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Guide to using public biodiversity data in the private sector

On accelerating private sector use of public biodiversity- and nature-related data to measure, report, and act on biodiversity

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What is Biodiversa+

The European Biodiversity Partnership, Biodiversa+, supports excellent research on biodiversity with an impact for policy and society. Connecting science, policy and practise for transformative change, Biodiversa+ is part of the European Biodiversity Strategy for 2030 that aims to put Europe's biodiversity on a path to recovery by 2030. Co-funded by the European Commission, Biodiversa+ gathers 81 partners from research funding, programming and environmental policy actors in 40 countries to work on 5 main objectives:

1. Plan and support research and innovation on biodiversity through a shared strategy, annual joint calls for research projects and capacity building activities
2. Set up a network of harmonised schemes to improve monitoring of biodiversity and ecosystem services across Europe
3. Contribute to high-end knowledge for deploying Nature-based Solutions and valuation of biodiversity in the private sector
4. Ensure efficient science-based support for policy-making and implementation in Europe
5. Strengthen the relevance and impact of pan-European research on biodiversity in a global context

More information at: https://www.biodiversa.eu/

List of abbreviations

BII - Biodiversity Intactness Index

CSRD - Corporate Sustainability Reporting Directive

CSDDD - Corporate Sustainability Due Diligence Directive

ENCORE tool - Exploring Natural Capital Opportunities, Risks and Exposure tool

ESRS - European Sustainability Reporting Standards

EUDR - Regulation on Deforestation-free Products

GBF - (Kunming-Montreal) Global Biodiversity Framework

GBIF - Global Biodiversity Information Facility

GFW - Global Forest Watch

GRI - Global Reporting Initiative

IBAT - Integrated Biodiversity Assessment Tool

IPBES - Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services

IUCN - International Union for Conservation of Nature

KBA - Key Biodiversity Areas

LEAP - Locate Evaluate Assess Prepare

NBSAP - National Biodiversity Strategy and Action Plan

OBIS - Ocean Biodiversity Information System

PBAF - Partnership for Biodiversity Accounting Financials

PDF - Potentially Disappeared Fraction

SBTN - Science Based Targets Network

TNFD - Taskforce for Nature-related Financial Disclosures

WBCSD - World Business Council for Sustainable Development

WDPA - World Database on Protected Areas

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Foreword

Biodiversity, and more broadly nature, is the foundation of our economy and society (Stockholm Resilience Centre, 2016). Over half of the global GDP depends moderately to highly on ecosystem services such as pollination, food production, water purification, and climate regulation (World Economic Forum & PwC, 2020). Furthermore, virtually all economic activities ultimately depend on healthy and functioning ecosystems (Stockholm Resilience Centre, 2016).

Biodiversity loss is ranked among the top three global risks over the next decade by the World Economic Forum (2025) and is also widely recognised as one of the most urgent threats to economic resilience, public health, and financial stability by other authoritative sources (*e.g.*, IPBES, 2019; United Nations Environment Programme, 2024).

In response, governments worldwide have adopted the Kunming-Montreal Global Biodiversity Framework (GBF), a landmark agreement to halt and reverse biodiversity loss by 2030 and with a vision of a world living in harmony with nature by 2050[1]. Delivering on these commitments requires not only ambition, but also action. Businesses will play a critical role in achieving the GBF's goals and targets.

To do so, they need reliable and accessible biodiversity and nature data to assess risks, comply with regulations, and develop action plans that support organisational, national, regional, and global goals. A common constraint voiced by businesses is that there is 'no biodiversity-related data'. In reality, a lot of data exists, but what is often lacking is decision-useful data and comparability between datasets.

This report aims to help close this gap by providing an overview of the current state of public biodiversity- and nature-related data, identifying challenges, sharing practical examples, and offering guidance on how such data can be used to drive action and support biodiversity- and nature-positive outcomes.

The shift is already visible. In the 18 months since the release of the TNFD recommendations, more than 733 organisations (representing over USD 22.4 trillion in assets under management), have committed to starting to report on their nature-related issues (TNFD, n.d. a). This illustrates the growing private-sector engagement with nature-related data and accountability. It's also in line with Target 15 of the GBF, which calls on governments to ensure that large businesses and financial institutions assess, disclose and reduce their risks, dependencies, and impacts on biodiversity (Secretariat of the Convention on Biological Diversity, n.d.). Achieving the GBF goals requires a whole-of-society approach, with the accelerated use of public nature- and biodiversity-related data being one of the pieces of the puzzle.

1. The vision of the GBF is a world of living in harmony with nature where "by 2050, biodiversity is valued, conserved, restored and wisely used, maintaining ecosystem services, sustaining a healthy planet and delivering benefits essential for all people." The mission of the Framework for the period up to 2030, towards the 2050 vision is: To take urgent action to halt and reverse biodiversity loss to put nature on a path to recovery for the benefit of people and planet by conserving and sustainably using biodiversity and by ensuring the fair and equitable sharing of benefits from the use of genetic resources, while providing the necessary means of implementation. Link to source: https://www.cbd.int/gbf/vision

Executive summary

Biodiversity, and more broadly nature, is the foundation of our economy and society (Stockholm Resilience Centre, 2016). Yet businesses and financial institutions still struggle to integrate biodiversity considerations into decisions. One major barrier is the limited and uneven use of public biodiversity- and nature-related data, despite its availability and relevance.

