS 4, it is likely that, akin to the surge in interest in climate change topics after the Paris Agreement, biodiversity discourse will also drive transformations in the coming years.

Companies must acknowledge their impact on nature and biodiversity and make efforts to adopt nature-positive initiatives that align with public expectations for responsible practices. Those who choose to take the lead may seize early opportunities and gain competitive advantage, while simultaneously mitigating the most significant nature-related physical and transition risks and building resilience.

**Chart 1: Percentage of companies that consider the following aspects as material to their business**



Source: Deloitte survey

Many companies recognize numerous positive outcomes associated with biodiversity and nature-related action. This raises the question: Why is the market response still slow? Our study finds that:

**41%** of respondents identified the focus on near-term business issues and demands from investors and shareholders as the primary obstacle. This suggests that there is often a tension between short-term financial goals and long-term environmental sustainability objectives.

**31%** of respondents indicated that cost is a significant obstacle.

**20%** of respondents cited difficulties in accessing biodiversity-related finance, such as loans and grants. This highlights the need for financial mechanisms and incentives to support companies in their biodiversity protection endeavors.

Despite this, **leaders are beginning to emerge**. Five sectors already show promise in their involvement in activities related to the protection of biodiversity:

- **Energy**, mainly because of long-standing regulations on emission reductions and wider strategic energy transformation;
- **Food and beverage**, due to increased (but still limited) awareness of business continuity risks in complex value chains related to biodiversity loss;
- **Financial institutions**, with an indirect impact on nature through financing decisions and potential risks emerging from biodiversity loss in their portfolios;
- **Real estate**, due to the understanding of how their projects can impact biodiversity and the conducting of impact assessments;
- **Retail**, due to their understanding of their unique position within the value chain allowing companies within this sector to emphasize sustainably sourced products.

This report aims at increasing market awareness of the observed nature crisis and biodiversity loss. At the same time, it showcases ready-to-use initiatives and wider coordinated action to change the business mindset and include biodiversity as a material topic in strategic responses. The roadmap which constitutes the focal point of the fourth (final) chapter of this report is designed to help public and private sector organizations to develop biodiversity action plans for their activities and projects. The guidelines are formulated in a way that introduces a systemic approach to biodiversity management, conservation and enhancement that can be built on further on and integrated with existing organizational practices. The roadmap may help companies to deliver on biodiversity requirements, commitments, improve performance, and contribute to nature-positive aims. It is structured around 7 steps:

1. Current State Assessment
2. Biodiversity Assessment
3. Awareness Raising and Capability Building
4. Governance Structure
5. Implementing and Strategy
6. Monitoring and Management Schedule
7. Revision and Update

In the light of the compelling evidence highlighting the critical link between biodiversity and our global economy, it is imperative for companies to act swiftly. The time has arrived for businesses to align their operations with nature-positive initiatives, acknowledge their impact on biodiversity, and embrace coordinated action. By adopting the suggested roadmap and making biodiversity a central component of their strategic responses, companies can not only mitigate risks but also unlock new opportunities for a more prosperous and sustainable future for all.

# Navigating Biodiversity Compliance in an Era of Tighter Regulation

Due to the acceleration on biodiversity loss becoming a crisis for society, the global economy and future generations, companies can expect more stringent regulatory landscape.

## Future-proofing the Biodiversity Regulatory Landscape

Halting biodiversity loss and reducing ecosystem degradation is a shared responsibility, with businesses becoming a committed solution provider. The importance of this issue is increasingly affecting choices taken by investors, who are now having to consider how to include environmental impacts in their assessments and how to channel capital into companies that take action and report

on their respective biodiversity strategies. Companies will increasingly be called upon to demonstrate sustainable operations and environmental practices. However, they will not be able to fully deliver on their role as ecosystem stewards at the scale needed without environmental policies and regulations that are predictive, transparent, consistent, and implemented on time.



**Global Biodiversity Framework**

The United Nations Biodiversity Conference (COP15) resulted in the adoption of the Kunming-Montreal Global Biodiversity Framework which, adopted by almost 200 countries, consists of two “30x30” headline targets: including a goal to conserve 30% of the world’s land and 30% of the oceans by 2030, as well as a commitment of developed countries to mobilize US\$30bn funding for developing countries by 2030<sup>1</sup>.

**European Union Biodiversity Strategy 2030**

The strategy sets out a comprehensive framework of commitments and actions to tackle the main causes of biodiversity degradation. The strategy is a core element of the European Green Deal and along with the Farm to Fork Strategy forms the two most important elements of the European Green Deal<sup>2</sup>.

**European Union Taxonomy**

The EU taxonomy describes a framework to classify “green” or “sustainable” economic activities executed in the EU and defines six environmental objectives, regarding climate change mitigation and adaptation, sustainable use and protection of water and marine resources, transition to a circular economy, pollution prevention as well as the control and protection and restoration of biodiversity and ecosystems. In addition, the “Do no significant harm” principle ensures the minimization of indirect detrimental impact on other taxonomy objectives<sup>3</sup>.

**Corporate Sustainability Reporting Directive (CSRD)**

The CSRD sets a common European standard in reporting on sustainability risks and impacts covering activities in accordance with the reporting European Sustainability Reporting Standards (ESRS) including: ESRS E4 on Biodiversity and ecosystems, ESRS E2 on Pollution and ESRS E3 on Water & Marine resources<sup>4</sup>.

- European Sustainability Reporting Standard (ESRS) E4  
The ESRS E4 – Biodiversity focuses on the undertaking’s relationship to terrestrial, freshwater, and marine habitats, ecosystems, and related fauna and flora species, including diversity within and between species and ecosystems and their interrelation with indigenous and affected communities<sup>5</sup>.

**International Financial Reporting Standards (IFRS)**

Apart from already published IFRS S1 General Requirements for Disclosure of Sustainability-related Financial Information and IFRS S2 Climate-related Disclosures, the International Sustainability Standards Board (ISSB) is in consultation on the future development of Standards including biodiversity, ecosystems and ecosystem services. It will consider the work of the Taskforce for Nature-related Financial Disclosures (TNFD) and other existing nature-related standards and disclosures<sup>6</sup>.

**Corporate Sustainability Due Diligence Directive (CSDD)**

The aim of the Directive is to foster sustainable and responsible corporate behavior by integrating human rights and environmental concerns including biodiversity loss into business operations and corporate governance, as well as requiring disclosures on due diligence processes<sup>7</sup>.

**European Union Deforestation Free Regulation (EUDR)**

The purpose of the Regulation is to reduce the EU’s share of deforestation, as well as to reduce greenhouse gas emissions and minimize biodiversity loss, by imposing due diligence obligations on companies selling goods that result in a high risk of deforestation<sup>8</sup> including legal deforestation.

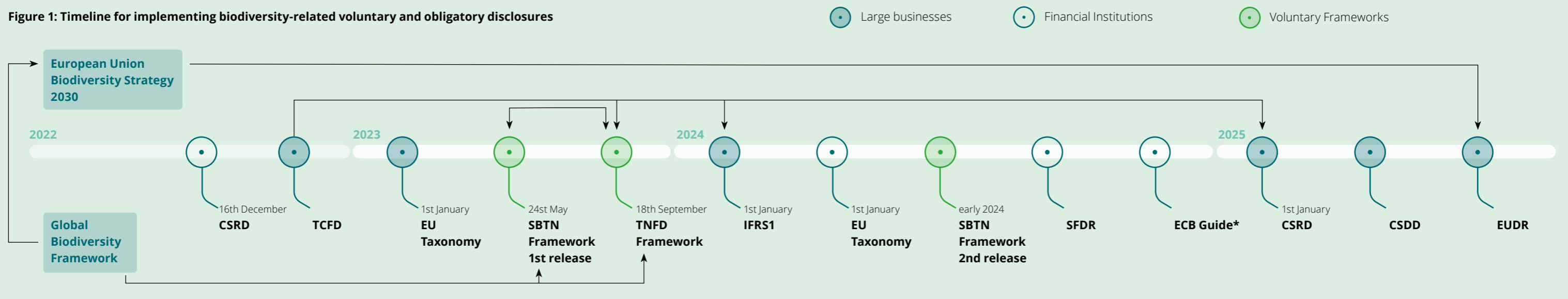
**Sustainable Financial Disclosure Regulation (SFDR)**

The SFDR requires European financial firms to consider their share of investments with a principal adverse impact (PAI) on the environment, including biodiversity indicators<sup>9</sup>.

**European Central Bank (ECB) Guide**

The ECB’s supervisory guide outlines how banks should incorporate climate-related and environmental risks – with explicit reference to risks caused by biodiversity loss – within their business strategy, governance, risk management and disclosures<sup>10</sup>.

**Figure 1: Timeline for implementing biodiversity-related voluntary and obligatory disclosures**



## Voluntary Associations, Standards and Frameworks

As biodiversity becomes a more integral part of corporate sustainability commitments companies will increasingly expect updated and new resources to support their efforts (or activities). The available resources are much less extensive than for those surrounding climate change, although updates are forthcoming. The principal organizations working on anticipated biodiversity disclosures as well as strategy frameworks and guidelines are presented on this page.

### **Taskforce on Nature-related Financial Disclosures (TNFD): Nature-Related Risk & Opportunity Management and Disclosure Framework**

The TNFD is a market-led, science-based and government supported initiative to help companies assess, manage and report on their nature-related impacts, dependencies, risks and opportunities. The TNFD framework mirrors that of the Taskforce for Climate-related Financial Disclosures (TCFD) – with the objective of quantifying the financial exposure that natural capital loss presents to organizations. In September 2023, TNFD released the final version of its risk management and disclosure framework<sup>11</sup>.

### **Science Based Targets for Nature (SBTN)**

The SBTN builds on the momentum of the GHG emission-oriented Science Based Targets initiative (SBTi). It is a collaboration between leading global non-profits and mission driven organizations working together with the aim of urging the world's largest companies and cities to adopt science-based targets and take action on water, land, ocean, and biodiversity issues by 2025<sup>12</sup>.

### **GRI 304: Biodiversity 2016**

GRI 304 aims to represent internationally agreed best practices and align them with recent developments and the relevant authoritative intergovernmental instruments in the field of biodiversity. The update to the Standard includes location-specific information on impacts. Reporting is required on biodiversity impacts across the supply chain, changes to the state of biodiversity, direct drivers of biodiversity loss and impacts on people<sup>13</sup>.

### **Nature Action 100**

Nature Action 100 is a global investor engagement initiative which was officially formed during COP15. The initiative engages companies in key sectors that are deemed to be systemically important in reversing nature and biodiversity loss by 2030<sup>14</sup>.

### **Finance for Biodiversity Pledge**

This pledge was launched by a group of 26 financial institutions calling on global leaders to commit to protect and restore biodiversity through their financial activities and investments. Signatories commit to setting targets and reporting publicly on them by 2025. Any financial institution can sign the pledge by completing a registration form<sup>15</sup>.

### **One Planet Business for Biodiversity (OP2B)**

The OP2B is an international cross-sectorial, action-oriented business coalition on biodiversity with a specific focus on agriculture. It focuses on three pillars: the scaling up regenerative agriculture, the enhancement of cultivated biodiversity, and the protection of high-value ecosystems, by providing both the necessary tools and a forum for discussion.

### **Partnership for Biodiversity Accounting Financials (PBAF)**

The PBAF consists of international banks, asset managers and investors, as well as enabling financial institutions to assess and disclose the impact of loans and investments on biodiversity. According to PBAF, every bank, asset manager or pension fund can use that to measure and act in a targeted way towards reducing their negative impact and protecting and restoring biodiversity<sup>16</sup>.

### **Finance for Biodiversity Pledge**

This pledge was launched by a group of 26 financial institutions calling on global leaders to commit to protect and restore biodiversity through their financial activities and investments. More than 150 signatories are already committed to setting targets and reporting on them publicly by 2025. Any financial institution can sign the pledge by completing a registration form<sup>17</sup>.



## UN Decade on Ecosystem Restoration

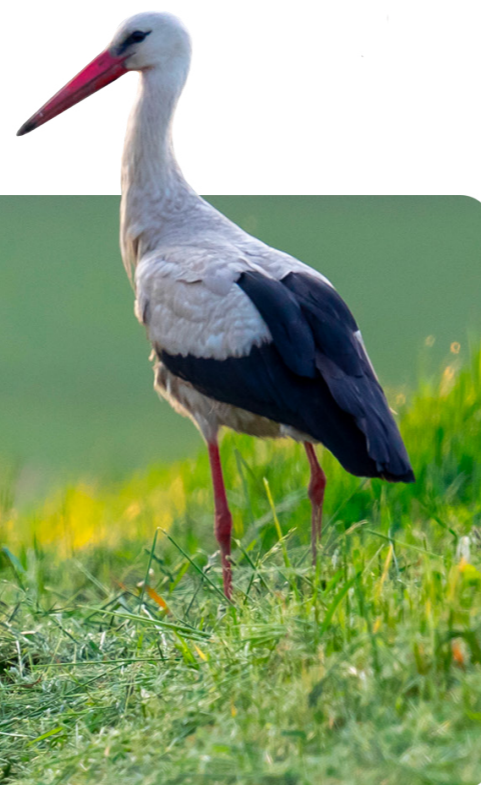
The UN agencies in charge of this initiative, the UN Environment Programme (UNEP) and the Food and Agricultural Organization (FAO) have stated that the better the condition of the Earth's ecosystems, the healthier the whole planet and its human inhabitants will be.

Improving the state of ecosystems means aiding the recovery of those that have been degraded or destroyed, and protecting those that are still relatively intact. It is central to achieving the Sustainable Development Goals, particularly those pertaining to combatting the climate crisis and halting the still continuing loss of biodiversity. More diverse and resilient ("healthier") ecosystems have a vastly greater potential to deliver many crucial goods and services, including water retention, soil quality improvement, natural disaster abatement and carbon sequestration and storage.

A direct Polish response to the proclamation of the UN Decade on Ecosystem Restoration is being launched by UNEP/GRID-Warsaw, of the Re-Generation Programme. It is a country-wide initiative in which we seek cooperation from the representatives of nature protection agencies – such as national and landscape parks and regional directorates for environmental protection – as well as local self-government authorities and non-governmental organizations, in order to identify ecosystems requiring our intervention to support their conservation and/or restoration.

However, it is the engagement of the business community, and their acknowledgment of the responsibility for the pressures inflicted upon the natural environment by business operations, that is key to the success of our ecosystem restoration activities. Business engagement needs address the most pressing environmental issues: not only the severe damage to the natural world already taking place as a result of human activity, but also halting further ecosystem degradation.

Companies participating in our Re:Generation Programme can become "adoption families" for natural sites truly worthy of attention and care. Their engagement can be reflected in their ESG reporting, in line with relevant EU directives (NFRD and its successor: CSRD) and based on the European Sustainability Reporting Standards (ESRS) in such areas as climate change (E1), water and marine resources (E3), or biodiversity and ecosystems (E4).



### Chapter I

## The Nature Emergency

### Introduction to Biodiversity and its Importance

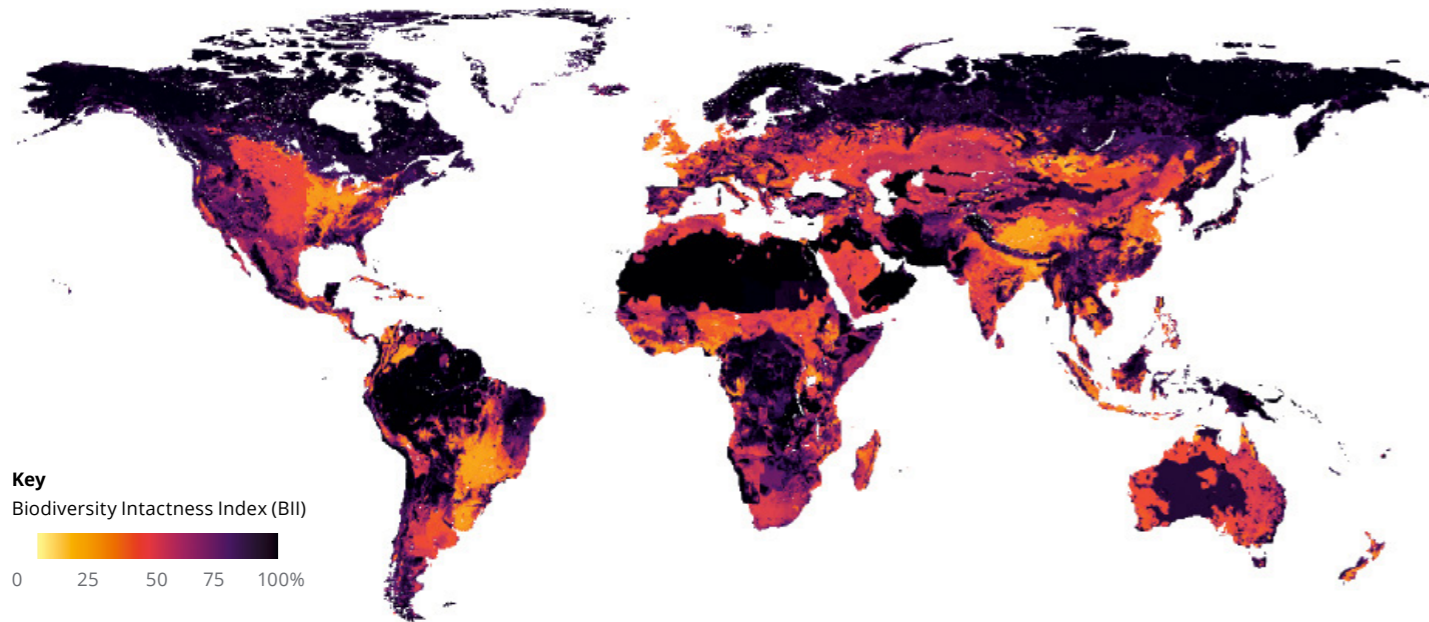
**Biodiversity is an inherent characteristic of nature and of healthy ecosystems,** forming an interconnected web of species which are all dependent on each other. It encompasses the diversity of life forms and their interactions across land, water, and air – spanning genes, populations, species, and ecosystems, including forests, wetlands, oceans, and freshwater. Biodiversity delivers indispensable services vital for humanity's well-being such as sustenance, medicines, energy, and materials. Additionally, ecosystems play a role in regulating climate, natural disasters, air quality, water resources, pollination, seed dispersion, pests, diseases, soil health, ocean acidity and habitat creation. Ecosystems also offer physical and emotional experiences, learning opportunities, inspiration and a sense of belonging.

**Nature is the source of everything which sustains human life.** Yet nature, and specifically biodiversity, has plunged into crisis, with an unprecedented loss of species, ranging plants, insects and mammals. This loss of species poses a risk to the balance of the entire natural system, and is effectively a risk to all of us.





Figure 2. The Biodiversity Intactness



Source: Living Planet Report 2022, WWF

### Biodiversity Intactness

To better understand past, current and future changes to nature, researchers at the London Natural History Museum have developed a Biodiversity Intactness Index (BII) that tracks the state of biodiversity across regions, countries, and habitats.

The Biodiversity Intactness Index (BII) summarizes the change in ecological communities in response to human activity. It presents an estimated percentage of the original number of species that remain and their abundance in any given area, despite human impacts. The BII is averaged across areas (countries, regions and globally) to give the remaining biodiversity across that area.<sup>18</sup>

**The map<sup>19</sup> above shows the dependence between human activities and biodiversity loss. The darkest areas indicate those with a BII of between 90-100%, where the area has “enough biodiversity to be a resilient and functioning ecosystem”. At the lightest end of the spectrum, the pale orange and yellow-shaded areas indicate a BII of less than 30%, which means that the biodiversity has been “depleted and the ecosystem could be at risk of collapse”.**

While large dark areas are still visible, indicating resilient and functioning ecosystems, two observations need to be highlighted. First, the map does not present marine ecosystems. Second, the Index only considers land use change and intensification, human population growth and landscape simplification. These, however, are not the only drivers of biodiversity loss.