Purpose and scope

This report aims to guide companies and financial institutions in making more effective use of existing public datasets to inform biodiversity assessments, disclosures, and strategies. It identifies core challenges, highlights practical examples, and provides recommendations for different actor groups. The focus is on **publicly available data** produced outside companies and financial institutions themselves, primarily by public organisations and the scientific community, while acknowledging that meaningful action also depends on internal data on operations and supply chains.

Core challenges

The analysis finds that while biodiversity- and nature-related data is abundant, it remains underused. Core challenges include:

- Gaps in quality, resolution, and comparability of existing datasets.
- Fragmentation across platforms, tools, and standards, which hinders usability.
- Limited clarity around licensing, data lineage, and appropriate applications.
- Uncertainty over when public data is sufficient versus when new site-level data is needed.
- Limited ecological literacy and organisational capacity within private sector organisations to interpret and apply biodiversity insights.

These barriers are not only technical but also social: many stems from siloed responsibilities, limited confidence, or lack of shared understanding across teams.

Recommendations

The report shows that while challenges remain, the private sector is already finding ways to use and adapt public datasets in practice. Key messages include:

- **The private sector cannot wait for "perfect data."** They need to begin working with what is already available, building familiarity and internal capability.
- **Systemic support is needed** to improve the quality, accessibility, and long-term sustainability of public biodiversity datasets.
- **Barriers are as much social as technical**. Building capacity, aligning teams, and fostering a shared vocabulary are essential.
- **Collaboration is critical**. Progress depends on joint efforts between the private sector, governments, research institutions, and civil society.
- **Financing biodiversity data is a shared responsibility**. While most datasets are publicly funded, maintaining and updating them requires ongoing support, where the private sector also has a role to play.
- **Progress is already underway**. New initiatives, collaborative platforms, and tool developments are emerging to make biodiversity- and nature-related data more actionable.

Moving forward

Improving the use of public biodiversity- and nature-related data depends on two mutually reinforcing developments:

1. The private sector needs to start working with the data already available, even if imperfect, to build internal familiarity and demand.
2. Continued support, including financial support, is needed for the broader ecosystem of actors improving the quality, accessibility, and relevance of that data.

Both sides of this equation are essential. Without corporate demand, there is limited incentive to improve public datasets. Without improved access and usability, the private sector may struggle to act effectively on their biodiversity- and nature-related risks and opportunities.

1

Introduction

Purpose and audience

This Biodiversa+ report aims to support the private sector in using publicly available biodiversity- and nature-related data to guide their decision-making. By providing comprehensive insights, it aims to help the private sector organisations to integrate such data into their processes so they can more effectively identify, assess, and reduce their negative impacts on biodiversity. It acknowledges that the use of biodiversity- and nature-related data varies significantly depending on a company's size, operating sector, and whether its operations have direct or indirect impacts on biodiversity and addresses the diverse needs of different private sector organisations for biodiversity- and nature-related data.

The primary audience of this report is the private sector, specifically companies and financial institutions in sectors with high impacts and dependencies on nature and biodiversity (consumer staples, materials, financials, and energy). These actors are central to driving biodiversity-related decisions and investments. The scientific and policy communities are recognised as a secondary audience, as their contributions are essential for creating the systemic changes that enable greater use of public biodiversity- and nature-related data by the private sector. The report specifically highlights the role of data providers and data service providers as key actors in accelerating the use of public biodiversity- and nature-related data, offering suggestions and action steps to help overcome challenges faced by the private sector. The ultimate objective is to encourage companies and financial institutions across sectors to identify, assess, report and ultimately reduce and minimise their negative impacts on biodiversity. The report provides guidance to help the private sector increase their use of public biodiversity- and nature-related data in this endeavour.

The ultimate objective of data use is to encourage private sector organisations across all sectors to identify, assess, report, and ultimately reduce and minimise their negative impacts on biodiversity. This report provides guidance to help private sector organisations to make greater use of publicly available biodiversity- and nature-related data in support of this goal. It is complemented by another report that provides detailed guidance on how private sector organisations can share their own biodiversity- and nature-related data with others, thereby contributing to a more robust and accessible global knowledge base (Ostermann *et al.* 2025).

The business case for biodiversity- and nature-related data

According to global calculations, over half of the world's GDP is moderately to heavily dependent on nature, biodiversity and the ecosystem services they provide (World Economic Forum & PwC, 2020). Nevertheless, concerns about biodiversity are often considered low priority or even disruptive when it comes to decision-making on the economy, trade policy and development (Dasgupta, 2021). Our economic system fails to adequately value nature. Investment decisions do not structurally take the potential impacts on biodiversity into account or recognise the potential contribution that biodiversity can make to their desired achievements.