According to the IPCC Sixth Assessment Report, which assesses 238 biodiversity hotspots, human activities have already affected all biodiversity hotspots, marine, freshwater and terrestrial. The latter are largely impacted by loss of habitat and are even more vulnerable to climate change than marine ecosystems. “All measures of biodiversity were found to be negatively impacted by projected climate change, namely, species abundance, diversity, area, physiology and fisheries catch potential<sup>20</sup>.”

That being said, if climate influences were taken into account on the map, it is highly likely that there would be far fewer dark areas, which would mean even less resilient and functioning ecosystems.

### Case Study: Sea otters and the kelp forest ecosystem

The sea otter, a charming marine mammal, plays a critical role in maintaining the health of kelp forest ecosystems. Sea otters feed on sea urchins, which are herbivores that graze on kelp forests<sup>21</sup>. In the absence of sea otters, unchecked sea urchin populations can devour entire kelp plants leading to “urchin barrens” (in essence, an ocean desert), causing a domino effect throughout the entire ecosystem and leading to its collapse<sup>22</sup>. Unfortunately, due to activity by hunters and fur traders in the 17th and 18th centuries, this species almost became extinct. After 200 years sea otters are now on the IUCN Red List, with a decreasing population trend caused by oil spills, pollution, disease and lack of quality habitat, including loss of kelp.

**The economic impact can be significant. A study shows that kelp forests contribute over US\$500bn each year to the global economy<sup>23</sup>.**

This ecosystem is important for commercial fisheries, as it provides a habitat for fish species that are commercially valuable, such as rockfish and herring. Additionally, kelp itself is harvested for various purposes, including food, cosmetics, and even biofuels. With its decline, these industries suffer losses, and coastal communities that rely on fishing and kelp-related activities experience economic setbacks<sup>24</sup>.



A sea otter with a freshly hunted urchin

Healthy kelp forest

Sea Otters

Urchin barren

## Nature & Economy

Approximately half of global GDP relies to a substantial extent on natural ecosystems, providing necessary resources and services<sup>25</sup>.

Both modern and traditional economic activities, as well as whole industries, depend on healthy ecosystems and the goods and services they provide. For instance, while agriculture productivity has always been tied to pollinators, fertile soil and water provided by natural ecosystems, modern technological appliances rely on rare earth minerals, essential for the production of advanced electronics or electric vehicles.



A report published by WWF states that under a “business as usual” (negative) scenario, **the cumulative losses from nature loss and ecosystem reductions may reach US\$10tn by 2050**<sup>26</sup>.

This is similar to the amount of the annual GDP of France, Germany and the United Kingdom combined<sup>27</sup>.

This is why biodiversity loss and the resulting ecosystem collapse were ranked fourth in a list of top ten threats which humanity will face in the next ten years, in the World Economic Forum’s 2023 Global Risks Report<sup>28</sup>.

## Nature & Society

### Humans have always been dependent on the proper functioning of nature.

Nowadays, besides bolstering economic activities, nature’s assets and services – including but not limited to clean air, abundant freshwater, fertile soils and a stable climate – constitute essential public goods that underpin societal functioning. Consequently, the decline of natural resources can heighten geopolitical and societal risks and potentially destabilize business environments<sup>29</sup>.

Humans enjoy direct material benefits from nature, provided by its assets and services, such as food, energy, medicines, genetic resources, as well as crucial materials which are essential for the proper well-being of entire societies and the maintenance of individual cultures.

For instance, **over 2 billion individuals depend on wood fuel as their primary source of energy and approximately 4 billion rely on natural remedies for healthcare, while roughly 70% of cancer drugs either originate from nature or are nature-inspired synthetics**<sup>30</sup>.

### Examples of key aspects of society dependent on nature



#### Health

The deterioration and depletion of natural ecosystems may significantly impact public health. To illustrate this, disruptions in ecosystems – such as the close correlation between deforestation and outbreaks of animal-borne illnesses like Ebola and the Zika virus – have triggered the emergence of infectious diseases. Businesses and their financial performance are at risk due to epidemic outbreaks disrupting their operations, supply chains, thus leading to absenteeism and decreasing workforce productivity<sup>31</sup>. Furthermore, the repercussions of nature’s decline extend to a worsening of air pollution – a significant health hazard that results in an annual toll of 3.4 to 8.9 million fatalities<sup>32</sup>.



#### Global peace

The degradation of nature can, in conjunction with climate change, contribute to water shortages and trigger other events. Such shortages have historically acted as a catalyst for disputes and conflicts. Droughts, which have a connection to climate change, are further intensified by trends of nature loss such as deforestation. Geopolitically, occurrences of drought are increasingly cited as pivotal factors in escalating violence, observed in regions such as sub-Saharan Africa. An example is the role of drought in the Syrian civil war<sup>33</sup>.



#### Gender equality

The effects of nature loss and climate change have a greater influence on women and children, primarily because women hold a crucial position in the management of biological resources such as fuel, food and water. As gender equality contributes to economic growth, the negative consequences of nature loss on women extend to their broader economic development, potentially limiting business opportunities and market growth<sup>34</sup>.

**Case Study: The link between deforestation and Ebola outbreaks**

Deforestation can impact human health in a very direct way because it drives wild animals out of their natural habitats and frequently closer to human populations. Such conditions foster a greater prevalence of zoonotic disease spillover to humans.

Research from EcoHealth Alliance has shown that **31% of outbreaks of new and emerging diseases such as the Nipah virus, Zika, and Ebola are linked to deforestation**<sup>35</sup>.

Research recently published in Nature's online journal [Scientific Reports](#) found an almost universal two-year link between deforestation and [Ebola outbreaks](#). Areas which experienced significant forest loss were highly likely to see an Ebola outbreak in humans two years later. Hence, the destruction of natural forest habitats presents an immediate risk to the people living in that area. Some Ebola outbreaks are contained, but some, such as the West African outbreak which lasted from 2013 to 2016 and killed more than 11,000 people, spread quickly across the region, even reaching the U.S. and Europe.



**Case Study: The resulting economic and business losses**

Outside of the tragic loss of lives, the havoc resulting from an Ebola outbreak represents significant economic and business losses. These in turn translate into harmful outcomes for families and job markets, leading to elevated joblessness, reduced earnings, decreased educational opportunities and diminished food consumption.

In Liberia, the number of employed individuals **dropped by 40% since the crisis began, with women being particularly affected**<sup>36</sup>.

However, the costs were not contained to the West African countries alone. The outbreak caused significant supply chain disruptions affecting other parts of the globe. For example, "mining, agricultural and energy companies tend to have large operations in the African nations, so they now are bearing the brunt of the Ebola pandemic. Another example is a Luxembourg-based steelmaker and mining firm ArcelorMittal S.A., which [said that contractors working on expanding an iron ore mining site in Liberia had declared force majeure and were moving workers out of the country, shutting the project down.](#)"<sup>37</sup>



Risks and opportunities:  
Two sides of the same coin

**Businesses operate in and depend on global and local economies, but they also need a healthy society to purchase their products or services. Both the economy and society depend on nature for their health. Some industries, such as the agriculture sector, rely directly on nature for their business continuity, while others have indirect dependencies through their supply chains.**

Although the unveiling ecosystem crisis is usually described in terms of threats for society and business, it may also be a chance to redesign the global economy into a nature-positive one, meaning a system in which economic activities and policies actively enhance and restore the natural environment, leading to net positive outcomes for biodiversity, ecosystems, planetary health and the global economy itself<sup>38</sup>.

A World Economic Forum report identifies **15 systemic transitions, with annual business opportunities worth US\$10tn that could create 395 million jobs by 2030.**

The report states that these systemic transitions together can pave the way towards people- and nature-positive developments which are resilient to future shocks<sup>39</sup>. Redesigning the global economy has the potential to not only avert a natural catastrophe and save trillions of dollars, but also create opportunities that financially outweigh the risks while also creating a safer world for current and future generations.



For most companies biodiversity is not just an issue related to the areas around production sites. Major impacts and dependencies occur in the supply chain, especially relating to cultivation and extraction of raw materials. Therefore an increased supply chain transparency and traceability, combining both biodiversity and sustainability issues, is the key.

Companies should involve other businesses along their supply chain and base their decisions on an evaluation of the main raw material risks and of biodiversity. Sector associations could play an important role here, providing support to their members, avoiding inefficiencies resulting from the fact that each company performs its own biodiversity assessment. Moreover, this support would reinforce SMEs which often do not have the resources for conducting own analysis.

After identifying the major risks it is time to act. Companies need to develop a plan to avoid or at least mitigate negative impacts. Due to their expertise, collaboration with NGOs may be beneficial and could streamline the identification and implementation of sound measures to improve biodiversity related efforts.

- Global Nature Fund

Chapter II

# Business Impact and Dependencies on Nature

Biodiversity loss is a threat for all businesses, the society as a whole and future generations.

Building on results from a numerous studies, there is no doubt that we are now observing an already enormous and accelerating loss of biodiversity, and we may soon feel its consequences,

the scale of which is beyond our comprehension. This alarming trend is sometimes called as the "sixth mass extinction"<sup>40</sup>.

More than half of global GDP is dependent on nature, its various ecosystem resources and services<sup>41</sup>. If they start to collapse, the impact on business and, consequently, society will be disastrous. To understand the scale and drivers of this risk, which is already looming over the horizon, and to properly plan a necessary response, we need to answer the two following questions:

How do various business sectors impact the Earth's ecosystems and biodiversity?

How much do they depend on nature's goods and services, and what does biodiversity loss mean to them?



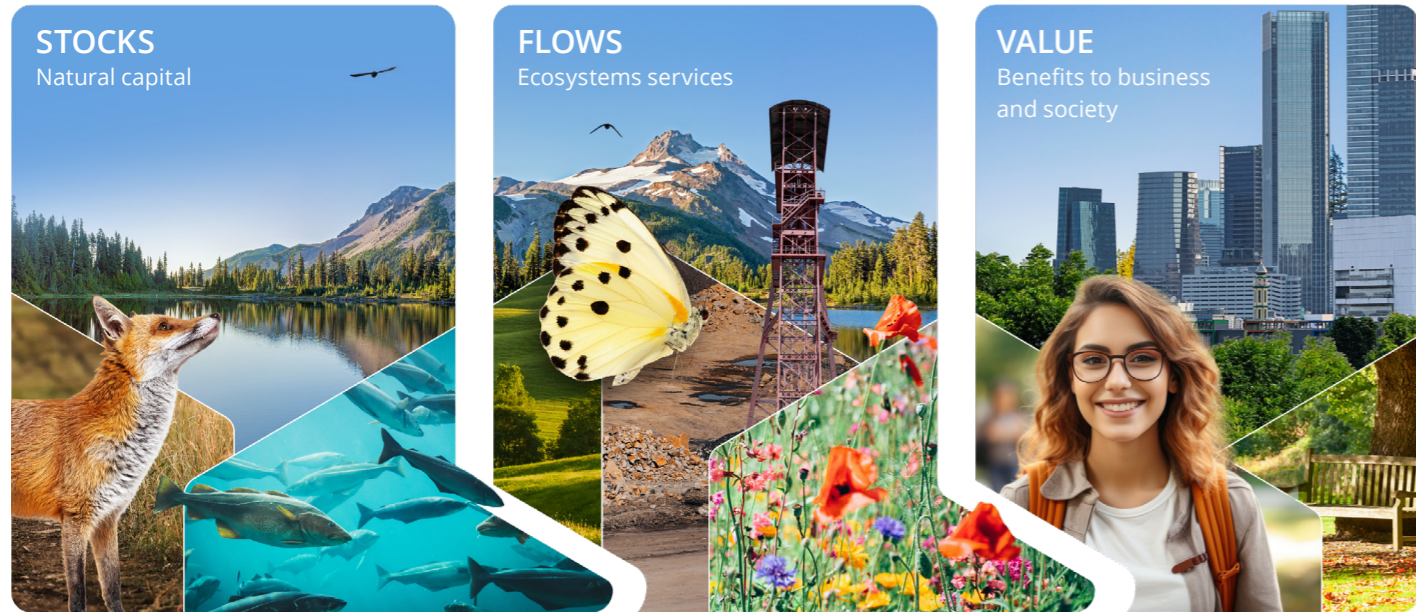
To understand this complex problem, we need to start with the idea of “natural capital”. “Natural capital is another term for the stock of renewable and non-renewable resources (e.g. plants, animals,

air, water, soils, minerals) that combine to yield a flow of benefits to people.”<sup>42</sup> It is worth emphasizing that this concept covers not only raw materials but also the role of different ecosystems and the variety

of services they provide, maintaining entire societies through provision of building blocks for human development, such as clean water, fertile soils and valuable, diverse genetic resources.

Another example of clear and constantly accelerating pressure on the Earth’s ecosystems is through rapidly expanding urban areas. Today, already more than half of the human population lives in cities and this number will likely rise to 70% by 2050<sup>43</sup>. As a result, urban areas already have a vast impact on the surrounding environment by transforming forests, wetlands and other areas into urban spaces. To keep up with this development, to light up the cities and fuel industry, we cut down trees, build transport networks through pristine areas and dig the ground to extract raw materials needed for energy production, burning them later and emitting harmful greenhouse gases.

**Figure 3. Global scale processes and biodiversity create the natural capital stocks that yield nature's contributions to people**



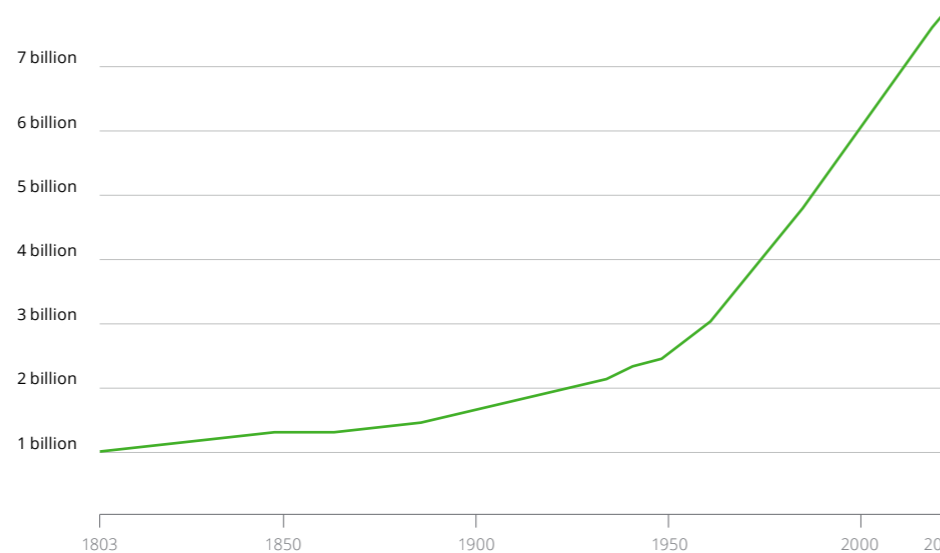
Source: Biodiversity Guidance to accompany the Natural Capital Protocol, 16 March 2020, Capital Coalition

People, societies, economies and finally, modern business and companies have been building for a long time on the abundance of natural resources and services provided by the Earth’s ecosystem.

**The one thing that has changed however, is the scale of this process.**

The human population has jumped from approximately one to eight billion people in just two centuries. This means that the demand for food has increased exponentially, even without assessing the differences in diet patterns between developed and developing countries.

**Chart 2: Human Population, 1803 to 2021**



Source: HYDE (2017); Gapminder (2022); UN (2022)

Developing potential scenarios for the future is not an exact science. However, several key conclusions from the OECD Outlook to 2060 may shed some light on the shape of the global economy over the next few decades.

Global gross domestic product (GDP) is projected to quadruple between 2011 and 2060, according to the central baseline scenario projected by the OECD ENV-Linkages model. **By 2060, global average per capita income is projected to reach the current OECD level (around USD 40 000).**

Production and consumption are shifting towards emerging and developing economies, which have on average a higher intensity of materials use.

Global materials use is projected to more than double **from 79 gigaton (one billion tons) in 2011 to 167 gigaton in 2060.** Non-metallic minerals, such as sand, gravel and limestone, represent more than half of total materials use.

But there are also positive tendencies which should be strongly supported:

- The materials intensity of the global economy is projected to decline more rapidly than in recent decades — at a rate of 1.3% per year on average — reflecting a relative decoupling: global materials use increases, but not as fast as GDP.
- Recycling is projected to become more competitive compared to the extraction of primary materials.
- The strong increase in demand for materials implies that both primary and secondary materials use increase at roughly the same speed.

Source: “Global Material Resources Outlook to 2060. Economic Drivers and Environmental Consequences”

## Combined impact of value chains on nature and biodiversity

Although comprising only 0.01% of the total biomass of life on Earth, the 8.1 billion human inhabitants have instigated, through the pursuit of economic growth and the related exploitation of nature, the loss of 82% of wild mammals and almost half of natural ecosystems<sup>44</sup>.

The current pace of species loss, surpassing historical norms by tens to hundreds of times, is on a swift upward trajectory. This profound impact of human activity on nature has heralded what biologists have begun to call the Anthropocene era, denoting an epoch where human actions will fundamentally shape the Earth's geology.

The consequences of our actions now exceed the resilience of natural ecosystems, pushing natural boundaries and amplifying the prospect of irreversible transformations in the environment and, therefore, our own human ecosystem.

The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) identifies five primary drivers that account for over 90% of the total decline in nature over the past five decades. These drivers emerge from a complex interplay of existing consumption habits, hidden value chain interconnections, population dynamics, trade patterns, technological innovations and governance structures, which IPBES classifies as enabling, or indirect, risks<sup>45</sup>.

Globally around ten million hectares of forests are lost each year.

### Drivers of biodiversity loss

#### SEA AND LAND USE CHANGE

Sea and land use change refers to alterations in the way humans utilize and modify coastal and terrestrial environments. These changes negatively impact biodiversity by disrupting natural habitats, leading to habitat loss, fragmentation, and pollution, ultimately threatening the survival of various species. Approximately 75% of the Earth's land surface has been significantly altered by human activities.

#### CLIMATE CHANGE

Since 1980, greenhouse gas emissions have doubled, raising average global temperatures by at least 0.7 degrees Celsius. There are indications that climate change-induced temperature increases may threaten as many as one in six species at the global level.

#### POLLUTION

Pollution, including from chemicals and waste, is a major driver of biodiversity and ecosystem change with especially devastating direct effects on freshwater and marine habitats. Plant and insect populations are dwindling as a result of the persistent usage of highly dangerous, non-selective insecticides. Marine plastic pollution has increased tenfold since 1980, affecting at least 267 animal species. Air and soil pollution is also on the rise.

#### DIRECT EXPLOITATION

Direct exploitation refers to the extraction and utilization of natural resources from ecosystems, often involving activities like logging or mining. These activities can directly harm biodiversity by destroying habitats and depleting populations of various species. Intensive agriculture causes an over-exploitation of soil and water resources.

#### INVASIVE SPECIES

Invasive species are non-native organisms that, when introduced to new ecosystems, can out-compete native species and disrupt ecological balances. Invasive species have played a role in almost 40% of extinction cases (where the cause is known) since the 1600s. Moreover, the economic damage resulting from introduced pests in Australia, Brazil, India, South Africa, the United Kingdom and the United States is projected to exceed US\$100bn annually<sup>46</sup>.



We need to rethink our approach to nature and biodiversity related risks. There are numerous hidden interdependencies in long supply chains affecting not one

but many economic sectors and finally leading to contagion risks in the financial system. The graphic presents simplified links between different sectors.