The operating environment for private sector organisations is shifting, with both physical and transition risks on the rise. Neglecting to assess dependencies and impacts on biodiversity can increase operational, reputational, and financial risks. It can also limit the ability of private sector organisations to adapt and compete in a rapidly changing market (KPMG & Naturalis, 2024).

Alongside these risks, significant opportunities are emerging for businesses that integrate biodiversity into their strategies. According to the World Economic Forum (2020), transitioning to nature-positive business models could generate up to $10 trillion in annual business value and create 395 million jobs by 2030. The private sector could benefit from more resilient supply chains, new market opportunities in sustainable products and services, cost savings through nature-based solutions, and enhanced stakeholder trust (World Economic Forum, 2020). Proactively investing in biodiversity can help businesses to secure access to resources, meet evolving customer expectations, and position themselves as leaders in a transforming global economy.

In line with evolving regulatory frameworks such as the Corporate Sustainability Reporting Directive (CSRD), the EU Taxonomy, and the proposed Corporate Sustainability Due Diligence Directive (CSDDD), private sector organisations are increasingly being expected to assess and manage their impacts and dependencies on nature and biodiversity. Under CSRD this depends on the double materiality assessment (DMA). By contrast, the EU Taxonomy and CSDDD impose more direct requirements through disclosure and due diligence obligations. Together, these regulations increase demand for reliable and decision-relevant biodiversity- and nature-related data. Several jurisdictions, including Australia and the UK, are actively exploring how to integrate TNFD recommendations into regulations and take legal action to ensure businesses 'assess, disclose and reduce biodiversity-related risks and negative impacts' as per GBF's Target 15 (Daghighi & Cowan, 2025; UK Government, 2025). In China, the government has committed to implementing the GBF through its National Biodiversity Strategy and Action Plan (NBSAP) (CBD, 2024) and has begun aligning financial and corporate disclosure practices with nature-related objectives, including biodiversity-related risk management in sectors such as agriculture and mining. China's Green Finance Committee is also promoting nature-inclusive risk frameworks in

financial institutions, building on its leadership in green finance taxonomy development (Yue & Nedopil, 2025). Meanwhile, countries like Japan and Brazil are engaging with TNFD through government-supported platforms and pilot programs, reflecting growing interest in integrating biodiversity into financial decision-making (TNFD, 2024; CEBDS, 2024).

Consequently, the demand for reliable, decision-relevant and spatially explicit biodiversity- and nature-related data is increasing. Public biodiversity- and nature-related datasets, which are freely available for anyone to use and share without significant restrictions, play a critical role in meeting this need.

Methodology

This report was developed through a multi-step, mixed-method approach that combined desk research, stakeholder consultation, and interactive validation to ensure it is both evidence-based and practically grounded. The process covered a comprehensive review of the existing literature and biodiversity- and nature-data landscape, including relevant datasets, frameworks, and initiatives aimed at bridging the knowledge and implementation gap for biodiversity metrics in the corporate context. This initial phase revealed persistent challenges related to the accessibility, usability, and integration of biodiversity- and nature-related data into business decision-making.

To complement and validate these insights, targeted consultations were held with 17 private sector organisations from four key sectors, materials, consumer staples, energy, and financials, selected for their relevance to biodiversity-related impacts, risks and opportunities. Sectors were mapped based on both their impact on biodiversity (*e.g.* land use, climate change, pollution) and their dependency on ecosystem services (*e.g.* water, soil, climate regulation), following the approach of the Finance for Biodiversity Foundation (2024). Additionally, input from 10 expert organisations, including global platforms focused on nature and finance, enriched the understanding of cross-sectoral challenges and emerging practices. An interactive session during the Biodiversa+ workshop[2] brought together (mainly) private and public sector participants to review, refine, and prioritise the identified challenges and solutions based on urgency and complexity. This iterative and participatory process helped shape guidance that is grounded both in the latest scientific and policy developments and in the practical constraints, business processes and decision-making contexts experienced by end users, as illustrated through case studies from the private sector and publicly available examples.