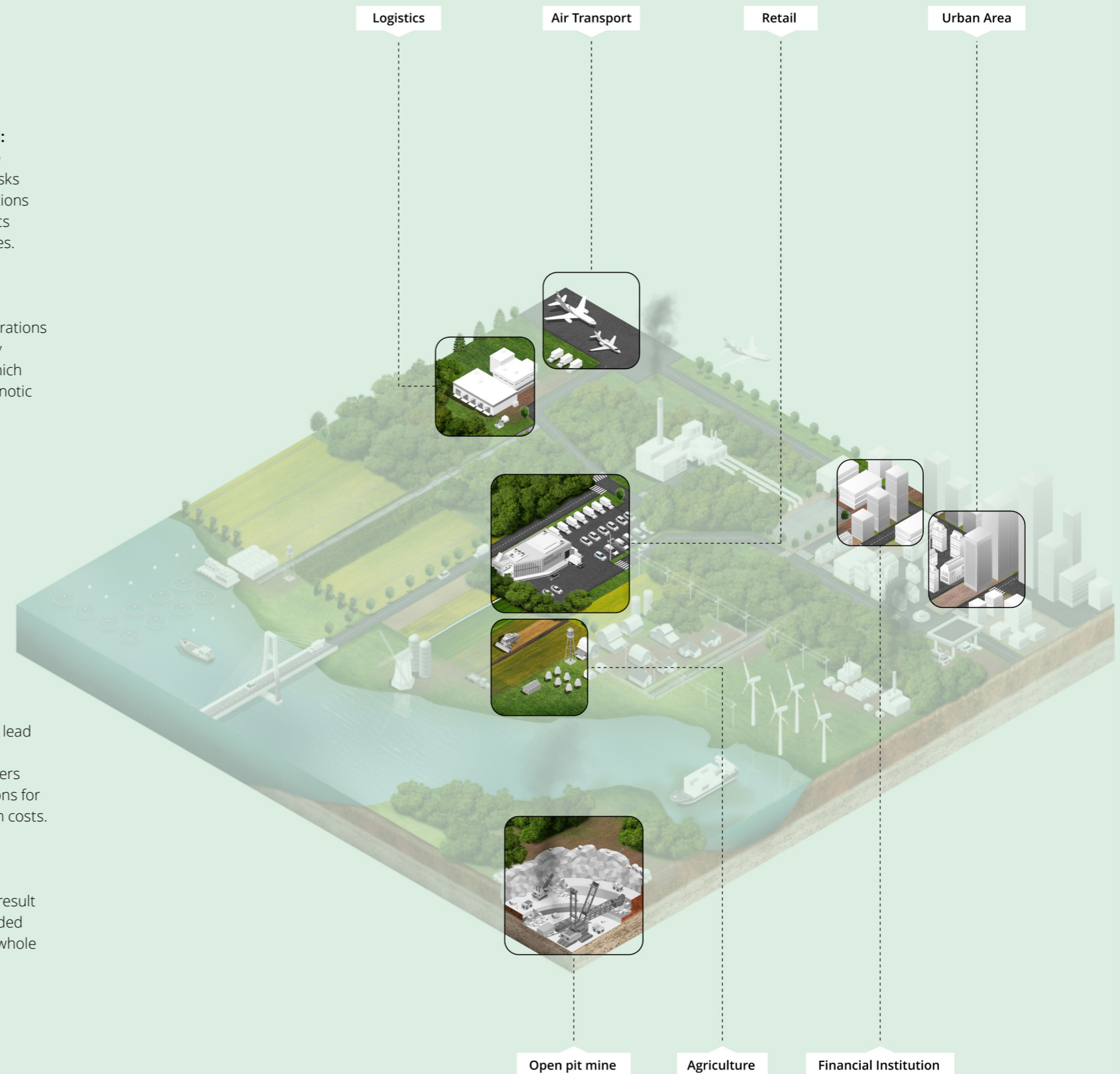
Sector	Nature & Biodiversity Related Risks
<b>Agriculture &amp; Fishing</b>	<ul style="list-style-type: none"> <li>Decreased productivity and smaller harvests, lower revenues and higher adaptation expenses due to ecosystems collapse</li> <li>Invasive species destroying crops</li> <li>Reputational risks due to harmful production processes</li> <li>Demand risks due to companies adopting high biodiversity standards</li> </ul>
<b>Air Transport &amp; Tourism</b>	<ul style="list-style-type: none"> <li>Loss of valuable tourist areas, higher costs of adaptation and mitigation</li> <li>New regulations</li> </ul>
<b>Warehouses (Logistics)</b>	<ul style="list-style-type: none"> <li>Lower turnover due to ecosystems disruption resulting in a supply chain challenges</li> <li>New regulations for large scale warehouses</li> </ul>
<b>Financial Institutions</b>	<ul style="list-style-type: none"> <li>Reputational risks due to financing harmful investments</li> <li>Decrease in loan repayments due to spillover effect</li> <li>New regulations</li> </ul>
<b>Urban Areas</b>	<ul style="list-style-type: none"> <li>Zoonotic diseases/epidemics impacting workforce and supply chains</li> <li>Higher food prices due to disruptions in supply chains</li> </ul>
<b>Energy</b>	<ul style="list-style-type: none"> <li>New regulations</li> <li>Reputational risks</li> <li>New technologies responding to market preferences and regulations resulting in loss of competitive advantage</li> </ul>
<b>Mining</b>	<ul style="list-style-type: none"> <li>New regulations</li> </ul>
<b>Retail</b>	<ul style="list-style-type: none"> <li>Changes in purchasing patterns resulting in lower revenues and higher costs due to supply chains disruptions</li> </ul>

**Agriculture + Logistics + Retail:**  
Ecosystem collapse and invasive species may trigger continuity risks in the agriculture sector. Disruptions in food supply may affect logistics and retail, leading to higher prices.

**Open pit mine + Urban Area:**  
The growing scale of mining operations in i.a. Key Biodiversity Areas may lead to both: new regulations which may force closures and new zoonotic diseases for the workforce.

**Retail + Agriculture:**  
Growing market awareness may lead to changes in the retail sector and in agriculture, forcing suppliers to make changes, with implications for higher adaptation and mitigation costs.

**Financial sector:**  
All of the above challenges may result in lower loan repayments, stranded assets and spillover risks in the whole financial sector.



## The impact of business on nature

**Numerous economic sectors as well as countless business and industrial activities contribute to biodiversity loss in multiple ways.** Their influences interlink with each another due to global trade routes and interdependencies among companies, services and key supplies. Their combined vast negative pressure on biodiversity may materialize as a significant business risk for the same sectors, disrupting or even undermining business continuity. Recent studies, shining a new light on the reasons for biodiversity loss, recognize the following business sectors as the most impactful<sup>47,48,49</sup>.

1. Food Production

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2. Oil, Gas & Consumable Fuels

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3. Chemicals

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4. Consumer Staples Distribution & Retail, Trading Companies & Distributors

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5. Metals & Mining

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6. Pharmaceuticals & Health Care Providers & Services

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7. Automobiles & Transportation

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8. Electric Utilities

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9. Built Environment & Related Infrastructure

"Understanding the true value of nature to business, through both an economic and cultural lens, will have a transformational effect on our relationship with nature. This is a shift we dearly need to help slow the incredible decline in biodiversity globally and to limit the flow-on impacts this will have for business and society."

Tayanah O'Donnell, Partner Deloitte Australia

While these industries potentially have the largest negative impact on nature and biodiversity, the pressure from the global economy does not end here. All business and industrial activities have some impact on whole ecosystems and particular species. An important piece of this puzzle is the role of the financial sector, which in the absence of applicable policies may finance activities which are harmful to the environment. That is why recently, in response to public pressure and new regulations, an increasing number of financial institutions have launched initiatives to investigate the impact, dependencies and related business risks that arise in their portfolios.



### Food Production

Intensive conventional agriculture is responsible for all five major drivers of biodiversity loss. With the rapid increase in human population, there is a growing demand for food, leading to intensive farming practices and more land being used for crops and the needs of livestock.

As demand rises, farmers directly exploit the land and sea through over-harvesting. In order to boost yields when the land capacity is not sufficient to meet the growing demand, they focus on extensive use of pesticides and nutrients and apply monoculture planting, both of which have substantial negative consequences for biodiversity, reducing soil and water quality and consequently disrupting entire ecosystems. This leads on to a decline in yields per square metre. To make matters worse, over-fishing has already caused a vast decline in marine species populations.

"The area given over to agriculture now accounts for around half of the planet's habitable land."<sup>50</sup>

Agriculture significantly contributes to climate change, which is one of the most important drivers of biodiversity loss, with approximately **30% of anthropogenic emissions** linked to this sector<sup>51</sup>.



### Oil, Gas & Consumable Fuels

The impact of the sector is to a large extent the result of its greenhouse gas (GHG) emissions which accelerate climate change.

The direct emissions from oil and gas activities account for **nearly 15% of total energy-related GHG emissions**, with further use of oil and gas resulting in a further **40% of emissions**<sup>52</sup>.

Apart from emissions themselves, this sector causes considerable pollution and destruction of critical habitats through deforestation when building large scale operational sites and due to long distance gas pipes.



### Chemicals

Compared with the visible impact of other sectors on biodiversity loss, for example through deforestation or over-fishing, the effects of chemical pollution are much more subtle and probably only now are starting to appear after a long time of extensive chemical use in industry and across the global economy. Studies suggest that chemical pollution may already pose a threat to 20% of species listed on the IUCN Red List of Threatened Species and in some cases it is the most negative factor<sup>53</sup>.

In Europe – identified as a hotspot for pollution-induced loss of biodiversity – as much as **75% of the produced chemicals are hazardous to people and/or planet**<sup>54</sup>.

These chemicals, when untreated, penetrate soil and water to be consumed later by animals and then advance up the food chain to humans.

Apart from direct pollution and toxicity, chemicals could imply different and as yet unknown negative effects, for example, for example loss of genetic diversity<sup>55</sup>.





**4**  
Consumer Staples  
Distribution & Retail, Trading  
Companies & Distributors

Distributors and retailers act as a link between economic sectors, and react to booming global consumption by supplying increasing quantities of goods and services to society.

Their impact on ecosystems and biodiversity is usually indirect, through accelerating production capacity, generating waste and pollution from transport.



**5**  
Metals  
& Mining

Similarly to the oil and gas sector, mining activities cause pollution, planet-warming carbon emissions, and the destruction of critical habitats. Mining also has significant impact on the quality and supply of fresh water and the quality of soil in nearby locations.

According to research, there are as many as **1,200 mines** located within so-called "Key Biodiversity Areas"<sup>56</sup>.



**6**  
Pharmaceuticals & Health  
Care Providers & Services

The pharmaceutical and health care service industries impact biodiversity through the pollution they generate when drugs enter the ecosystem, usually through our bodies<sup>57</sup> or when improperly contained in landfills. In some instances, waste from the drug manufacturing process enters ecosystems without proper and safe treatment. While it is much less visible than other forms of pollution, it significantly threatens organisms living in rivers, lakes and soil with an impact similar to other chemicals.



**7**  
Automobiles  
& Transportation

The most commonly-understood impact of the transportation sector on biodiversity is the generation of noise and air pollution, e.g. dust particles, exhaust emissions. This applies both to road and air transport. However there are also other negative impacts:

**Road transport**

With the growing use of electric vehicles, the demand for batteries is sky-rocketing. This requires, among other minerals, the supply of nickel, which unfortunately is found in places with rich ecosystems, such as Indonesia, the Philippines, the island of New Caledonia and parts of Australia. Extraction of this rare mineral may significantly disrupt local ecosystems.

**Air transport**

With the rapid expansion of global mobility in the past 50 years, planes may become a significant driver of invasive species migration. Additionally, increased passenger numbers require more airports as well as the expansion of existing ones. This may significantly affect rich and biodiverse areas as these transportation hubs are usually built outside city centers, further increasing land use change.

**Sea transport**

Besides producing underwater noise and being a cause of pollution, ships may affect biodiversity in a way similar to planes, carrying invasive species to other parts of the world.



**8**  
Electric  
Utilities

Electricity generation is currently in the middle of transformation to meet the ambitions laid out in the Paris Agreement. For this transformation to happen, there is a need for a vast supply of critical minerals, such as nickel, cobalt, copper and manganese, to name just a few. Unfortunately, these minerals are also found in places with rich biodiversity.

Out of **1,200 mines** within Key Biodiversity Areas, **29%** are supplying critical minerals for energy transition<sup>58</sup>.



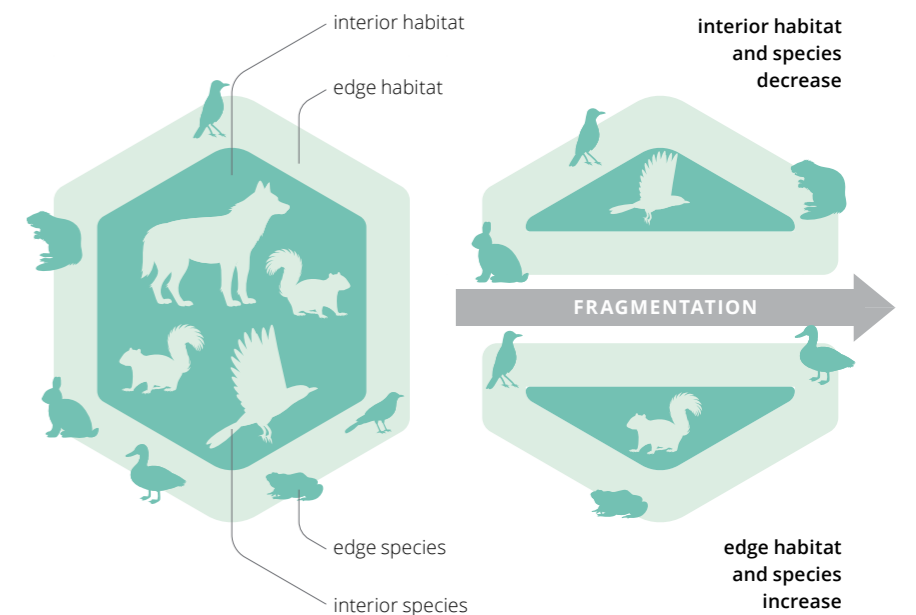
**9**  
Built Environment  
& Related Infrastructure

All economic sectors, as well as society as a whole, need infrastructure and buildings. Therefore, given the accelerated rate of urbanization, the built environment has an enormous impact on surrounding ecosystems.

A tremendous cross-sectoral impact, induced by different production practices, consumption patterns and lack of waste management practices is the microplastics pollution.

These particles contaminate soil, aquatic ecosystems, are consumed by animals, found in most distant ecosystems (such as the Arctic) and finally find their way into the human blood.

Figure 4. Habitat fragmentation



Source: <https://statics.teams.cdn.office.net/evergreen-assets/safelinks/1/atp-safelinks.html>

## Complex urban infrastructure

While the concept of assessing the potential impact of new infrastructure and real estate projects on the environment is nothing new for real estate companies undertaking a new project, the cumulative impact of buildings and related infrastructure is much more complex.

Apart from residential, business, industrial and storage buildings, this covers all elements of urban infrastructure necessary to maintain transportation, energy, water supply, sewage treatment and solid waste disposal.

The accelerating rate of urban development is happening at a cost of loss in natural habitats, such as forests and wetlands. Roads, bridges, railroads, electric transmission lines and other constructions often cut through natural areas, leading to fragmentation of habitats.

**1.2 mkm<sup>2</sup>**

expansion of urban areas by 2030

**25 mkm**

need of paved roads needed by 2050

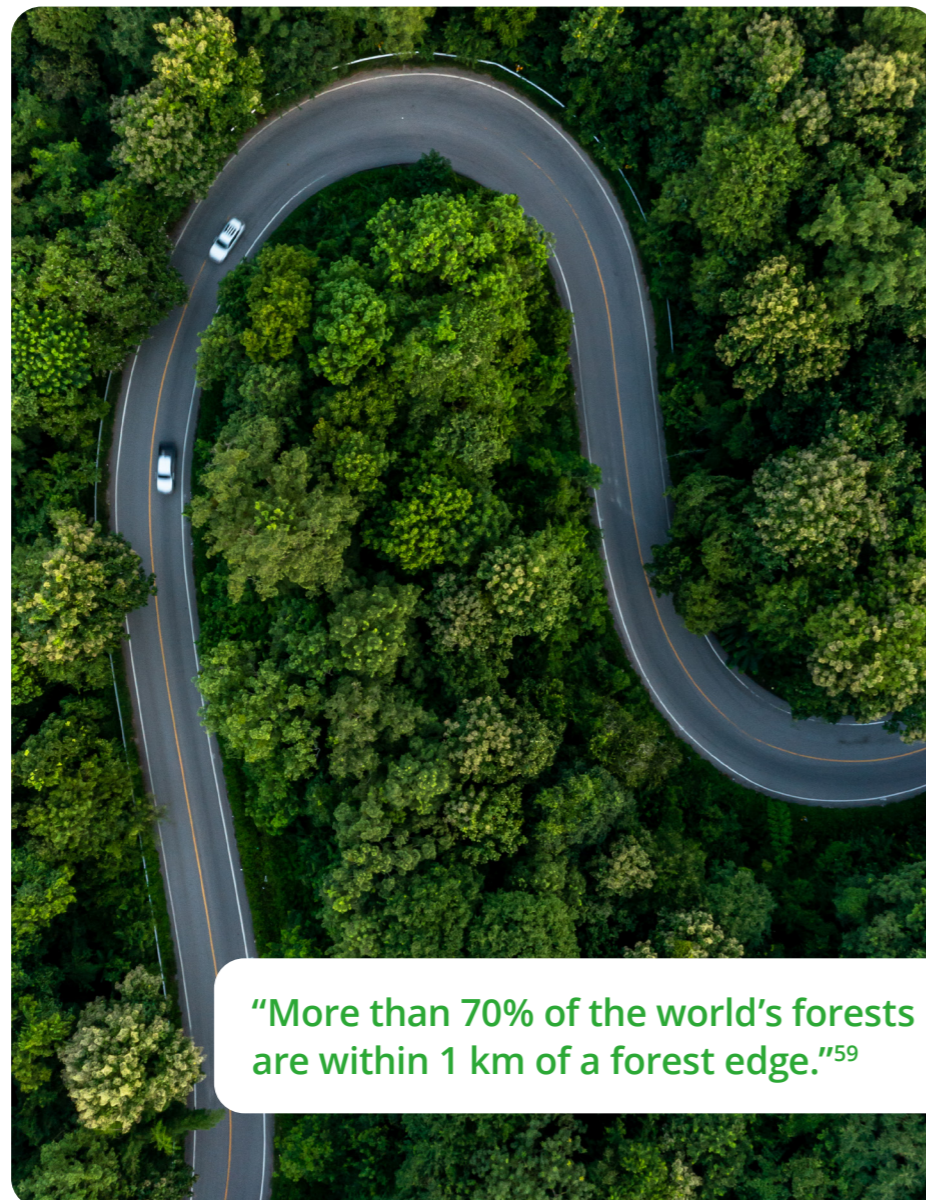
**335,000 km**

need of railway tracks needed by 2050<sup>60</sup>

## Interconnection of biodiversity, nature-related dependencies, and business vulnerabilities

**According to the World Economic Forum, there are six the most dependent on goods and services provided by nature business sectors, with more than half of the value added related with their supply chains.** Among these six sectors are: chemicals and materials, aviation, travel and tourism, real estate, mining and metals, supply chain and transport, retail and consumer goods and lifestyle<sup>61</sup>.

In some geographies and industries, businesses have already experienced disruption from biodiversity loss. In other regions and industries, the pressure is yet to be felt. The risks, however, may soon materialize. According to TNFD, there are three major groups of nature-related threats: Physical, Transition and Systemic risks:<sup>62</sup>



**“More than 70% of the world’s forests are within 1 km of a forest edge.”<sup>59</sup>**

### Examples of nature-related risks for business

	Category	Description	Examples of sectors where risk may materialize
Physical risks	Acute	Loss of raw material, disruption of operating environment, loss of resilience, damage from catastrophic crop loss caused by loss of pollination services, or disruption from zoonotic infectious diseases caused by land use change.	Direct impact – agriculture, forestry, e.g. due to overexploitation, extensive use of chemicals. Indirect impact – Food production, transport, shipping, retail – e.g. due to disruptions among producing companies or decrease in workforce efficiency due to new epidemics.
	Chronic	Loss of raw material, disruption of operating environment, loss of resilience, damage from catastrophic crop loss caused by loss of pollination services, or disruption from zoonotic infectious diseases caused by land-use change.	Agriculture, food production, forestry, real estate, tourism, transport (indirectly), pharmaceuticals and healthcare providers.
Transition risks	Policy and legal	Changes in the legal operational context due to new (or enforcement of existing) legislation, regulations and policies.	All sectors, with focus on the ones with greatest impact, as they may be targeted by new regulations sooner than other industries.
	Market	Changing dynamics in overall markets, including changes in consumer preferences, which arise as a result of changing physical, regulatory, technological and reputational conditions and stakeholder dynamics.	Agriculture and food production, tourism, fast moving consumer goods, transport (indirectly), retail (indirectly).
	Technology	Substitution of products or services with a lower / improved impact on nature or reduced dependency on nature.	Agriculture, chemicals, mining, energy, pharmaceuticals – e.g. due to the risk of emerging new technologies which may enable business continuity in the case of new regulations.
	Reputation	Changes in perception of a company's actual or perceived impact, including at the local, economic and societal levels, may result from direct company impacts, industry impacts, and / or impacts of upstream / downstream operations.	All sectors, with specific focus on the most impactful ones, as they may be targeted by NGOs and society in general due to their negative impact. This also applies as well to specific large companies and leaders in each sector, even if they are not the most harmful ones.
Systemic risks	Ecosystem collapse	Risk that a critical natural system no longer functions, e.g. tipping points are reached and the natural ecosystem collapses resulting in wholesale geographic or sectoral losses (summing of physical risks).	This risk category applies first and foremost to the financial sector, which may observe an increased risk in the number of portfolio companies. Among other affected industries are retail, transport and shipping sectors.
	Aggregated	Linked to fundamental impacts of nature loss to levels of physical and transition risks across one or more sectors in a portfolio (financial or corporate).	
	Contagion	Originates in the financial or real economy as a risk that financial difficulties at one or more financial institution spill over to the financial system as a whole.	

Due to the fact that the range and scale of potential impacts from nature-related risks on businesses is so diverse, it is crucial for companies to start assessing the interdependencies and potential risks resulting from their activities or from observed global biodiversity loss which may indirectly impact their value chains. A useful framework for identification and assessment of nature-related risks was recently published by the Taskforce on Nature-related Financial Disclosures (TNFD). More information on the TNFD recommendations and approach to nature-related risks assessment is in Annex I.

**It's not only about the risk!**

It is for our common good that businesses acknowledge the impact they have on nature and biodiversity, implement the TNFD approach and respond to emerging threats with nature-positive initiatives, transitioning from negative to positive outcomes from their activities.

If successful, these initiatives will not only mitigate the risk for businesses and enable adaptation of the sectors most impacting biodiversity, but more importantly result in thriving ecosystems without exploiting the natural capital which is indispensable for the future well-being of humanity.

Companies which decide to act as pioneers are likely to **win public attention, attract new consumers and obtain financing for further development of nature-positive initiatives** from responsible investors, and will be better perceived by financial institutions, which increasingly link ESG aspects with financing decisions.

Despite their limitations, quantitative ESG ratings will likely remain an important method used by the financial sector for selecting companies which are advancing their environmental, social and governance practices, including a focus on nature and biodiversity.



## Private sector's role in tackling biodiversity loss

**The private sector has an important contribution to make in conserving and restoring biodiversity and promoting sustainable development, thereby contributing for future generations.**

From a business perspective, investing in natural and social capital has never been so crucial. There will be no thriving businesses without functioning ecosystems and a healthy society, and short-term exploitative land use and strategies based solely on profit are no longer socially acceptable. Increasingly, consumers demand responsible business practices, accountability and transparency<sup>63</sup>. This may present an opportunity for the private sector to play a crucial role in tackling biodiversity loss and promoting conservation efforts. Business brings complementary strengths and skills, such as efficiency, effectiveness, risk-taking, innovation, flexibility and sustainable financing.

Private sector companies often have the resources and expertise to develop innovative solutions for biodiversity conservation. Their investments can directly fund conservation initiatives, including projects related to habitat protection, wildlife preservation, and ecosystem restoration. Companies can also focus on research and development to find ways to operating more efficiently and with less impact on ecosystems. Moreover, the private sector can create economic incentives for biodiversity conservation and collaborate with government agencies and NGOs. This may take shape of investing in ecotourism where natural habitats are preserved to attract tourists, or by developing markets for sustainably sourced products.

The private sector can also become a standard-setter for biodiversity action. Many industries have already developed certifications and standards programs that promote sustainable practices across

value chains. Examples of this include certifications for sustainable forestry<sup>64</sup>, responsible fishing<sup>65</sup> and fair trade<sup>66</sup>.

Through marketing, corporate social responsibility initiatives, as well as partnerships with educational institutions, companies can help inform the public about the importance of biodiversity and inspire behavioral change<sup>67</sup>. However, in order to achieve behavioral change, the product portfolio need to change first and the private sector needs to offer products produced in a biodiversity responsible way. This is often not yet the case, therefore, consumers have still little possibilities to change towards alternative products. While the private sector can impact biodiversity conservation positively, it

should be done in a transparent and accountable manner. Greenwashing should be avoided, and efforts should contribute genuinely to conservation goals rather than just serve as a public relations tactic.

In a manner similar to the way net-zero emissions targets have gained prominence in corporate strategies, the concept of setting a "nature-positive" target is expected to become a fundamental benchmark for businesses<sup>68</sup>. This means that companies will likely be expected to address and incorporate nature-positive goals into their operations and decision-making processes. A "nature-positive" target refers to a commitment by businesses to contribute positively to the health and conservation of natural ecosystem<sup>69</sup>.

"One of the challenges in the renewable energy sector is the potential disruption of natural habitats during the construction and operation of renewable energy infrastructure such as wind farms or solar installations. Respect Energy's investments, both in Poland and abroad, are carried out with respect for biodiversity. Projects are preceded by thorough environmental impact assessments and are conducted under environmental supervision. Examples include investments such as Zwartowo - the largest PV farm in Central and Eastern Europe and the wind farms in Jędrzychowice and Zgorzelec."

Tomasz Zadroga, Vice Chairman of the Management Board of Respect Energy Capital Group.

## Public sector's role in tackling biodiversity loss

**The public sector also has an important role to play in the preservation of biodiversity. Its involvement is essential due to its regulatory powers, policy-making capabilities, funding allocation and incentives, through enhancing companies' participation in biodiversity action, and enforcing environmental laws.**

Governments have the authority to create laws and regulations to protect biodiversity and natural ecosystems. Primarily, they can establish protected areas, set limits on resource extraction and enforce standards for pollution and habitat preservation<sup>70</sup>. Government agencies are responsible for land use planning and zoning regulations. By designating specific areas for conservation and others for development, governments can manage urban sprawl, protect critical habitats, and maintain biodiversity-rich landscapes. They also have a regulatory power which they could use to enforce companies to conduct environmental impact assessments for development projects. These assessments help identify potential negative effects on biodiversity and ecosystems, and appropriate measures can be taken to mitigate these impacts<sup>71</sup>.

Public sector entities can lead ecosystem restoration projects to recover degraded landscapes and promote biodiversity recovery. This can be realized by, inter alia, government funding and support for research and innovation, leading to the development of new technologies, strategies, and approaches for conservation.

Furthermore, governments can create legal frameworks that incentivize biodiversity conservation. This might include offering tax incentives or grants to businesses and individuals engaged in conservation activities, as well as reducing subventions

and other incentives which are harmful for biodiversity. Governments play a key role in influencing international negotiations and agreements, thus facilitating global cooperation in addressing biodiversity loss and habitat protection. The public sector also plays an essential role in financing biodiversity action. Integrating biodiversity targets into long-term strategic planning is an important means of ensuring that biodiversity is adequately financed and supported by government fiscal and regulatory policy<sup>72</sup>. As the biggest buyer of goods and services, public administrations should also include biodiversity criteria into Green Public Procurement requirements. However, it is often the case that capital allocations can be changed in favor of nature only if they present a response to a country's development goals, which often focus on economic development<sup>73</sup>.

One of the most important roles of the public sector is data collection and monitoring progress. Governments can monitor compliance with regulations, issue fines for illegal activities and take legal action against those who violate conservation laws<sup>73</sup>. Public sector authorities should also inform and educate all stakeholders, in particular the general public, about the need to maintain biodiversity. Public authorities are encouraged to include biodiversity in their communications with stakeholders. Public sector entities can engage local communities in conservation activities. Involving communities in decision-making and management of natural resources fosters a sense of ownership and responsibility<sup>74</sup>.

The public sector's involvement in tackling biodiversity loss is indispensable due to its authority, resources and ability to shape policies that guide conservation efforts. It is important to note that individuals can play their part by creating the institutions and electing leaders who can help to safeguard biodiversity.

**Effective collaboration between governments, NGOs, local communities, and the private sector is key to addressing biodiversity loss comprehensively and sustainably.**

### Chapter III

## The Business Case for Nature Survey

The most recent Living Planet Report states that the average population size of monitored animal species in the world decreased by 70% in the years 1970-2022, primarily due to habitat destruction, but also to climate change, wildlife trafficking and other human activities. Awareness of biodiversity loss is growing – that's groundbreaking: we have a biodiversity agreement from Montreal, that many countries signed up to, but we we feel that now is the time to challenge them to make sure that they deliver on their commitments.

Now is the time to mobilize all businesses to transform their current practices and become true partners in conservation.

Only by treating this issue as a priority can we protect life on our planet. It is crucial to set long-term goals and measure progress. Businesses should look for synergies and conduct regular biodiversity risk and opportunity assessments.

Businesses need to develop their knowledge, feel pressure from their stakeholders, and receive facilities that make it easier and more profitable for them to carry out activities to protect and restore biodiversity. The role of financial institutions will be significant in this transformation, as they can, on the one hand, enforce and, on the other hand, help companies to address the biodiversity crisis. The annual value of ecosystem services globally is estimated at USD 150 billion. The costs of its loss are and will be borne by everyone: the governments, citizens, but above all, businesses.

We can no longer destroy nature on credit. Need to find new ways - such as regenerative agriculture, not wasting food, moving away from fossil fuels, the circular economy, gray water and more... No more greenwashing: companies must understand what activities are effective and efficient in protecting biodiversity.

Businesses need to know that there is no future without nature and that introducing activities to protect biodiversity can bring profits NOW.

They should understand that there is no other way.

**Miroslaw Proppé**  
CEO WWF Poland



## About the survey

This is the first edition of a survey conducted by Deloitte, giving a voice to ESG Directors and Sustainability Specialists from across the world, with the main focus on Europe. The data for this edition was collected between August and October 2023, with responses obtained from 91 companies' representatives in 19 countries and across a wide range of industries. The survey questions were divided into 6 main categories: impact, potential engagements and initiatives, opportunities, obstacles, metrics and targets, governance and reporting.

### Sample composition by industry

Industry	%
Automotive	1
Energy & Mining	7
Financial sector	15
Food and beverage	6
Healthcare	1
Materials & Chemicals	12
NGO	2
Other	9
Real Estate	9
Retail	7
Transport, Tourism & Logistics	7

### Sample composition by business details

Size of the company	%
<100	9
>1 000	42
100-500	19
500-1 000	6

Ownership type	%
Public	11
Private	40
Listed	14
Family-owned	9
State-owned	4
Subsidiary	9

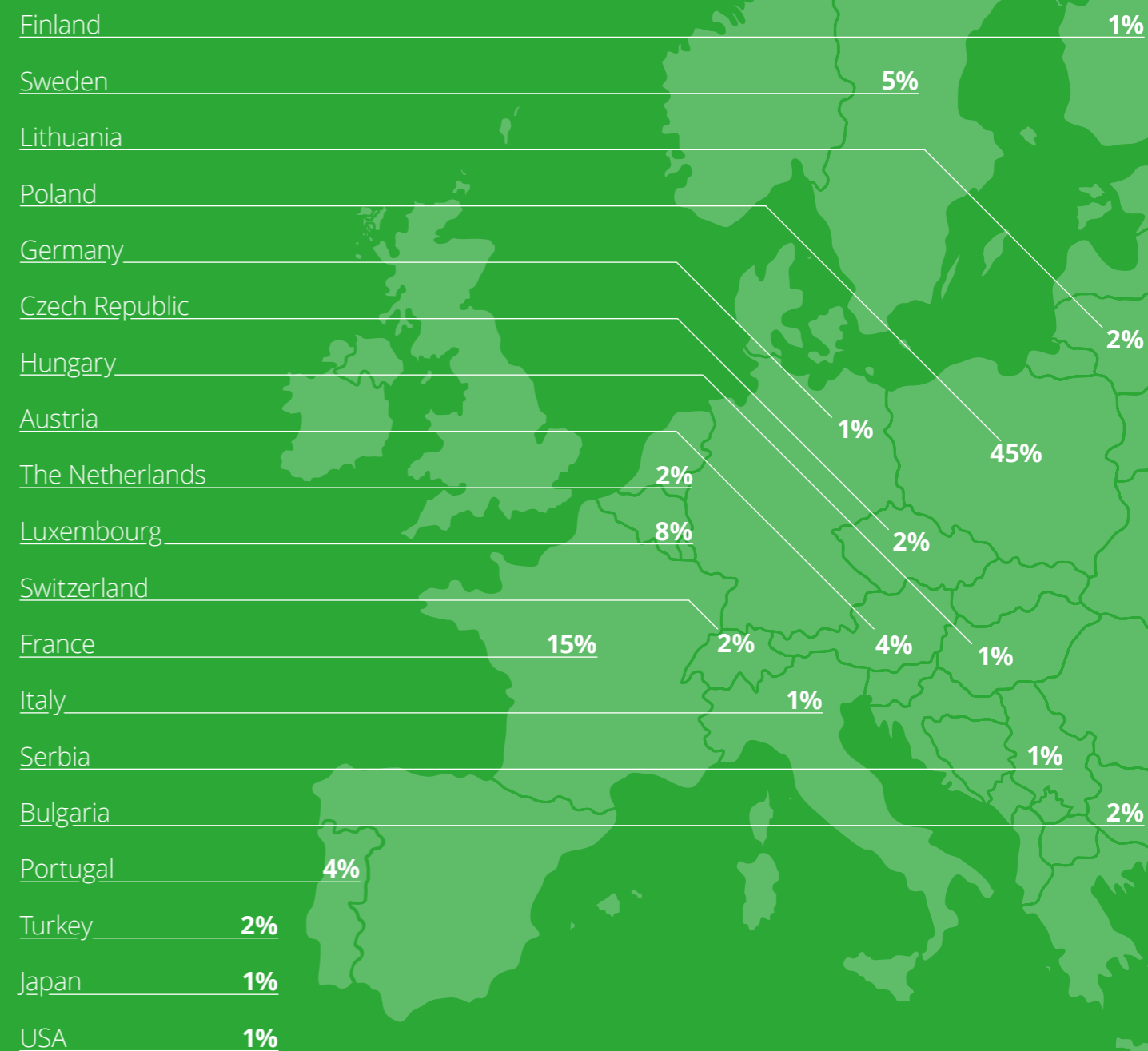
### Restrictions

All percentage values presented in tables and graphs have been rounded in accordance with the rules for rounding numbers to integer. The presented data may encompass a margin of error as companies more mature in terms of biodiversity activities may be more willing to take part in market research and thus promote their activities.

### Acknowledgements

We would like to thank all participating ESG Directors and Sustainability Specialists for their support in completing this survey. We would also like to thank the Deloitte Teams in each of the countries that collected the data from local companies, as well as for their useful comments and valuable input on the survey results.

### Sample composition by geographic location



## Executive summary of the market research

Concern slowly shifting towards nature

Despite the rapid loss of biodiversity and ongoing climate change crisis, companies are presenting a rather optimistic view:

**75%**

of respondents claim that “With immediate action, we can limit the worst impacts of biodiversity loss.”

On the other hand,

**1 in 5 companies**

think that “We have already hit the point of no return and it is too late to repair the damage caused by biodiversity loss.”

Moreover,

**86% of companies**

expect pressure on the issue of biodiversity will soon increase.



“Biodiversity is among the most critical aspects, and its depletion directly affects our lives. However, it is simultaneously one of the most perplexing topics in business, largely due to a lack of skills in addressing it within the business reality.”

ESG manager from European Retail (Apparel) company.



When attempting to summarize the findings of the survey in one phrase, it might be said that the lack of discussion on the topic of biodiversity results from a knowledge gap. This gap hampers informed decision-making and limits the integration of biodiversity-related considerations into strategic planning. Biodiversity initiatives, when present, are most prominent in the food and beverage, energy and financial sectors. This can be attributed to growing concerns over biodiversity loss and the potential impact it may have, also as a spillover effect on other sectors, and also due to regulations requiring environmental impact assessments for construction projects. While these initiatives are commendable, their scope remains limited, often failing to encompass a broader range of industries and services affected by biodiversity loss.

Furthermore, in cases where companies embark on biodiversity initiatives, a common challenge is a lack of coordination and integration within their overarching business strategies. Efforts are frequently isolated and fail to leverage the potential synergies that could emerge from a holistic approach to sustainability and biodiversity preservation. In this context, ESG and sustainability managers have an important role in driving corporate responsibility efforts. However, the increasing demands placed on these managers, largely driven by regulatory requirements, can limit their capacity to fulfil sufficiently their biodiversity-related responsibilities.

While the corporate world has made significant strides in embracing environmental sustainability, biodiversity preservation remains a challenge. However, we assume that companies' rising awareness will entail increasing regulatory focus and obligatory initiatives the lack of which has so far hindered the incorporation .

### The key conclusions:

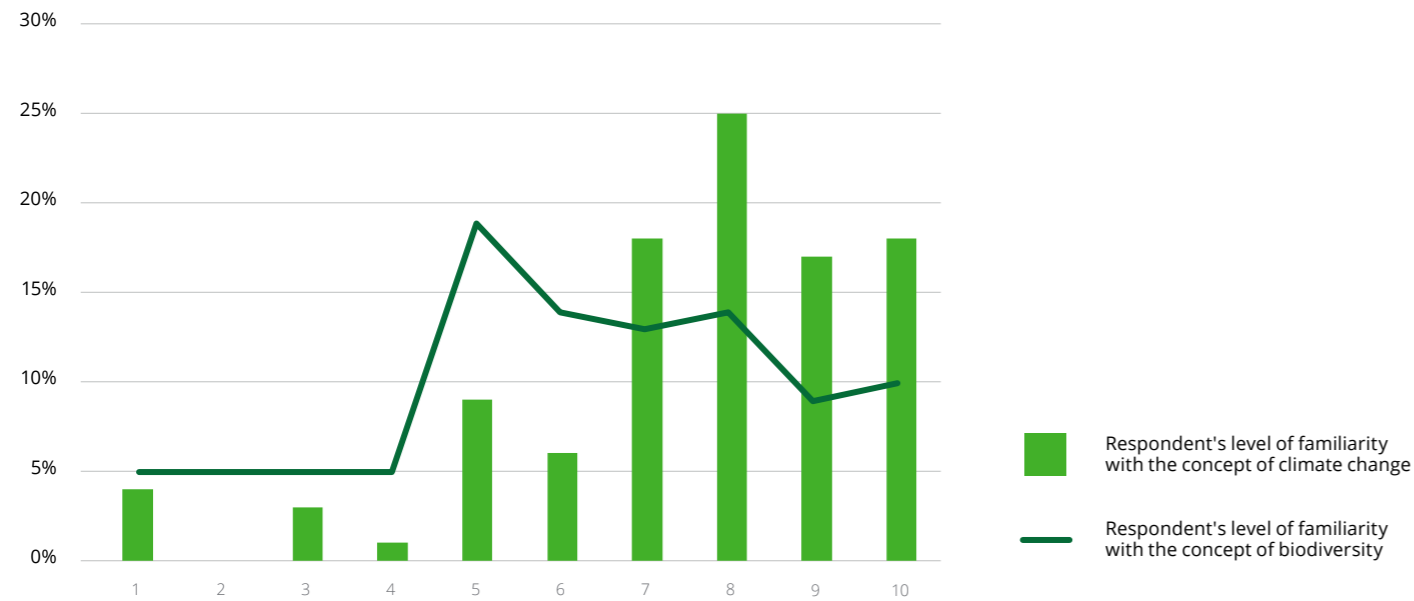
- **All eyes on climate change.** There is a disparity in awareness level between climate change and biodiversity.
- **The pressure is rising.** Companies feel the growing interest from regulators, investors and society in general to act on biodiversity-related issues.
- **Companies are focused on compliance with mandatory regulations,** which so far do not cover the biodiversity aspect either in scale or in detail similar to climate change coverage.
- **Companies still have limited information** about their supply chains and the source of raw materials, while the main negative impacts on biodiversity are related to the extraction or cultivation of raw material.
- **Despite a moderate level of understanding about the potential impact of biodiversity loss on business operations** there is still an action gap - only a limited number of companies take action to further assess and measure it.
- **Initiatives limiting biodiversity loss** or supporting an increase in biodiversity are mainly implemented by companies with the greatest impact.
- **The limited interest of companies** in the topic of biodiversity is related to the multitude of other responsibilities.