2. Business & Biodiversity workshop by Biodiversa+, Barcelona Spain, 23rd of May 2025

2

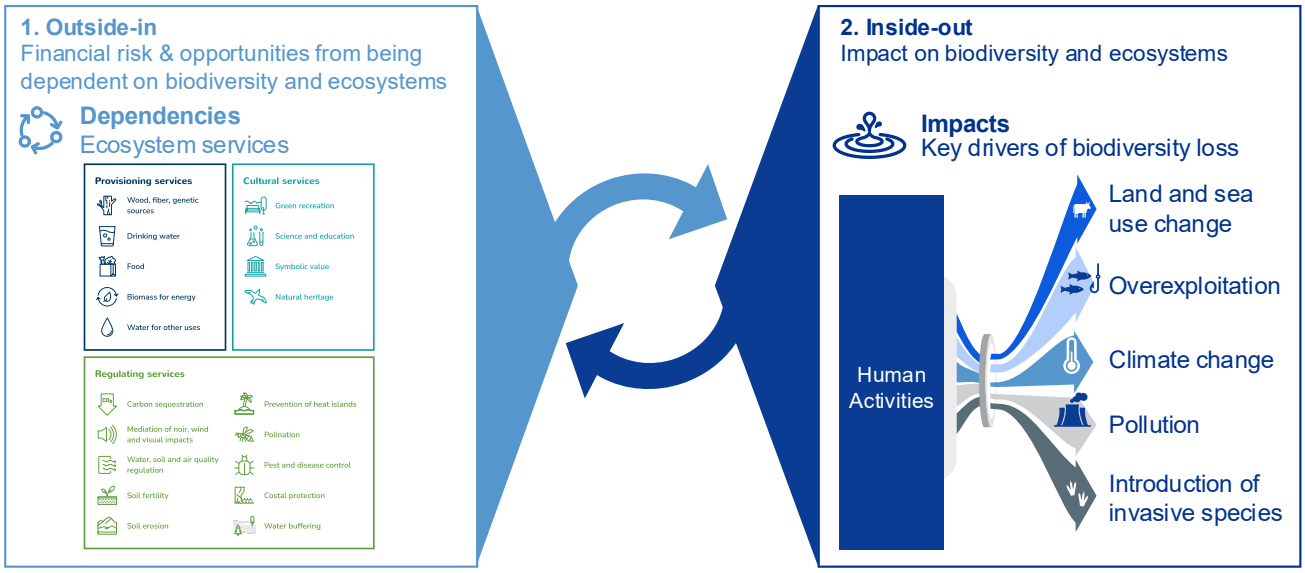
Key concepts: What is biodiversity and why does it matter for a private company?

As biodiversity moves higher up on the corporate agenda, a shared terminology across sectors, frameworks and policy contexts is key.

This chapter introduces key concepts, outlines relevant EU and global policy developments, and further clarifies the definition of nature data. These elements set the stage for the more practical guidance that follows.

2.1 How does the private sector interact with nature and biodiversity?

Business activities are closely linked to nature and biodiversity. The private sector relies on ecosystem services for resources and stability, and they affect the ecosystems in which they operate. Understanding these relationships is a first step towards making better use of nature- and biodiversity-related data when making decisions.

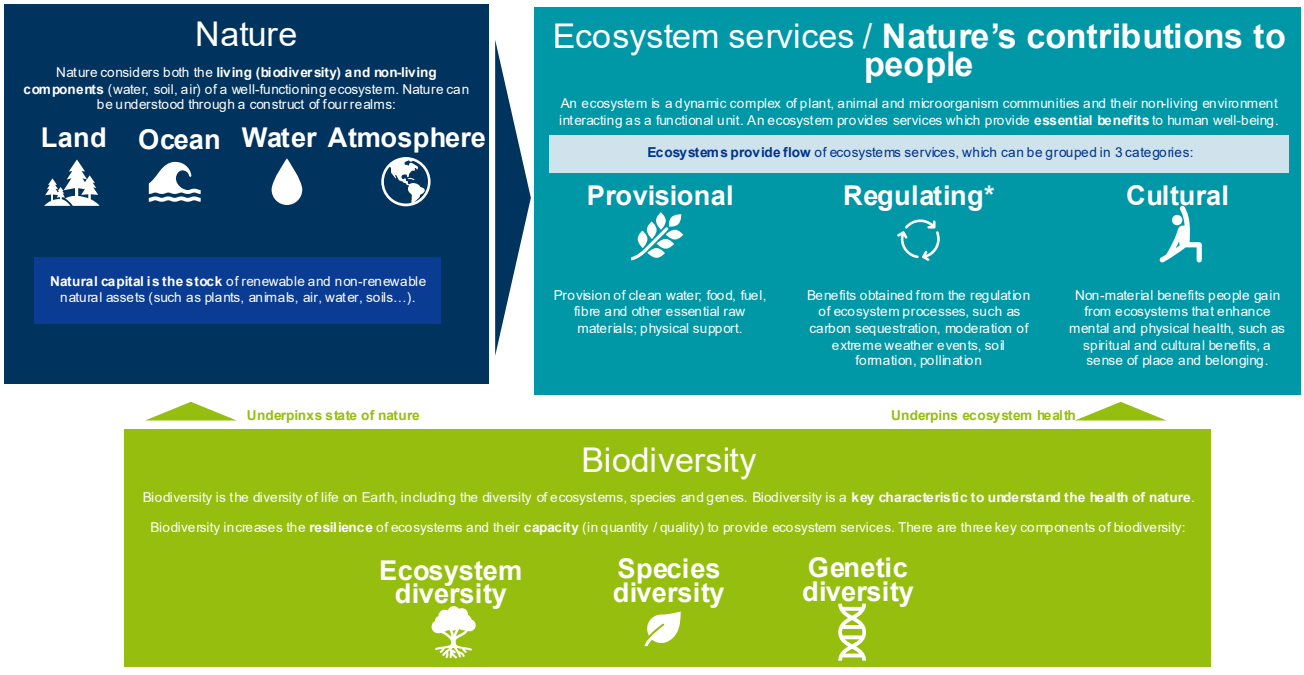


Source: Natural Capital in the Netherlands: Recognising its true value

Figure 1: From an outside-in perspective, the private sector depends on biodiversity and ecosystems for the services they provide; from an inside-out perspective, the private sector also impacts them (Egmond & Ruijs, 2016; IPBES, 2019).

Nature and biodiversity

Biodiversity refers to the diversity of life on Earth, including genetic, species and ecosystem diversity. Nature includes both the living (biodiversity) and non-living components (water, soil, air) of a well-functioning ecosystem (IPBES, 2019). These components work together to provide essential **ecosystem services**, such as water regulation, pollination, carbon storage and nutrient cycling, many of which underpin economic activities (IPBES, 2019)).



Source: : IPBES Global Assessment, 2019. Nature's contributions to People. *Within IPBES, since 2018 the definition has been updated: what were formerly known as supporting services are excluded, largely to avoid double-accounting.

Figure 2: Introducing nature, ecosystem services and the key role of biodiversity (IPBES, 2019).

Healthy and biodiverse ecosystems are active and productive, resilient to stress, maintain their organisation and autonomy over time and are better able to adapt to change (Hernández-Blanco *et al.*, 2022). However, when biodiversity is lost, the services ecosystems provide may become unreliable or cease entirely (IPBES, 2019).

Use of terms in this guidance

This guidance focuses primarily on biodiversity-related data, reflecting the terminology used in the Kunming–Montreal Global Biodiversity Framework (GBF), which sets global targets to halt and reverse biodiversity loss (Secretariat of the Convention on Biological Diversity, 2011).

Although nature as a concept already encompasses biodiversity, the combined term "nature- and biodiversity-related data" is used in this guidance to clearly put the emphasis on integration of biodiversity data. Corporate decision-making often requires information beyond the biodiversity state alone, such as data on environmental pressures, ecosystem functions, or abiotic components like soil, water, and climate variables. In line with definitions used in science and policy, this guidance applies:

- **Biodiversity-related data** when referring specifically to data on ecosystems, species or genes (*e.g.*, species occurrence)
- **Nature- and biodiversity-related data** covers both biodiversity-related data (as seen above) as well as wider data on the state of nature and the pressures acting upon it (*e.g.*, data on air, soil, water, land-use change, or pollution). While the definition of 'nature data' inherently encompasses biodiversity, we use the term 'nature- and biodiversity-related data' in this report to enhance clarity and specifically reinforce the integration of biodiversity in corporate and financial contexts.

Where a specific framework (*e.g.* TNFD, SBTN) or initiative is discussed (*e.g.*, Nature Positive Initiative), the terminology follows that frameworks or initiative's usage. This approach ensures precision while acknowledging differences in emphasis between science, policy, and private sector contexts.

Dependencies and impacts

Private sector organisations are linked to nature and biodiversity in two main ways: through what they depend on, and what they affect.