Additionally, a limitation to this analysis should be highlighted. The presented data may encompass a margin of error as companies more mature in terms of biodiversity activities may be more willing to take part in such market research and thus promote their activities, contrary to those who do not want to claim that they are inactive in this area.

Moreover, companies in Poland are over-represented in this survey compared to other countries. Although this could affect the survey findings, it provides useful insights.

1. All eyes on climate change. The disparity in awareness between climate change and biodiversity.

**Chart 3. Respondents' familiarity with the topic of climate change and biodiversity on a scale of 1-10**



Source: Deloitte survey

Judging from the data, respondents are more familiar with the concept of climate change than the concept of biodiversity. This, in turn, limits their understanding of biodiversity loss and its repercussions.

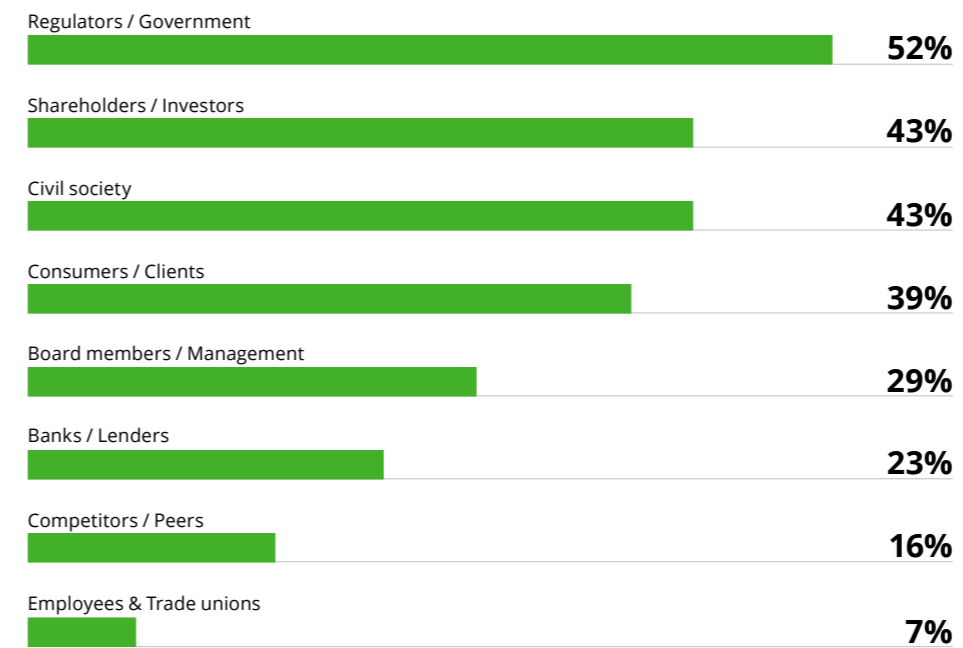
Additionally, in response to the question “Have you expanded your knowledge on the subjects of climate change and/or biodiversity in the last 12 months, i.e. by reading publications, participating in conferences, etc.?”

In the context of climate change, the percentage of negative responses was only 5%, however in the context of biodiversity it was almost 25%.

This observation may signal that even respondents who claim to have greater familiarity with the issue of biodiversity are not necessarily increasing their understanding and knowledge of it.

2. Rising pressure. Companies feel a growing interest from regulators, investors and civil society to act on biodiversity-related issues.

**Chart 4. The percentage of companies experiencing pressure to act on biodiversity-related issues from the following stakeholders**



Source: Deloitte survey

4 out of 5 surveyed companies indicate that they already feel some pressure to act on biodiversity-related matters,

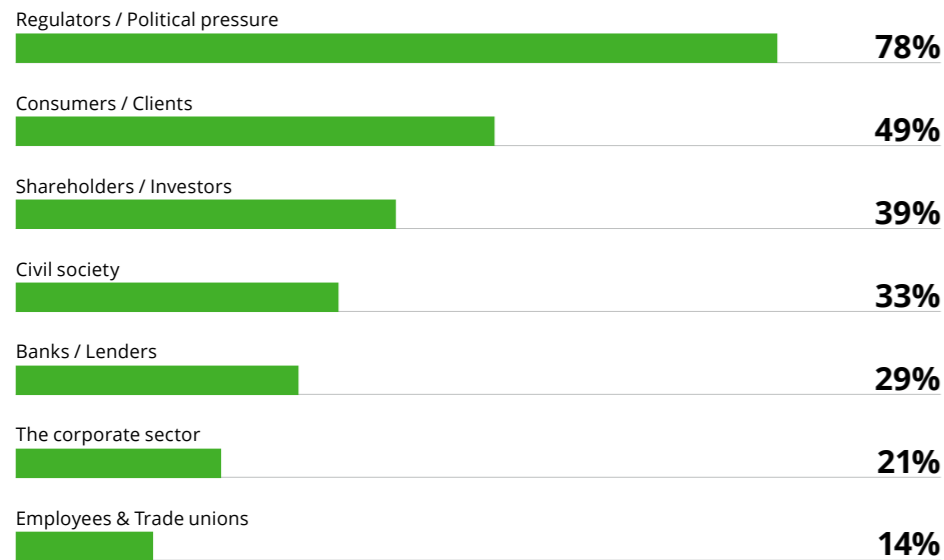
4 out of 5 surveyed companies indicate that they already feel pressure to act on biodiversity-related matters, predominantly from government, but also from existing and upcoming regulations. A significant percentage of companies also pointed to pressure from shareholders/investors and public, following with consumers/clients.

This shows that the perception of biodiversity-related issues is developing in a similar way to the perception of climate change and is following an already-beaten path.

Similarly, current mandatory regulations so far do not cover the biodiversity aspect either in scale or in detail similar to climate change coverage. However, considering the number of voluntary frameworks which have recently begun to appear and looking at upcoming regulations on the horizon, it is likely that – just as in the case of the rising momentum of climate change awareness following the Paris Agreement – biodiversity discourse will follow a similar path in the years to come.

3. Regulators and financial institutions remain the most influential force for the private sector in terms of tackling the biodiversity crisis.

**Chart 5. Percentage of companies which selected the following aspects as a driver of change and increased action in relation to biodiversity protection efforts**



Source: Deloitte survey

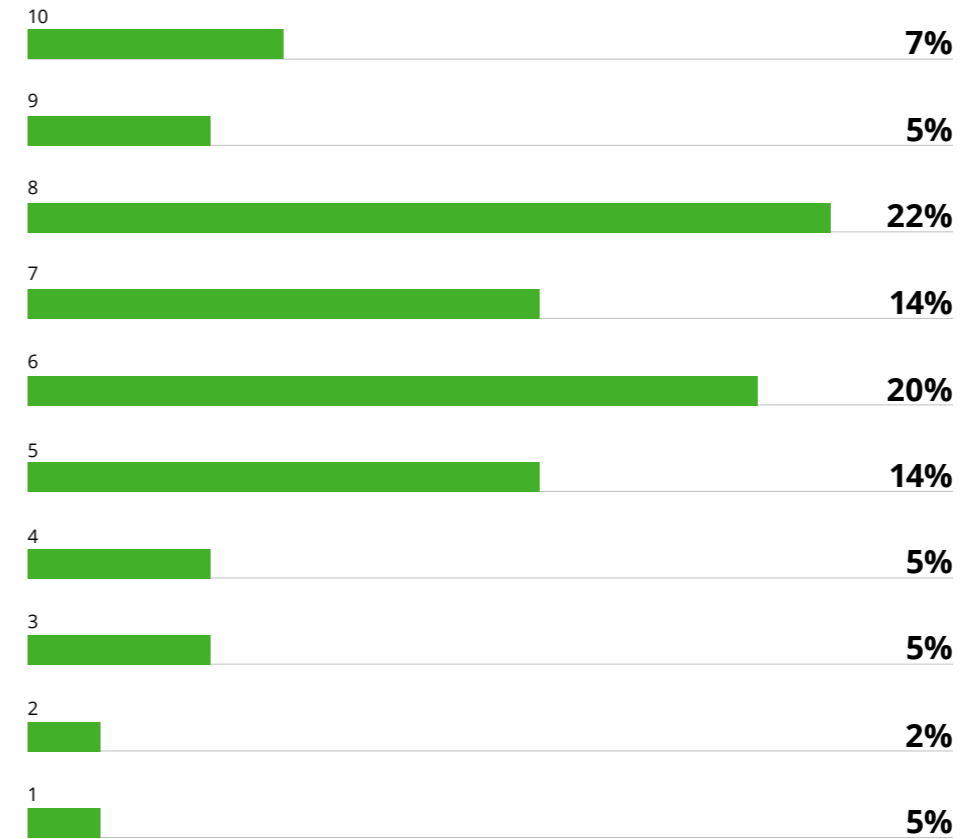
Chart 4 highlights that the public sector exerts substantial pressure to act on biodiversity-related matters. The public sector is also seen as a main driver of change. It is worth noting that although consumers presently do not exert as much pressure as civil society or shareholders/investors, they are seen to be another main driver of change, second only to the public sector and related regulations.

This is significant because it suggests that companies attach great importance to consumer perceptions, and so reputation risk. A third source of influence is shareholders and investors, who have been taking climate change issues into account in their decisions for several years already.

Given the growing understanding that economic risk from biodiversity loss could emerge at the company or portfolio level, it is likely that companies will apply similar risk approaches and extend the already existing climate change requirements with biodiversity aspects.

4. There is a moderate level of understanding about the potential impact of biodiversity loss on business operations. However, only a limited number of companies take action to further assess and measure it.

**Chart 6. Respondents' awareness level of the potential nature-related risks impacting their business and/or sector of operation on a scale of 1 (Low awareness) to 10 (High awareness)**



Source: Deloitte survey

**More than two-thirds of respondents claimed moderate to high awareness of potential business threats related to nature**

The greater familiarity among respondents with the potential risks to their business from biodiversity loss, compared to the concept of biodiversity itself (Chart 3) suggests that businesses are increasingly coming to an understanding that their operations are intertwined with ecosystem health. This is driving them to understand and address tangible threats such as supply chain disruptions, regulatory challenges, and resource scarcity. However, it is vital to remember that a broader understanding of biodiversity is necessary for holistic environmental stewardship.

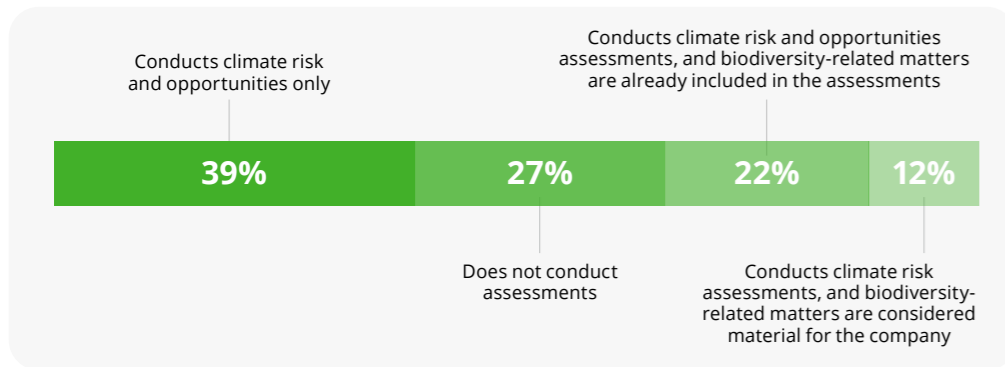
Bridging the gap between practical concerns and ecological principles can lead to more informed and responsible corporate actions, benefiting both businesses and the natural world.

More than two-thirds of respondents claimed moderate to high awareness of potential business threats relating to nature (68% of aggregated answers 6 to 10). However, only 1 in 3 companies include biodiversity aspects when conducting risk and materiality assessments (see Chart 7 below).

While companies are increasingly aware of the potential risks posed by biodiversity loss, there appears to be a delay or reluctance in fully integrating these concerns into their risk and impact assessments. This suggests that there is room for improvement in translating awareness into concrete actions.

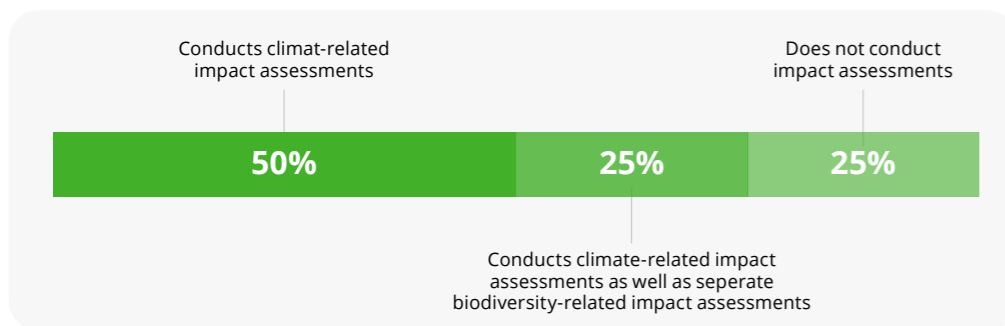


**Chart 7. Percentage of companies conducting climate and/or biodiversity risk and opportunities assessment**



Source: Deloitte survey

**Chart 8. Percentage of companies conducting climate and/or biodiversity-related impact assessments**



Source: Deloitte survey

The survey results illustrate a prevalent focus among companies on climate-related impact assessments, reflecting the continued emphasis on addressing climate change as a top environmental priority.

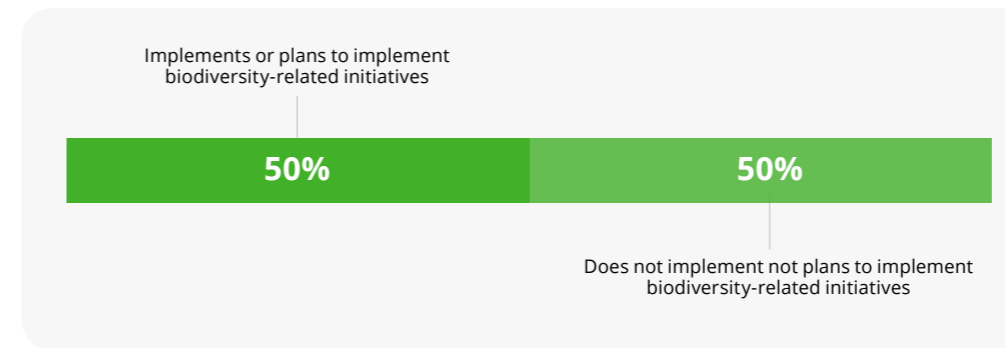
However, the fact that a quarter of respondents do not conduct either climate or biodiversity-related impact assessments suggests that there is room for improvement in sustainability practices within a portion of the corporate sector.

This underscores the need for broader education and awareness-building around both climate and biodiversity issues to encourage more companies to integrate comprehensive environmental assessments into their business strategies.

The 25% of companies conducting separate biodiversity-related assessments are leading the way in recognizing the importance of biodiversity alongside climate concerns, reflecting a holistic approach to sustainability and a deeper understanding of the interconnectedness of these environmental challenges.

5. Initiatives limiting biodiversity loss or supporting an increase in biodiversity are implemented mainly by companies with the greatest impact.

**Chart 9. Percentage of companies that implement or plan to implement biodiversity-related initiatives**








Source: Deloitte survey

"One in two companies does not implement or plan to implement biodiversity-related initiatives. Today, we can now assess, act and monitor biodiversity progress. After years of inaction, it's up to you now!"

Ywan Penvern, Partner Sustainability and Nature, Deloitte France

Five sectors are already showing promise in their involvement in activities related to the protection of biodiversity:

- 
**Energy**, mainly because of long-standing regulations on emission reductions and already strong pressure from different stakeholders.
- 
**Food and beverage**, due to increased (however still limited) awareness of business continuity risks in complex value chains related to biodiversity loss, as well as increasing pressure from regulations such as the upcoming regulations within the EU Farm to Fork Strategy.
- 
**Financial institutions**, with an indirect impact on nature through financing decisions and potential risks emerging from biodiversity loss in their portfolios.
- 
**Real estate**, due to the understanding of how their projects can impact biodiversity and the conducting of impact assessments.
- 
**Retail**, due to their understanding of their unique position within the value chain, allowing companies within this sector to emphasize sustainably sourced products.

These sectors (especially Food and beverage) are those with the greatest impact on biodiversity.

The survey results indicate that there are equal numbers of companies implementing biodiversity initiatives (50%) regarding nature and biodiversity and those who are not yet active (50%). These initiatives may cover both responding to material biodiversity-related business risks through mitigation or adaptation solutions, and also measures to halt biodiversity loss itself.

While biodiversity conservation efforts are nothing new for non-governmental organizations and local communities, they are still underrepresented among private sector companies. This is largely caused by significant difficulties due to a lack of a unified and standardized approach to measuring environmental impact, as well as the high cost of these initiatives. Additionally, there are still a limited number of pioneers – leaders who implement innovative initiatives and bold actions.

Our survey also asked for specific examples of biodiversity initiatives implemented by the companies, resulting in the following examples.



**Chemical Industry Company:**

This company demonstrates its commitment to biodiversity through local support for preserving endangered species, with a particular emphasis on the Iberian Lynx.



**Food Production Company:**

This company uses drones to monitor water management and health of plants, including crop greening, weed infestation rates, pest identification and expected crop yield. Due to this approach, the company adjusted the amount of fertilizers, pesticides and water used.



**Financial Industry Organization:**

This organization in the financial sector focuses on operational activities related to biodiversity. It prioritizes educating and raising awareness among its employees, including promoting employee volunteering efforts, to create a more environmentally conscious workforce.



**Materials Sector Company:**

This company is actively collaborating with NGOs to develop projects and Key Performance Indicators (KPIs) aimed at addressing environmental concerns. Its focus areas include water consumption, waste reduction, responsible forest management, and greenhouse gas emissions. The company is committed to sustainability through its MAP2030 program and is currently in the process of planning for MAP2050, demonstrating a long-term commitment to environmental responsibility.



**Retail Company:**

In 2023, this retail company conducted a biodiversity footprint assessment, laying the foundation for its commitment to sustainable supply chains, particularly for commodities linked to deforestation risks, such as soy, cocoa, and coffee. It is actively engaged in initiatives for renaturation and agricultural transformation.



**Retail Company:**

This retail company has implemented a comprehensive biodiversity strategy, which includes initiatives such as regenerative agriculture, a zero-deforestation/conversion goal, and a bee protection program.



**Textile Company:**

This textile company has undertaken an initiative to support biodiversity by creating a flower meadow designed to benefit 180,000 wild bees.



**Tourism Industry Company:**

Several projects undertaken by this tourism company aim to protect seals in the Baltic Sea.

We also conducted in-depth interviews with selected companies. The following three companies were identified as having good practices and were developed into case studies.

**Case Study: A global confectionery and food company**

A global confectionery and food company has embarked on a journey to address sustainability and biodiversity challenges within its supply chain. Among the top priorities is the responsible sourcing of key ingredients, including sugar, palm oil, cocoa, and hazelnuts, as well as supply chain transparency. The company treats biodiversity loss as a business continuity risk.

- Among the flagship initiatives are tree planting projects, focused on ecologically vulnerable areas of Africa, not only benefiting local ecosystems but also supporting cocoa and hazelnut farmers by maintaining soil balance and preventing over-exploitation. Furthermore it utilizes satellite data monitoring to track deforestation and maintain traceability in its supply chain.
- The company's commitment to supply chain transparency is evident through its almost 100% certified palm oil sourcing and close collaboration with cocoa and hazelnut suppliers. Moreover, the practice of auditing suppliers ensures adherence to sustainable and ethical standards, with premiums offered to cocoa farmers.
- The company also recognizes the cultural nuances of farming in rural regions, particularly in Africa, and collaborates with organizations such as Save the Children to provide education to children, aligning with their goal of long-term sustainable farming practices.