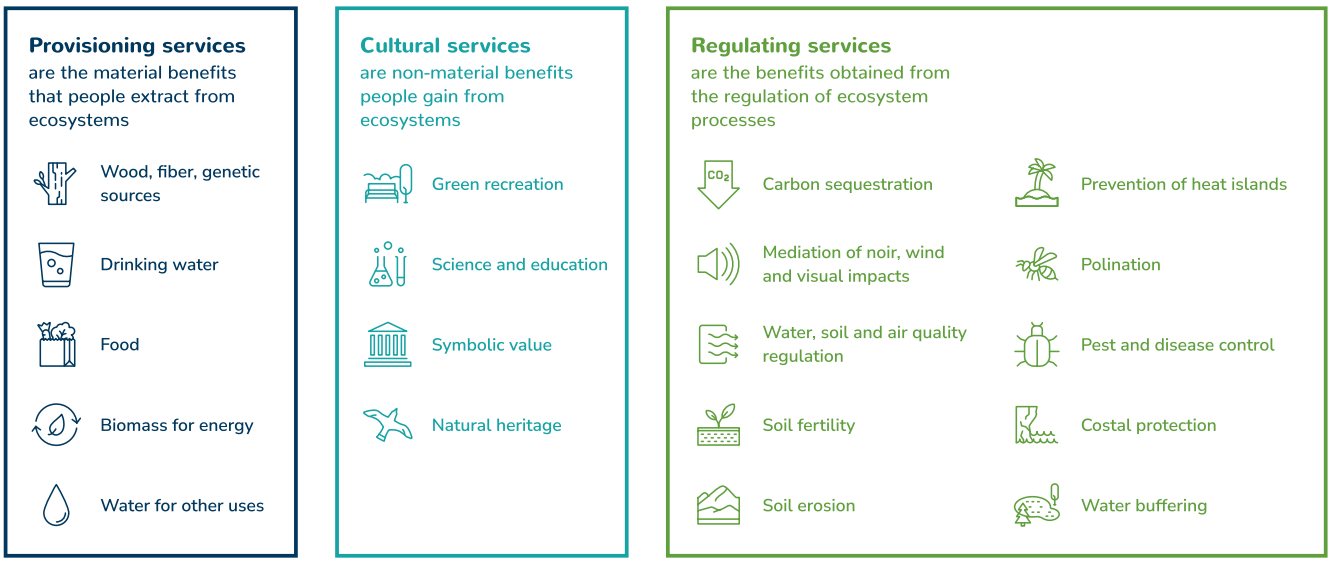
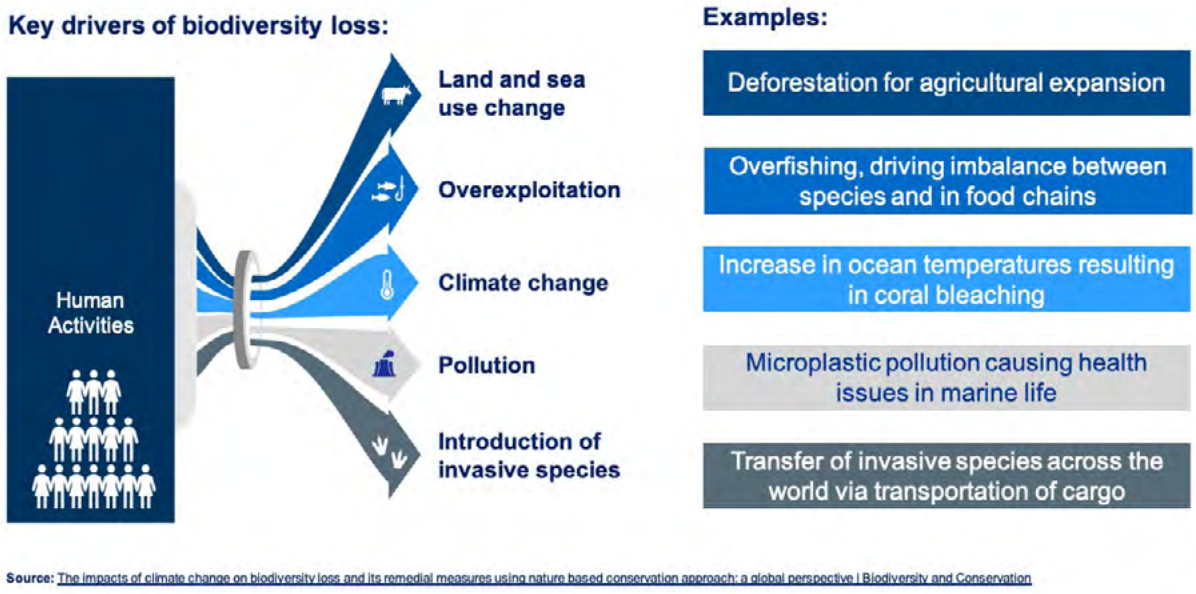


Figure 3: Overview of the different types of ecosystem services that the private sector relies on (Egmond & Ruijs, 2016).

- **Dependencies** refer to the natural systems or ecosystem services a company relies on. For example, agriculture depends on healthy soils, freshwater, and pollinators. Manufacturing may depend on stable water supply or protection from floods. These dependencies create risks if ecosystems degrade or their functions decline (Adapted from SBTN, 2023 & TNFD, 2025).



Source: The impacts of climate change on biodiversity loss and its remedial measures using nature based conservation approach: a global perspective | Biodiversity and Conservation

Figure 4: Overview of the main impact drivers of human activities causing biodiversity loss (IPBES, 2019).

- **Impacts** occur when business activities lead to changes in nature, such as land conversion, emissions, or (over) extraction of natural resources. Impacts can be negative or positive, direct or indirect. Over time, they can reduce the very services private sector organisations depend on, and affect communities, other sectors, and nature itself (SBTN, 2023; Climate Disclosure Standards Board, 2021; Impact Management Platform, 2023; TNFD, 2025)

Risks and opportunities

Biodiversity- and nature-related dependencies and impacts translate into financial risks for businesses, such as operational disruptions, increased costs, or regulatory penalties when ecosystems degrade, or ecosystem services become less reliable. Conversely, understanding and managing these connections can create opportunities for cost savings, innovation, and competitive advantage, for instance through sustainable sourcing, nature-positive product development, or access to green finance. The ability to identify, measure, and disclose these risks and opportunities is crucial for robust business decision-making and resilience (SBTN, 2023; Climate Disclosure Standards Board, 2021; Impact Management Platform, 2023; TNFD, 2025).

Understanding where and how a company depends on biodiversity and nature, and where it causes change, is essential for assessing risks, action planning, and using biodiversity- and nature-related data effectively.