This holistic approach reflects the company's dedication to balancing business interests with environmental and social responsibilities, contributing to a more sustainable and biodiverse future<sup>75</sup>.



**Case Study: A European real estate company**

This prominent European real estate company sets itself apart with its meticulous approach to incorporating biodiversity-related initiatives into its operational model. Central to its strategy is the comprehensive assessment of each potential project's impact on biodiversity. It establishes a minimum score, contingent on the projected adverse effects, as a prerequisite for management approval. If the anticipated impact proves significant – resulting in a low score – management may opt to forgo the project.

In practical terms, the company actively avoids purchasing land with mature trees to prevent their removal and, when acquiring such land, strives to preserve these trees in their natural setting. It also refrains from acquiring land without sewage systems, to prevent pollution and avoid transforming farmland into built-up areas, demonstrating its commitment to preserving existing ecosystems.

The company's initiatives also include reducing the frequency of grass-cutting, installing birdhouses, retaining excavated soil on-site to protect local insects and worms while elevating ground levels, and prioritizing native, drought-resistant plant species in landscaping.

This holistic approach is well received and applauded by its customers<sup>76</sup>.



**Case Study: A leading pharmaceutical company**

A pharmaceutical industry leader is actively involved in sustainability efforts as part of the Value Balancing Alliance (VBA), a consortium committed to steering businesses towards greater sustainability. Within VBA, the company spearheads the “modernization of biodiversity accounting” project, aligned with a scientific initiative operated by Germany's Ministry of Education and Research. Its primary goal is to integrate impact valuation methods into current regulations, bridging the gap between corporate practices and legislative requirements.

The company has been at the forefront of impact accounting, monitoring about 400 Key Performance Indicators (KPIs) across environmental, social and economic dimensions throughout its value chain. While the pharmaceutical industry primarily emphasizes social aspects, such as improving access to medicine, the company tracks environmental factors diligently, including biodiversity.

It recognizes the importance of addressing environmental and biodiversity-related impacts, even as it continues to refine its understanding of certain aspects, for example through recognizing that its extensive supply chains and shipping lanes may contribute to the spread of invasive species. Additionally, it is attentive to ecosystem services but acknowledges that this area remains largely unexplored.

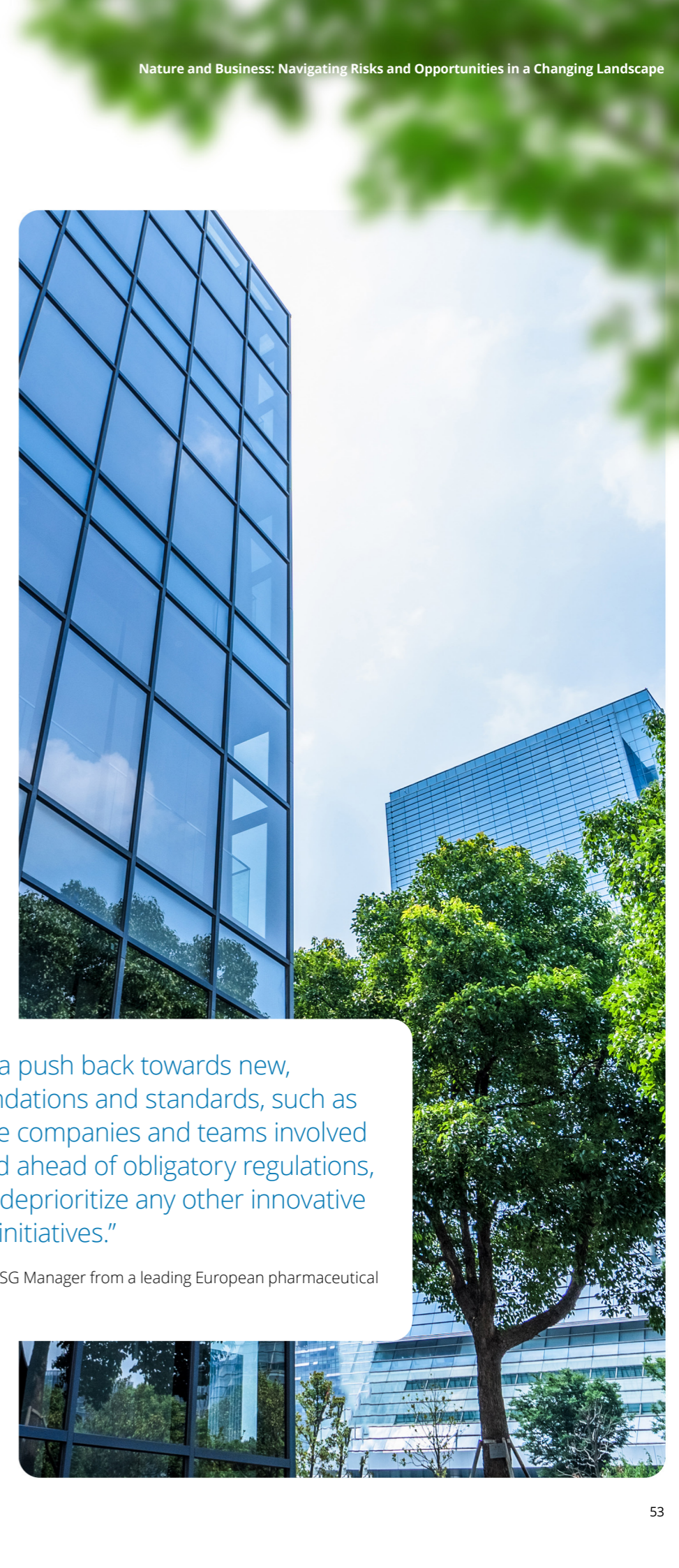
6. The comparative low interest in biodiversity among companies is due to their many other responsibilities.

As part of our research, we conducted in-depth interviews with sectoral leaders. One of the main observations was the pressure on companies to focus on compliance issues, which may result in neglecting purpose driven initiatives which are yet not covered by the regulatory regime.

ESG and Sustainability Managers, along with their teams, are to large extent already under significant pressure resulting from regulatory requirements which still do not comprehensively cover the topic of biodiversity. Nature-related responsibilities will likely become a part of the wider duties undertaken by these managers, thus limiting the potential of a company's response and commencement of initiatives with an actual impact.

“This may also build a push back towards new, voluntary recommendations and standards, such as SBTN or TNFD, as the companies and teams involved are heavily pressured ahead of obligatory regulations, including CSRD, and deprioritize any other innovative and purpose driven initiatives.”

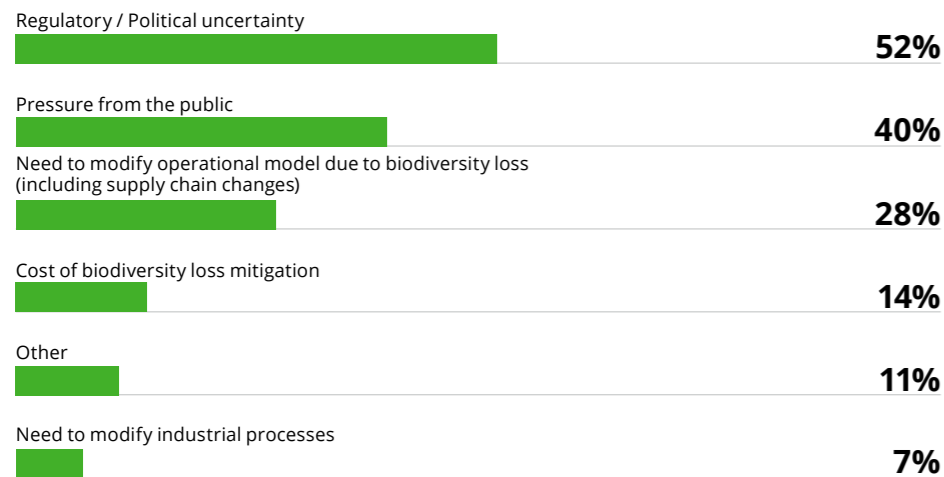
Quote from an interview with a ESG Manager from a leading European pharmaceutical company<sup>77</sup>.



## Deep dive into the survey results

### Impact

**Chart 10. Percentage of companies which stated that a given issue is already impacting their operations**



Source: Deloitte survey

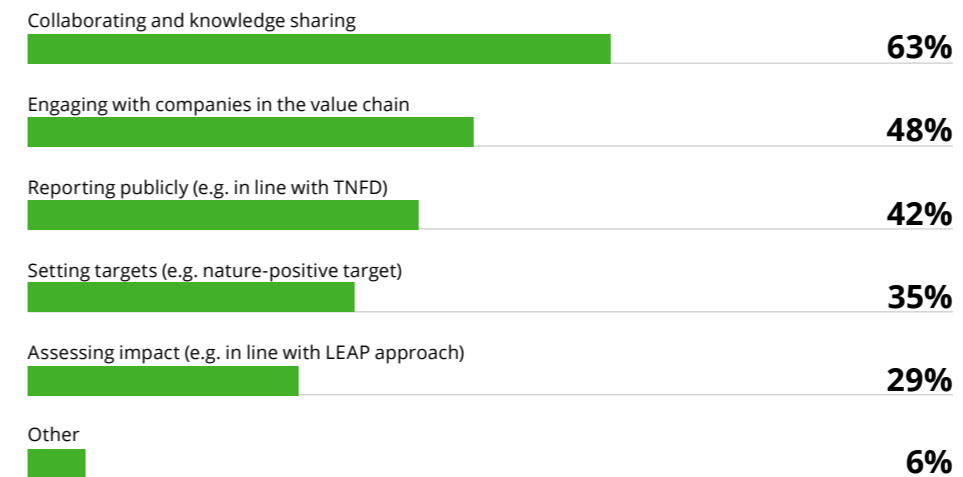
The survey findings reveal that regulatory and political uncertainty is a primary concern for companies regarding biodiversity-related impacts, underscoring the ever-changing landscape of environmental regulations. Companies are increasingly vigilant about staying compliant with evolving biodiversity laws and policies.

Moreover, the acknowledgment of public pressure by 40% of respondents highlights the growing influence of public sentiment and activism in shaping corporate biodiversity efforts. As societal awareness of biodiversity conservation grows, companies must engage proactively in sustainable practices to maintain their reputation and to address stakeholder expectations.

Interestingly, 1 out of 4 companies claim that they already see a need to reorganize their operational model and supply chain management. While this pattern may be visible primarily in food and beverage companies, it may soon trigger changes in other sectors.

### Potential engagements and initiatives

**Chart 11. Percentage of companies which consider implementing a biodiversity-related initiative/commitment**



Source: Deloitte survey

The responses to the question paint a promising picture of evolving corporate attitudes towards environmental responsibility. With 63% of respondents expressing a willingness to consider collaboration and knowledge sharing, it suggests that companies are increasingly recognizing the value of collective action when it comes to addressing biodiversity challenges. This inclination towards cooperation signifies a shift towards more holistic and interconnected approaches to environmental stewardship. Additionally, the 48% of respondents open to engaging with companies

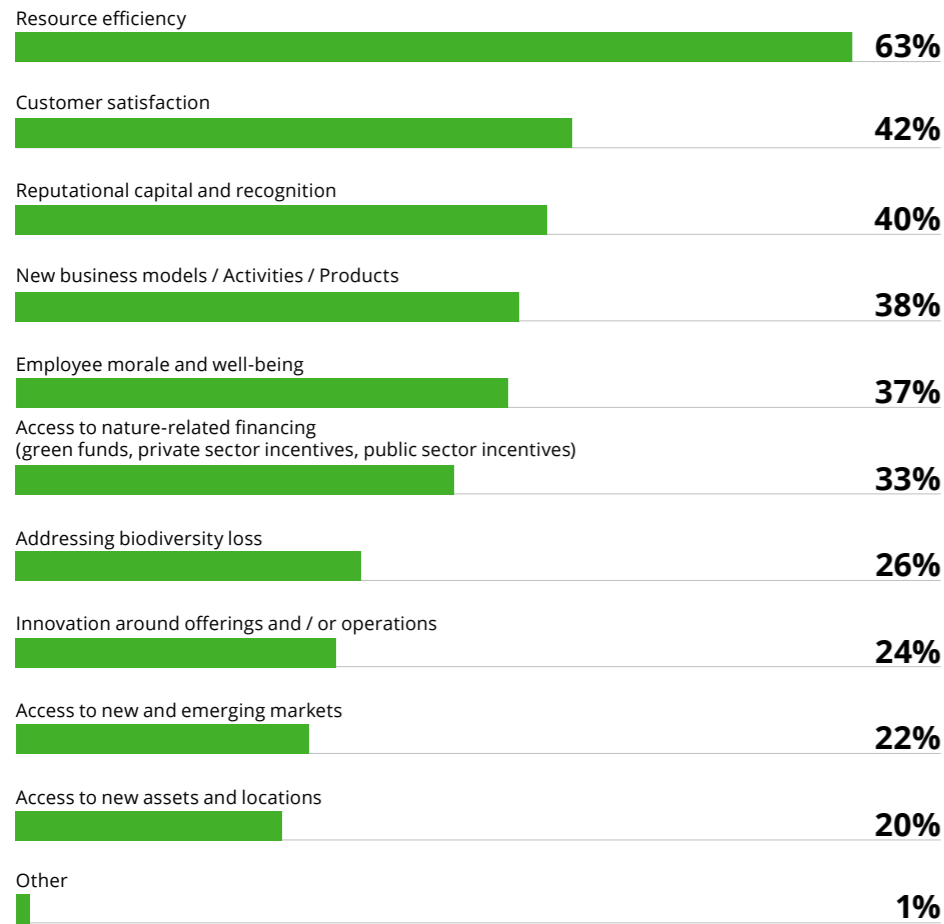
in their value chain highlights a growing awareness of the profound impact supply chains can have on biodiversity. This suggests that many businesses are acknowledging the need for shared responsibility throughout their value chains, potentially sparking meaningful change in how industries approach sustainability and biodiversity conservation.

Moreover, the 42% of companies indicating their willingness to report publicly, such as under the Task Force on Nature-related Financial Disclosures (TNFD), demonstrates a growing commitment to

transparency in nature-related reporting. This transparency not only fosters accountability within the corporate sector but also serves as an essential step toward increasing awareness about the importance of biodiversity conservation among stakeholders and the public. Last but not least, while setting targets is a positive signal, one should remember that commitments such as being nature-positive might be misleading. Therefore, companies should focus on short-term milestones and goals structured around avoid, reduce, compensate, and enhance transition according to the mitigation hierarchy.

## Opportunities

**Chart 12. Percentage of companies that consider the following aspects as the most material to their business**



Source: Deloitte survey

Rather than allowing biodiversity risks to manifest themselves in mainstream business, leaders can seize opportunities that enable them to remain at the forefront of their sector. Companies willing to be involved in this area as first responders may grasp the opportunities such as:



- **Increased efficiency** through reductions in raw material and energy costs, which may contribute as well to a reduction in the over-exploitation of natural resources;



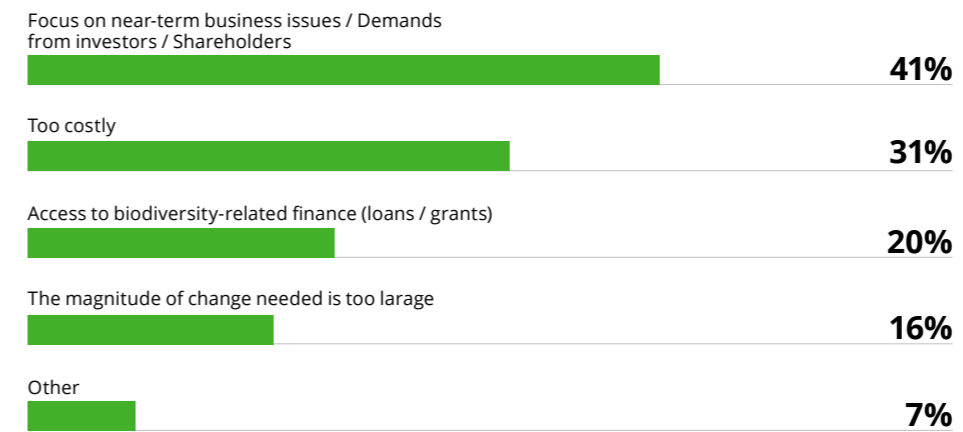
- **Increased consumer confidence** which can improve their value proposition by responding to public demand for biodiversity-positive products;



- **Positioning themselves** to enter profitable new markets by developing valuable new products, services, and entire business models.

## Obstacles

**Chart 13. Percentage of companies which identified the following issues as obstacles that limit biodiversity protection efforts**



Source: Deloitte survey

The survey results regarding the most significant obstacles facing companies that hinder biodiversity protection efforts provide valuable insights into the challenges businesses face in integrating sustainability into their operations.

First and foremost, **41%** of respondents identified the focus on near-term business issues and demands from investors and shareholders as the primary obstacle. This suggests that there is often a tension between short-term financial goals and long-term environmental sustainability objectives.

Companies may feel pressured to prioritize immediate financial returns, potentially overlooking or under-investing in biodiversity initiatives. This highlights the need for strategies and communication with investors and shareholders that align environmental concerns with business interests to bridge this gap effectively.

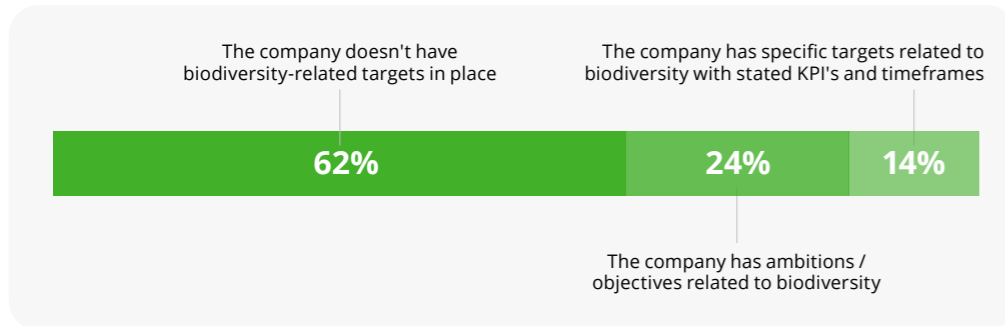
The survey's findings also underscore the financial aspect of biodiversity protection, with **31%** of respondents indicating that cost is a significant obstacle. To overcome it, businesses should explore more cost-effective sustainability solutions and partnerships, and also consider long-term benefits such as risk mitigation, improved brand reputation, and access to sustainability-focused markets.

Additionally, **20%** of respondents cited difficulties in accessing biodiversity-related finance, such as loans and grants. This highlights the need for financial mechanisms and incentives to support companies in their biodiversity protection endeavors.

Finally, **16%** of respondents noted the magnitude of change as a hurdle. This indicates that the importance of effective change management strategies and gradual, incremental approaches to make biodiversity initiatives more manageable for businesses.

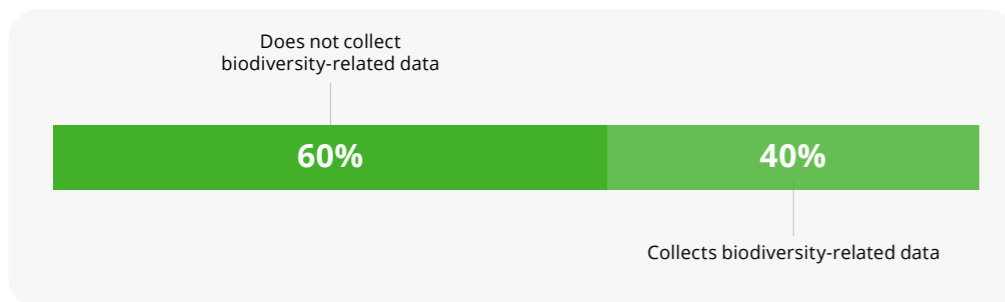
Metrics & Targets

**Chart 14. Percentage of companies with a defined approach to setting biodiversity targets**



Source: Deloitte survey

**Chart 15. The percentage of companies which collect biodiversity-related data**



Source: Deloitte survey

The survey results reveal a significant divide in corporate practices related to biodiversity data collection, with a majority of companies (60%) not engaging in such efforts.