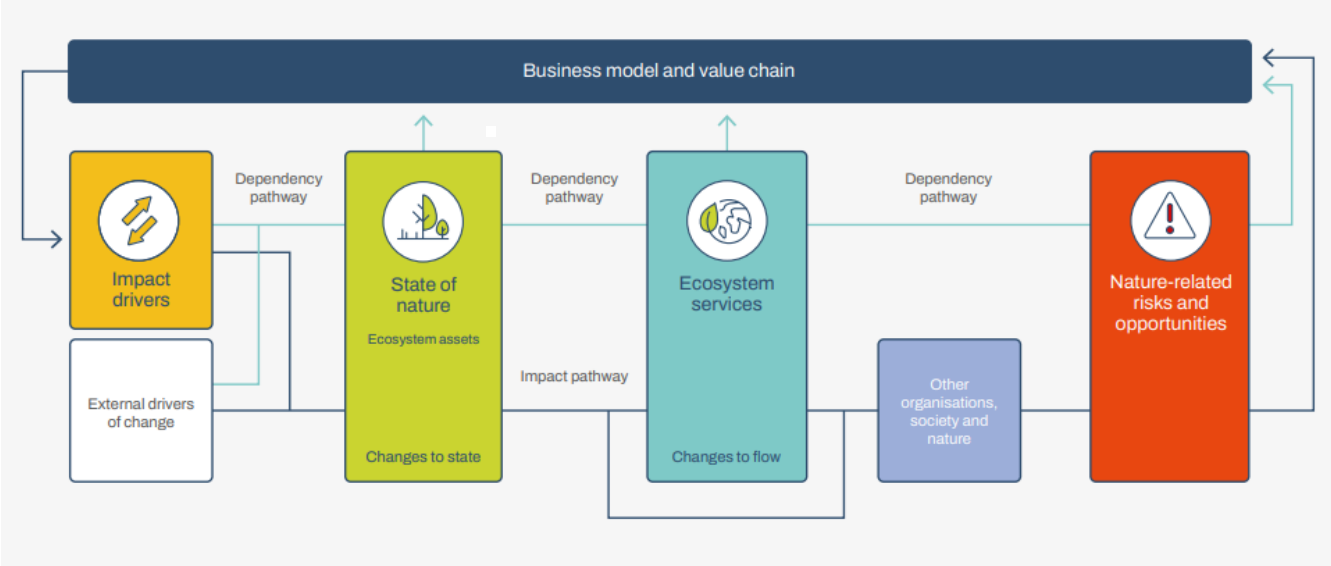


Figure 5: Connections between nature-related dependencies, impacts and risks and opportunities – Impact and dependency pathways (building on TNFD, 2023).

Pathways of interaction

Dependencies and impacts often follow specific chains of cause and effect. For example:

- Clearing land for development may lead to habitat loss, species decline, and reduced pollination and water infiltration for nearby agriculture.
- A business dependent on groundwater may face rising costs or operational disruption if local water tables fall due to climate shifts, land clearing and water run-off or overuse.

These kinds of interactions, often referred to as *pathways*, help identify 1) impact drivers and external factors, 2) changes to the state of nature and 3) changes to the availability of ecosystem services. As such, they clarify how changes in biodiversity may affect the businesses (dependency pathway) and how, as a result of a business activity, an impact driver may impact biodiversity (impact pathway) (Natural Capital Coalition, 2016; see further definition of impact pathway from Impact Management Platform (2023); TNFD, 2025).

2.2 What are the global biodiversity policies and frameworks?

In recent years, biodiversity loss has moved higher on the policy agenda, not only as an environmental concern, but as a material business and financial risk. Global commitments and EU regulation are increasingly converging on the expectation that private sector organisations understand and disclose how their activities both depend on and impact nature and biodiversity.

From global ambition to national implementation

The Kunming-Montreal Global Biodiversity Framework (GBF), adopted in 2022 under the UN Convention on Biological Diversity, sets the scene for biodiversity action in the next few decades.

The vision of the GBF is a world of living in harmony with nature where "*by 2050, biodiversity is valued, conserved, restored and wisely used, maintaining ecosystem services, sustaining a healthy planet and delivering benefits essential for all people.*"

The mission of the Framework for the period up to 2030, towards the 2050 vision is: "*To take urgent action to halt and reverse biodiversity loss to put nature on a path to recovery for the benefit of people and planet by conserving and sustainably using biodiversity and by ensuring the fair and equitable sharing of benefits from the use of genetic resources, while providing the necessary means of implementation.*"

Over 190 countries have adopted the GBF and are now required to develop or update their national biodiversity strategies and action plans (NBSAPs), outlining how they will contribute to achieving these global goals at the national level. This process is crucial to translate the global vision and mission into concrete, country-level actions and measurable outcomes. It defines 4 global goals for 2050, envisioning a world living in harmony with nature:

1. Halt the extinction of species and reduce extinction risk tenfold;
2. Protect and restore ecosystems so that biodiversity is valued and conserved;
3. Sustainably use biodiversity to maintain ecosystem services and benefits for people, ensure fair and equitable sharing of genetic resources;
4. Close financial gaps for biodiversity protection.

Together, these goals provide a long-term vision for reversing biodiversity loss and ensuring a sustainable future for both people and the planet (Secretariat of the Convention on Biological Diversity, n.d.). Importantly, the GBF is not only a framework for governments but also for businesses: it sets clear expectations for how the private sector can and should contribute to its implementation, for example through assessment, disclosure, and action to reduce biodiversity impacts.