This highlights a critical area for improvement in corporate sustainability strategies, as effective data collection is fundamental for informed decision-making and assessing the impact of biodiversity on business operations. The 40% of companies that collect biodiversity-related data are demonstrating proactive engagement with environmental

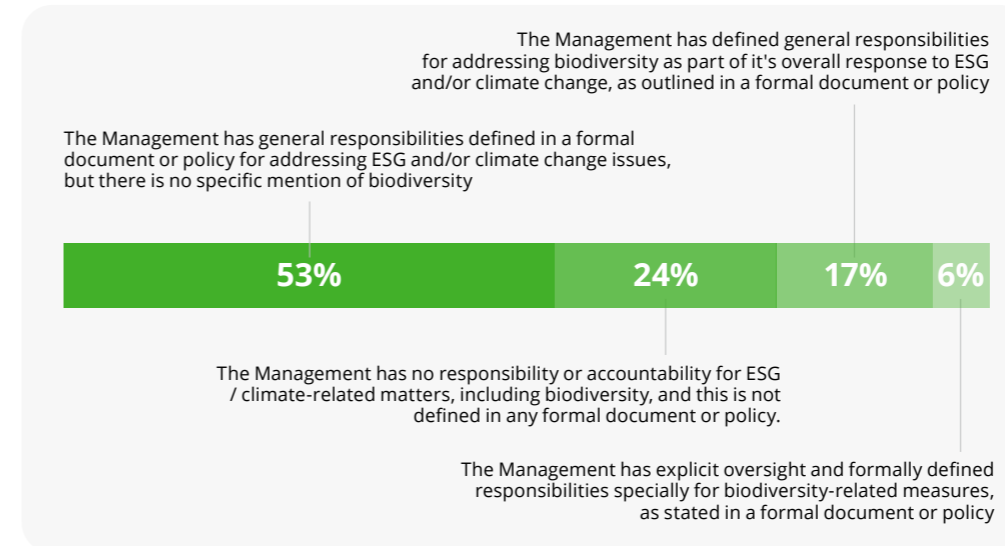
concerns and may be better positioned to address emerging sustainability challenges.

Almost two-thirds of respondents admit that biodiversity-related targets are yet to be developed and implemented. This seems significant in view of the fact that companies are already feeling pressure from stakeholders to act on biodiversity-related matters, and that companies are already experiencing biodiversity loss-related issues, such as regulatory pressure (52%).

This suggests that companies may feel that they are not yet ready to set concrete targets despite growing concerns in this area. This is most likely, because either they might not be aware of the available solutions and tested mechanisms to implement, or they have not assessed the baseline yet so there is no specific knowledge on the main risks and real impacts on biodiversity along their value chains.

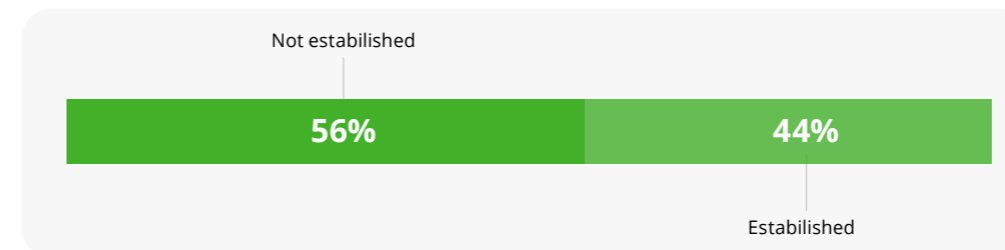
Governance & Reporting

**Chart 16. Percentage of companies conducting climate and/or biodiversity risk and opportunities assessment**



Source: Deloitte survey

**Chart 17. The percentage of companies with a dedicated executive/supervisory level person responsible for nature/biodiversity risks and matters**



Source: Deloitte survey

Survey results on how companies define biodiversity-related responsibilities within their Management reveal a diverse range of approaches. A majority (53%) of companies have defined general responsibilities in their formal documents or policies for addressing ESG and climate change issues, but biodiversity remains unmentioned, underscoring our findings that there is a gap in specific biodiversity integration as opposed to climate change integration. The 24% of companies where the Management has no responsibility

or accountability for ESG, climate, or biodiversity matters and lacks defined policies points to the need to further promote sustainability governance.

Conversely, the 6% of companies with explicit oversight and formally defined responsibilities for biodiversity measures demonstrate a commitment to recognizing and addressing biodiversity as a standalone concern.

Finally, the 17% of companies include general responsibilities for biodiversity a part of their overall ESG and climate change response. This underlines the growing awareness of biodiversity's relevance within the broader sustainability framework, even if it is not explicitly defined.

Similarly, while 56% of companies do not have dedicated executive roles for nature and biodiversity risks, the 44% that do are taking innovative steps to navigate these emerging environmental challenges effectively.

Chapter IV

# A Call to Action

**The importance of biodiversity is yet to be fully recognized, and there are no structured directions about what companies and the public sector should do to extend actions that focus on halting the loss of biodiversity. Both sides are still at the initial levels of maturity in tackling the biodiversity crisis.**

Our research indicates that companies have traditionally centered their efforts on complying with mandatory regulations, primarily those related to emissions and environmental impact, as regulatory frameworks still lack comprehensive coverage of biodiversity aspects. Consequently, many businesses tend to prioritize compliance with existing regulations rather than proactively address biodiversity preservation. Another noteworthy obstacle impeding coordinated action to address biodiversity loss is the limited comprehension of its potential impact on business operations.

To react to the pressures of business on nature and to overcome the observed challenges, a coordinated effort involving regulators, financial institutions, businesses, and environmental experts is needed.

There are six key focus areas which have a potential to drive significant and transformative change in addressing biodiversity loss<sup>78</sup>. These areas highlight specific approaches and strategies that, when implemented effectively, can contribute to meaningful progress in biodiversity conservation.



**There are six key focus areas which have a potential to drive significant and transformative change in addressing biodiversity loss.** These areas highlight specific approaches and strategies that, when implemented effectively, can contribute to meaningful progress in biodiversity conservation.



**Incentives**

Creating economic and policy incentives that encourage individuals, businesses, and communities to engage in biodiversity conservation. These incentives might include tax breaks, grants, subsidies, and market mechanisms that reward sustainable practices. At the same time it is important to eliminate subsidies with negative impacts on biodiversity, as well as releasing financial resources for incentives.



**Capacity building**

Capacity building is important to enhance knowledge, skills, and resources of individuals and organizations involved in biodiversity conservation. This can involve training programs, educational initiatives, and support for local communities to take an active role in protecting their natural resources. Importantly, quality managers and production managers, as well as suppliers, and not just Sustainability Managers, need to improve their knowledge.



**Cross-sectoral cooperation**

Encouraging collaboration and coordination across different sectors and industries, recognizing that biodiversity is interconnected with society. Effective conservation requires input and action from government bodies, private companies, NGOs, communities and academic institutions working together.



**Innovation and bold action**

Fostering innovative approaches and solutions to address biodiversity loss and restoration. This might involve connecting climate and biodiversity protection as well as water related issues in order to identify and enhance synergies. In addition, implement cutting-edge technologies, research new protection methods and demonstrate a willingness to take bold and unconventional actions to protect and restore ecosystems.



**Decision making in the context of resilience and uncertainty**

Recognizing the complex and dynamic nature of ecosystems and the uncertainties associated with biodiversity conservation. Making decisions that prioritize resilience involves understanding and accounting for potential disruptions, such as climate change impacts and habitat loss, while maintaining the ability of ecosystems to recover and adapt.



**Environmental law and its implementation**

Strengthening and enforcing environmental laws that safeguard biodiversity and natural resources. This includes ensuring that laws are comprehensive, effective, and responsive to emerging challenges. Implementation involves monitoring compliance, enforcing penalties for violations, and promoting a culture of legal and ethical responsibility.

Each of these six areas represents a distinct avenue for driving transformative change in addressing biodiversity loss. By focusing strategically on these aspects, **governments, organizations, and communities can work together to create a more sustainable and resilient future** for both humanity and the diverse ecosystems that support them.

# Biodiversity Roadmap

Considering the results of the research and scientific recognition of biodiversity status around the globe, we have developed a biodiversity roadmap and guidelines to set the direction for action.

For organizations to be more active in the area of biodiversity, many more need to understand how it could affect their activities. We recognize a need to create guidelines that will make private sectors' actions structured and aligned.

Our roadmap is designed to help public and private sector organizations to develop biodiversity action plans for their activities and projects. The guidelines are formulated in a way that introduces a systemic approach to biodiversity management, conservation restoration, and enhancement which can be built on further and integrated with existing organizations' processes.

The roadmap may help companies to deliver on biodiversity requirements and commitments, improve performance and contribute to their nature-positive aims. While developing an approach to counteracting biodiversity loss it is important to plan and manage all actions in a way that they collectively reduce negative influence and promote positive impacts. Activities should ensure that they counteract the drivers of biodiversity loss and stimulate the drivers of biodiversity restoration, maintenance, and enhancement.

Our guidelines encapsulate three dimensions:

**Firstly**, it is important to focus on the conservation of biodiversity by management of existing ecosystems, habitats, natural resources, and other areas important for biodiversity.

**Secondly**, the sustainable use of biodiversity – promotion of sustainable practices and cultivation that allows for the current use of biodiversity while also ensuring its regeneration and future use.

**Thirdly**, much has been already destroyed. Therefore, the UN declared the Decade of Ecosystem Restoration. This should be another strategic goal for businesses around the world.



- **Internal Assessment:**  
Evaluate your company's current practices, policies, and already identified impacts on biodiversity within the organization. Identify any existing biodiversity-related initiatives or projects. Analyze how internal operations affect biodiversity, including resource consumption and waste generation.
- **External Assessment:**  
Examine external factors such as market trends, stakeholder expectations and ecosystem conditions.
- **Regulatory Assessment:**  
Understand existing biodiversity-related regulations and their implications for your operations. Review national and regional biodiversity-related regulations and compliance requirements. Evaluate potential legal risks and liabilities associated with non-compliance. Identify gaps between existing regulations and the company's current practices.

- **Biodiversity Context:**  
Identify the national and regional biodiversity context, describing ecosystems, habitats, species, and priority biodiversity features.
- **Materiality Assessment:**  
Conduct materiality assessment with focus on methods for quantifying the extent to which biodiversity loss is financially material. Determine how significant biodiversity is for the company's overall sustainability strategy.
- **Impact and Dependencies:**  
Assess how your organization impacts biodiversity and how biodiversity loss might influence your business strategy. Assess potential financial, reputational and operational impacts of biodiversity-related matters.
- **Policies and Processes:**  
Review internal policies and processes, such as transport policy, waste management policy, water management policy and procurement policy. Identify opportunities to modify existing policies to better integrate biodiversity considerations.

- **Baseline Assessment:**  
Analyze the current state of biodiversity in your operational areas, including habitats, species and ecosystem health. Identify areas of critical concern including those in your supply chain.
- **Biodiversity Inventories:**  
Prepare detailed inventories of biological information for selected species or habitats. Map out the ecosystem, identifying key habitats, corridors, and biodiversity hotspots to guide conservation efforts.
- **Conservation Status Assessment:**  
Evaluate the conservation status of species within specific ecosystems. Focus on selected key indicators of the health of the ecosystem.

- **Task Force on Nature-Related Financial Disclosures (TNFD):**  
Align with TNFD requirements to disclose financial risks and opportunities linked to biodiversity. Identify potential risks and opportunities associated with biodiversity conservation.
- **Threats and Opportunities Assessment:**  
Evaluate the threats and opportunities that exist for biodiversity within your operations.
- **LEAP Assessment:**  
Utilize the framework to guide decision-making and identify material issues:
  - **Locate** the interface with nature;
  - **Evaluate** dependencies and impacts;
  - **Assess** risks and opportunities;
  - **Prepare** to respond and report.

- Raise internal awareness about the importance of biodiversity through educational programs, workshops and training for employees.
- Create awareness among suppliers and business partners. Establish sectoral and cross-sectoral partnerships to promote knowledge.

The TNFD Framework and the LEAP approach are good practices supporting the accomplishment of the Current State and Biodiversity Assessments.

### Natural capital accounting

A structured approach to measuring the changes in the stock and condition of natural capital tends to be overlooked still in many policy decisions and business choices. If appropriately incorporated into accounting and reporting systems, it has the potential to provide concrete results for business performance reporting by explicitly mapping out impacts and/or dependencies on natural resources and placing a monetary value on them. The most prominent methodologies are: UN System of Environmental-Economic Accounting ([UN SEEA](#)) and BIOFIN ([UNDP](#)).



4 Governance Structure

- Establish a clear governance structure that outlines responsibilities, decision-making processes and accountability for biodiversity initiatives.

5 Defining and Implementing Strategy

Recognizing that most of companies are still at the early stages of maturity when it comes to implementing biodiversity action, it is understood that they will not be able to achieve positive biodiversity outcomes overnight. Its achievement requires a dedicated commitment of time and structured strategic action. It should be emphasized that companies should aim to avoid or minimize negative impacts on biodiversity before striving to achieve positive outcomes.

Implementing effective biodiversity action plans is a demanding task, especially for businesses that have historically operated with limited regard for ecological impacts. To succeed in this endeavor, companies must embrace a systemic approach characterized by the “avoid, minimize, restore” concept<sup>79</sup>.

The foremost objective for companies should be to prevent negative impacts on biodiversity from occurring in the first place. This means carefully assessing their operations and identifying potential risks to local ecosystems, for example by adopting the LEAP approach. By taking proactive steps to avoid harm, companies can significantly reduce their biodiversity footprint. In cases where it is not possible to avoid negative impacts entirely, companies should take measures to minimize them. This might involve employing more sustainable practices, adopting advanced technologies, or altering processes to reduce ecological harm. The goal is to mitigate any adverse effects on biodiversity as much as possible.



However, even with avoidance and minimization efforts, some ecosystems may have already been degraded or removed due to past activities. In such cases, companies can invest in restoration efforts to rehabilitate these ecosystems. Restoration can involve re-establishing native habitats, replanting vegetation, or other interventions aimed at restoring ecological balance.

**Definition**

- **Action Plan:** Develop an action plan that integrates biodiversity considerations into your core business operations and values. The action plan should respond to the findings of the baseline assessment and should aim for a continuous improvement in biodiversity performance.
- **Goals and Targets:** Determine overarching goals and targets for your biodiversity conservation efforts.
- **Set Specific Targets:** Establish specific, measurable targets for each biodiversity goal.
- **Conservation and Restoration Targets:** Create targets for habitat conservation, restoration, and species recovery.
- **Measures and KPIs:** Identify and implement a set of measures and KPIs to achieve your biodiversity targets and track progress effectively.

Only after robustly applying avoidance, minimization and restoration measures should companies consider approaches to compensate for any remaining negative impacts. Additionally, they can undertake actions that deliver positive biodiversity outcomes. The following actions may support strategy definition and execution.

**Implementation**

- **Workplan:** Create a detailed plan outlining actions, budgets, and timelines to implement biodiversity measures.
- **Institutional Partnerships:** Collaborate with external stakeholders and establish institutional partnerships to enhance implementation.
- **Target Operating Model:** Define how, by whom, and when the measures will be executed, ensuring efficient and coordinated efforts.
- **Governance Capabilities:** Enhance the capabilities of your governance team to manage and oversee biodiversity initiatives.

6 Monitoring and Management Schedule

- **Establish Monitoring Systems:** Set up a comprehensive monitoring system to track progress towards your biodiversity targets.
- **Impact Assessment:** Continuously assess the impact of your initiatives on biodiversity, business operations and communities.

- **Reporting:** Regularly report on the progress of your biodiversity conservation efforts, providing transparency and accountability.

- **Internal Audit and External Assurance:** Ensure the completeness and correctness of performed assessments as well as the scope of public disclosures to avoid non-compliance and greenwashing.

7 Revision and Update

Regularly review and update your biodiversity conservation roadmap to adapt to emerging challenges, incorporate new knowledge, and ensure continued effectiveness.

## Conclusions

**We are observing an unprecedented biodiversity crisis caused either directly or indirectly by human activities. Despite market optimism that we can still limit the worst impacts of biodiversity loss, there is little actual movement on the market. One of the most important reasons is low market awareness about business impact on nature and dependencies.**

However the pressure is rising, with a number of recently published voluntary frameworks and with biodiversity being included in the EU's CSRD regulations. Moreover, the financial sector is increasingly aware of biodiversity and wider nature-related risks in their portfolios, and are therefore extending their risk assessments with this issue in mind.

Companies, which took part in Deloitte's survey claimed several positive, potential outcomes from taking action and responding to biodiversity loss: resource efficiency, reputation, employee morale, and access to new markets. However, respondents mentioned other obstacles limiting their actions: a focus on near-term perspectives, high costs and difficulties with access to finance.

In view of the fact that there have already been many regulations and initiatives relating to climate change, there is a strong possibility that biodiversity will soon become the next significant issue for an increasing number of stakeholders, including regulatory authorities.

Companies which choose to take the lead in addressing biodiversity loss may seize early opportunities and gain competitive

advantage, while simultaneously mitigating the most significant nature-related physical and transition risks and building resilience.

**This report is the first attempt to examine actual market awareness, assess companies' biodiversity related efforts, map obstacles and shed some light on real-life case studies.**

As a response, this report proposes a 7-step roadmap, which may help companies assess their impact and dependencies, develop response mechanisms and eventually incorporate biodiversity concerns in their strategic thinking.

While this is a first step in transforming the way businesses operate, further research and more coordinated action from all of us is needed to respond to obstacles that limit responses and to constantly raise awareness about the crisis that may undermine our own future.

## Appendix I – Actions and tools to tackle nature emergency

Examples of initiatives undertaken by sector leaders

1

### Food Production

*Regenerative agriculture*

Companies in the Food Production sector can implement a regenerative agriculture approach, seeking to improve soil health and fertility. This includes crop rotation and intercropping (growing different crops in close proximity), as well as agroforestry. Synergies may also appear when farmers are encouraged to add green buffers (such as hedges and wildflowers) to the edges of their fields, as well as plant riparian buffers (such as trees) along waterways.

2

### Oil, Gas & Consumable Fuels

*Screening projects for proximity to protected areas*

Due to the fact that this sector is already under strong environmental pressure, companies increasingly utilize information from different assessment tools (such as Integrated Biodiversity Assessment Tool (IBAT)) to screen projects for proximity and potential impact on nature. Access to this data in the early stages of project planning supports biodiversity protection.

3

### Chemicals

*Management of product impact*

Chemical companies more often evaluate their products and solutions for crop protection throughout the entire research, development and registration process, in terms of potential impacts of product use on biodiversity. They also use environmentally friendly solutions such as insecticidal-active ingredients, which enable farmers to control a wide range of pests and are also beneficial for pollinators

4

### Consumer Staples Distribution & Retail, Trading Companies & Distributors

*Focusing on supplier education*

The fashion sector depends on its suppliers and should therefore seek positive actions in its supply chain. Companies can cooperate with NGOs and sector-specific organisations (such as the Ellen MacArthur Foundation or Textile Exchange's Leather Impact Accelerator (LIA)) to jointly develop best practices in their supply chains to prevent harmful activities by suppliers. Initiatives may include deforestation prevention, the establishment of minimum social, environmental, and animal welfare requirements as well as implementing incentives for producers to accelerate the pace of their engagement with biodiversity.

5

### Metals & Mining

*Restoring marine ecosystems*

Businesses are increasingly aware of new frameworks focused on biodiversity, such as TNFD. Some companies already joined them with the aim of strengthening preservation activities near their business sites. However, positive actions can also take place outside of factories zone. Companies can engage in restoring the marine ecosystem, including creation of sea forests and marine waste collection. For example, joint efforts by South Korean steel-making company and Research Institute of Industrial Science and Technology led to the development of an artificial reef in domestic waters.

6

### Pharmaceuticals & Health Care Providers & Services

*Supplier focused requirements*

Pharmaceutical companies depend on natural capital and biodiversity to conduct research and develop new medicines. The sector impacts ecosystems through value chains and unsustainable supplier practices. In order to address these issues, companies can engage with local communities (which often hold valuable knowledge about the local ecology), improve data collection (to understand their impact and dependencies) and set new requirements for suppliers. The latter may be commenced with revision of SBTN's list of high impact commodities. The management may then prioritize the materials related to the company's characteristics and map respective supply chains to further define requirements or targets for their business partners. Supplier oriented goals may involve such categories as „sustainably sourced" and deforestation-free, covering e.g. land-use change, water stewardship, biodiversity, animal welfare, hazardous materials, greenhouse gas emissions, labour rights and local communities.

## 7 Automobiles & Transportation

*Partnering for reforestation and wildlife crossings*

Since a transportation network is often developed at the cost of habitat loss, fragmentation and increased air pollution, companies can implement reforestation programs and work together with local communities to sponsor mass plantings in strategic locations adjacent to main roads and railroads. Similarly, companies can work together to support the development of wildlife crossings as a wider sectoral response. As part of wider sustainability related efforts, companies may also accelerate the transition from internal combustion engines to low-emission vehicles.

## 8 Electric Utilities

*Improved land management practices*

Utility companies collectively own and manage large land areas around power transmission lines and transformers. According to environmental and safety regulations they need to inspect and manage them to ensure that no trees or shrubs threaten the appliances. Recently however, utility companies have been investing in biodiversity conservation and restoration. Some of them apply satellite imagery to provide granular data on a plot of land. This approach ensures that all sites are suitably maintained. This approach reduces the costs and improves efficiency as companies know which locations are a priority. It may also mitigate the risk of wildfires, through timely identification and measures to deal with the hazards.

## 10 Financial Sector

*Portfolio risk assessment*

The financial sector is extremely important in transferring new requirements to a wide range of portfolio companies, which would not take action otherwise. Nature and biodiversity-related risks are now being treated as material issues by banks and other financial institutions. They often decide to perform portfolio assessment and some of them implement the TNFD approach. As a result, they build knowledge of the most vulnerable sectors and potential hazards hidden in the portfolio. Financial institutions require their clients to develop mitigation and adaptation strategies. Simultaneously, banks may support their clients in the development of specific initiatives, reducing their potential portfolio risk.

## 11 Other

*The use of bees in creating an urban ecosystem*

An advanced initiative is under way in Berlin. A company is creating a resilient urban district in harmony with nature, with the help of bees. Around 80,000 bees across the site collect pollen and nectar. Small amounts of the pollen are sent regularly to the Belgian startup BeeOdiversity and are compared with an extensive plant database. In this way, the bees become "natural drones" and part of natural biodiversity monitoring. This solution can help promote species found at the site, regulate overpopulation and protect endangered species. Additionally, harmful impacts are detected in time and can be prevented. This creates a balanced ecosystem which is able to regulate itself in the future'

The initiatives and approaches described above should not be understood as catalogue of best practices, but rather as examples of real-life case studies of actions under way or already implemented by different companies operating in their respective sectors.

## 9 Built Environment & Related Infrastructure

*Site specific nature conservation practices*

The construction of buildings and infrastructure leads to habitat loss, deforestation and encroachment on pristine natural areas. Construction and real estate companies are increasingly aware of their impact and are starting to implement different initiatives that in many cases can improve biodiversity conservation. These initiatives cover mass planting, woodland creation, digging tunnels beneath roads, improved water management practices, building shelters for insects and animals, and leaving the land mass on the construction site.

### Joint TCFD/TNFD disclosures

Sustainable forest management is increasingly a response to mass deforestation and climate change consequences. Recently, it also encompasses biodiversity loss. An Australian company piloted a world-leading approach to mainstream a consideration of climate within a nature-based framework. It is an early adopter of both the TNFD and TCFD methodologies and is one of the first entities to demonstrate publicly how the two frameworks can be integrated. In doing so, it has showed how companies can build on their climate-related reporting requirements to incorporate nature-related considerations.

For most geographies, reporting aligned to the TCFD and TNFD frameworks remains voluntary. However, as investors and shareholders seek further information on the materiality of climate and nature to a business's operations, frameworks such as these are likely to become a part of the corporate reporting landscape. Integrated disclosures provide a roadmap for how companies can leverage their existing reporting capabilities to communicate a more comprehensive view of their risks to investors, lenders and insurance underwriters.

## Tools to start with

Numerous companies are working to meet growing expectations to assess, disclose and address their impacts and dependencies on biodiversity, but effective action has been slow, mostly because companies find it difficult to access and analyze the diverse and complex data needed to fully understand biodiversity-related risks. That is why tools that help companies understand their impact and dependencies by collecting and analyzing a broad spectrum of relevant data are so important. Three of the most comprehensive tools available today are highlighted here.

### Integrated Biodiversity Assessment Tool (IBAT)

IBAT is an interactive mapping tool that provides easy access to up-to-date information, with three of the world's most authoritative global biodiversity datasets: IUCN Red List of Threatened Species, World Database on Protected Areas, and World Database of Key Biodiversity Areas.

<https://www.ibat-alliance.org/>

### Exploring Natural Capital Opportunities, Risks and Exposure (ENCORE)

ENCORE is a free online tool that maps the impacts and dependencies of different economic sectors on nature-enabling financial institutions to identify and assess the nature-based risks to the businesses in their portfolios. These risks can be explored further to understand location-specific risks with maps of natural capital assets and drivers of environmental change.

<https://encore.naturalcapital.finance>

### WWF Biodiversity Risk Filter

WWF's Biodiversity Risk Filter is a single free-to-use platform that brings together over 50 biodiversity-relevant datasets to provide companies and financial with institutions comprehensive geospatial biodiversity data to assess and respond to nature-related risks and strengthen resilience.

<https://riskfilter.org/biodiversity/home>

## Appendix II – Taking the next step for nature: impact and dependency measurement – TNFD<sup>80</sup>

The recommendations of the TNFD framework are designed to help companies build actionable strategies to reduce their nature-related risks, allow financial institutions to make more informed investment decisions, and provide an understanding of the concentrations of nature-related risks and opportunities.

The TNFD framework includes three core components:

- 01 Core concepts and definitions**  
A language system, standardizing definitions of the core nature-related concepts, impact and dependencies as well as risks and opportunities.
- 02 The LEAP Process**  
An integrated 'step by step' nature-related risk and opportunity assessment process.
- 03 Recommended disclosure**  
A set of six general requirements and a set of 14 disclosure recommendations on nature-related risks and opportunities.



### LEAP – Nature-related Risk and Opportunity Assessment Approach

The LEAP approach comprises voluntary guidelines intended to help companies and financial institutions conduct assessments to inform strategy, governance, capital allocation and risk management decisions, including disclosures aligned with the TNFD's recommendations

#### The LEAP approach consists of four core phases of analytical activity:

**Locate**  
your interface with nature;

**Evaluate**  
your dependencies and impacts;

**Assess**  
your risks and opportunities;

**Prepare**  
to respond to nature-related risks and opportunities, and report to investors.

LEAP is not a disclosure recommendation or a mandated process to adhere to the disclosure recommendations put forward by the TNFD. The LEAP approach can be used as a checklist to ensure the existence of internal processes adequately addressing nature-related risks and opportunities.

The following key elements should be considered in the initial stages of identifying nature-related dependencies and impacts to inform an organization's analysis of risks and opportunities:

#### Location:

Nature-related dependencies and impacts are location-specific. Thus, an understanding of where the organization's operations and supply chains are located, along with the specific nature context of that location (i.e. the biome and location-specific ecosystem), is essential.

#### Sector:

The characteristics of the organization's business processes, products and services will similarly define its relationship with nature. Some sectors will have either a less or more significant impact on nature than others, depending on their production processes and indirect forces.

#### Drivers of change:

The pressures on nature in different locations will influence the level of risk exposure. For example, if climate change impacts water availability or affects the health of coral reefs, this can have implications for companies in agriculture and tourism with supply chains reliant on the coastal infrastructure.

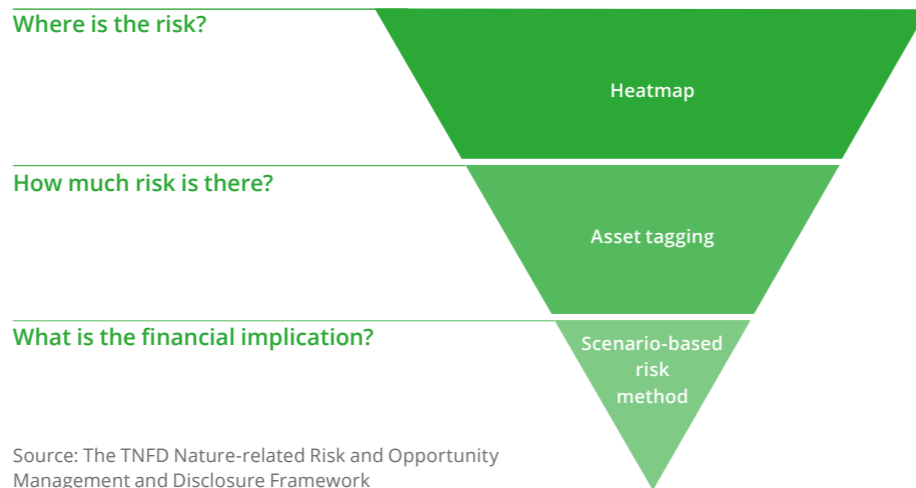
#### Timeframes and scenarios:

It is also important to consider the timeframe of the assessment, particularly when identifying nature-related risks and opportunities. The use of scenarios can be helpful to support longer term thinking around key trends and critical uncertainties.

### Three approaches to risk assessment

In addition to the LEAP process, TNFD provides practical guidance for implementing three different risk assessment approaches. These methods build on each other and have varying levels of complexity, from qualitative to quantitative, and are suited to specific use cases, particularly for financial institutions.

Figure 5. Three risk assessment methods



Source: The TNFD Nature-related Risk and Opportunity Management and Disclosure Framework

#### 1. Heatmaps

Used to identify risks that may warrant a deep dive analysis, inform exclusion policies and/or constitute topics for engagement with portfolio companies. Analysis can be at the sector level or by categories of dependency and impact.

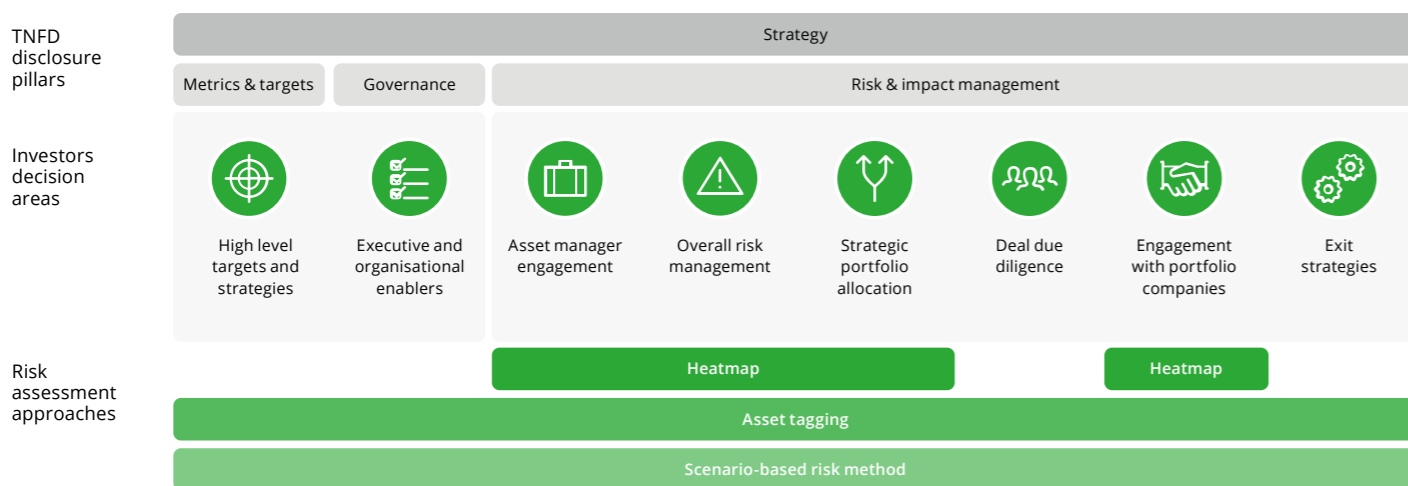
#### 2. Asset tagging

Can be used to focus on sectors, dependencies or impacts on nature that a heatmap exercise has identified as potentially material. It can be used to inform portfolio composition, produce more granular qualitative or quantitative metrics and help prioritize individual portfolio companies for engagement.

#### 3. Scenario-based risk assessment method

Can be used to explore the financial implications of nature-related risks through scenario analysis and can feed into decisions about capital allocation, diversification and portfolio company engagement.

Figure 6. Risk assessments can inform multiple decision areas across all four pillars of recommended TNFD disclosures



Source: Guidance on the identification and assessment of naturerelated issues: The LEAP approach

Nature-related risk assessments can help both financial institutions and corporates inform their strategies and decision-making. For asset owners in particular, risk assessments feed into decisions about portfolio allocation, risk management and

investment strategies, from due diligence to value creation and exit strategy. Risk assessments can also help corporates stress test their business strategies, identify options for risk mitigation and inform peer engagement to create

industry-wide initiatives with positive impacts on nature. Understanding how to apply best practice risk assessment approaches effectively is essential for integrating nature into strategic thinking, decision making and risk management.

### From measurement to action: TNFD Disclosures

After a comprehensive assessment of nature-related risks, a company can advance in its disclosures and fully comply with the standardized disclosures recommended by TNFD, which largely cover the key recommended metrics that are broadly relevant to all organizations and across all economic sectors. This approach also aims to signal companies' alignment with global policy goals, such as the recently agreed Global Biodiversity Framework.

**TNFD allows for flexibility in applying impact materiality and double materiality, making it compatible with GRI and the CSRD.**

There are two conceptual building blocks of the TNFD recommended disclosures:

#### 1. General Requirements for TNFD disclosures:

- Approach to materiality:** The organization should set out its approach to materiality - aligning to external standards or regulatory requirements where appropriate - to help report users understand the context of the information being presented by the report preparer.
- Scope of disclosures:** The organization should provide a description of the scope of disclosures, both in terms of the coverage of the business and value chain, as well as which elements of the TNFD framework have been disclosed against, and plans to extend this scope in the future.
- Consideration of nature-related issues:** The organization should identify nature-related risks and opportunities based on an assessment of dependencies and impacts on nature.
- Location:** The organization should consider the specific locations of its interface with nature as integral to the assessment.
- Integration with other sustainability issues:** The organization's nature-related disclosures should consider, and be integrated with to the extent possible, other sustainability-related disclosures, including climate-related disclosures, with any alignment, contributions and possible trade-offs clearly identified.
- Stakeholder engagement:** The organization should take into account stakeholders' engagement across its disclosures.

The general requirements were created to help ensure expectations are aligned across report editors and users on what adoption of the TNFD framework entails.

#### 2. Complete a set of 14 recommended disclosures with implementation guidance for 'All Sectors':

The TNFD's disclosure recommendations follow the TCFD's four pillars:

- Governance:** The ways in which the organization's oversight and decision-making functions take nature-related risk and opportunities into account.
- Strategy:** The integration of actual and potential effects of nature-related risks and opportunities in the organization's business model, strategy and financial planning.
- Risk management:** How the organization integrates nature-related risks into its overall risk management approach.
- Metrics and targets:** Quantitative and qualitative performance indicators and aims related to nature-related risk and opportunities, based on nature dependencies and impacts.

TNFD recommended disclosures framework

Governance	Strategy	Risk & Impact Management	Metrics & Targets
Disclose the organisation's governance of nature-related dependencies, impacts, risks and opportunities.	Disclose the effects of nature-related dependencies, impacts, risks and opportunities on the organisation's business model, strategy and financial planning where such information is material.	Describe the process used by the organisation to identify, assess, prioritise and monitor nature-related dependencies, impacts, risk and opportunities.	Disclose the metrics and targets used to assess and manage material nature-related dependencies, impacts, risks and opportunities.
RECOMMENDED DISCLOSURES	RECOMMENDED DISCLOSURES	RECOMMENDED DISCLOSURES	RECOMMENDED DISCLOSURES
<p>A. Describe the board's oversight of nature-related dependencies, impacts, risks and opportunities.</p> <p>B. Describe management's role in assessing and managing nature-related dependencies, impacts, risks and opportunities.</p>	<p>A. Describe the nature-related dependencies, impacts, risks and opportunities the organisation has identified over the short, medium and long term.</p> <p>B. Describe the effect nature-related dependencies, impacts, risks and opportunities have had on the organisation's business model, value chain, strategy and financial planning, as well as any transition plans or analysis in place.</p> <p>C. Describe the resilience of the organisation's strategy to nature-related risks and opportunities, taking into consideration different scenarios.</p> <p>D. Disclose the locations of assets and/or activities in the organisation's direct operations and, where possible, upstream and downstream value chain(s) that meet the criteria for priority locations.</p>	<p>A. (i) Describe the organisation's processes for identifying, assessing and prioritising nature-related dependencies, impacts, risks and opportunities in its direct operations.</p> <p>A. (ii) Describe the organisation's processes for identifying, assessing and prioritising nature-related dependencies, impacts, risks and opportunities in its upstream and downstream value chain(s).</p> <p>B. Describe the organisation's processes for monitoring nature-related dependencies, impacts, risks and opportunities.</p> <p>C. Describe how processes for identifying, assessing, prioritising and monitoring nature-related risks are integrated into and inform the organisation's overall risk management processes.</p>	<p>A. Disclose the metrics used by the organisation to assess and manage material nature-related risks and opportunities in line with its strategy and risk management process.</p> <p>B. Disclose the metrics used by the organisation to assess and manage dependencies and impacts on nature.</p> <p>C. Describe the targets and goals used by the organisation to manage nature-related dependencies, impacts, risks and opportunities and its performance against these.</p>

Compilers and editors should apply four general requirements for the preparation of disclosures that cut across all four pillars of the disclosure recommendations:

- **Identification of material nature-related risks and opportunities** should be based on an assessment of nature-related dependencies and nature impacts;
- **Consideration of the organization's interface** with nature at specific locations should be integral to the assessment, recognizing that nature-related dependencies and nature impacts occur in specific ecosystems;
- **Consideration** should be given to how the organization ensures that the correct skills and competencies are available to assess nature-related risks and opportunities, and oversee strategies designed to respond to those risks and opportunities; and,
- **A statement** should be provided regarding the scope of current disclosures and what further disclosures are planned in the future.

## Endnotes

- <sup>1</sup> Convention on Biological Diversity (2023) Kunming-montreal global biodiversity framework. Available at: <https://www.cbd.int/gbf/>
- <sup>2</sup> European Commission (2023) Biodiversity strategy for 2030 Available at: [https://environment.ec.europa.eu/strategy/biodiversity-strategy-2030\\_en#:~:text=The%20EU%27s%20biodiversity%20strategy%20for,contains%20specific%20actions%20and%20commitments](https://environment.ec.europa.eu/strategy/biodiversity-strategy-2030_en#:~:text=The%20EU%27s%20biodiversity%20strategy%20for,contains%20specific%20actions%20and%20commitments)
- <sup>3</sup> European Commission (2023) EU Taxonomy for Sustainable Activities. Available at: [https://finance.ec.europa.eu/sustainable-finance/tools-and-standards/eu-taxonomy-sustainable-activities\\_en](https://finance.ec.europa.eu/sustainable-finance/tools-and-standards/eu-taxonomy-sustainable-activities_en) (Accessed: 12 October 2023).
- <sup>4</sup> European Commission (2023) Corporate Sustainability Reporting. Available at: [https://finance.ec.europa.eu/capital-markets-union-and-financial-markets/company-reporting-and-auditing/company-reporting/corporate-sustainability-reporting\\_en](https://finance.ec.europa.eu/capital-markets-union-and-financial-markets/company-reporting-and-auditing/company-reporting/corporate-sustainability-reporting_en)
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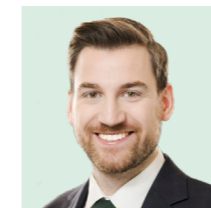
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