Alongside the 4 global goals, the GBF sets out 23 global targets for 2030. This includes Target 15, which calls on countries to require large and transnational companies to assess and disclose risks, dependencies and impacts related to biodiversity across their operations and value chains. Beyond assessment and disclosure, the target's core aim is to use this information to reduce negative impacts, increase positive impacts, and promote sustainable production. This target has become a key reference point for regulators, financial institutions and standard-setting bodies alike (Secretariat of the Convention on Biological Diversity, n.d.). At the same time, it is important to recognise that the successful implementation of the GBF will require business engagement across all the 4 global goals.

In the EU, alignment with the GBF is reflected in the EU Biodiversity Strategy for 2030, which forms part of the wider European Green Deal. This strategy commits to expanding protected areas, restoring degraded ecosystems and integrating biodiversity into business and finance. The aim is to effectively protect nature on 30% of land and 30% of seas by 2030. It establishes the basis for an increasing set of legal requirements that incorporate biodiversity into corporate due diligence, reporting and risk assessment (European Commission, 2025).

Key EU regulatory developments

One of the most influential pieces of European legislation is the Corporate Sustainability Reporting Directive (CSRD). Private sector organisations in scope of the CSRD are required to produce a sustainability statement applying European Sustainability Reporting Standards (ESRS). This covers two cross-cutting standards and 10 topic-specific standards: five standards for reporting in the Environmental domain, four standards in the social domain, and one standard in the Governance domain. The five standards in the Environmental domain include:

- **Climate change (E1),**
- **Pollution (E2),**
- **Water and marine resources (E3),**
- **Biodiversity and ecosystems (E4),**
- **Resource use and circular economy (E5)**

The standard that relates most strongly to this study is ESRS E4: Biodiversity and Ecosystems, which sets out detailed reporting requirements related to governance and strategy, impacts, risks and opportunities and metrics and targets. However, it is important to note that all ESRS standards are interconnected. For example, E3 is part of nature and biodiversity. E1, E2, and aspects of E5 reflect key pressures on nature and biodiversity, while other elements of E5 represent important response strategies). These requirements may be further adjusted through the forthcoming "Omnibus" amendments to the ESRS, which aim to refine and clarify certain disclosure obligations. Specific timelines, as well as some disclosure requirements, are currently under revision and may influence how biodiversity-related information is reported in practice.

Double materiality

A core concept of ESRS is double materiality: private sector organisations are expected to assess not only how (changes in) biodiversity and ecosystems may affect their financial performance but also how their own activities impact biodiversity and ecosystems. This dual perspective is central to determining which disclosures are required.

Complementing the CSRD are other EU regulations that address specific aspects of business interaction with nature and biodiversity:

- The Corporate Sustainability Due Diligence Directive (CSDDD) requires private sector organisations to identify and address adverse environmental impacts in their operations and value chains, including impacts on biodiversity and ecosystems (European Commission, n.d. a).
- The EU Regulation on deforestation-free products (EUDR) obliges private sector organisations to ensure that certain commodities, such as coffee, cocoa, soy, rubber, palm oil, wood and cattle, are not linked to deforestation after 2020. It introduces due diligence, traceability and risk assessment obligations.
- The EU Taxonomy for Sustainable Activities defines when economic activities can be considered environmentally sustainable. One of the taxonomy's six objectives focuses on the protection and restoration of biodiversity and ecosystems, linking nature-related performance to access to green finance (European Commission, n.d. b).
- The Sustainable Finance Disclosure Regulation (SFDR) requires financial institutions to report on how they integrate sustainability risks, including biodiversity risks, into their investment decisions. It also calls for transparency on principal adverse impacts, including those related to land use and ecosystems (European Commission, n.d. c).
- Other EU environmental directives (*e.g.*, Environmental Impact Assessment Directive, Birds Directive, Habitats Directive, Marine Framework Strategy Directive) also influence business interactions with biodiversity by requiring the assessment, monitoring, and management of impacts on species and ecosystems. These directives often drive on-the-ground conservation actions and involve collecting site-specific ecological data, which can be aligned with national, regional, and global datasets to strengthen biodiversity reporting.

Together, these frameworks are reshaping corporate expectations. Where biodiversity is deemed material, they create requirements to gather and disclose information on nature and biodiversity. More broadly, they are increasing demand for spatially explicit, up-to-date and decision-useful biodiversity-related data, a topic that is explored further in the next sections of this guidance.

2.3 What are the additional voluntary nature-related frameworks?

A growing number of voluntary frameworks are offering private sector organisations practical guidance on how to respond to nature related risks and opportunities. These initiatives provide structure, terminology, and methods that help organisations assess nature-related risks, identify opportunities, and begin integrating nature into business decisions.

While not legally binding, these frameworks are shaping market norms. They inform investor expectations, influence due diligence practices, and often serve as stepping stones for private sector organisations preparing to comply with EU sustainability reporting requirements.

How do frameworks relate to the use of nature data?

The **Taskforce on Nature-related Financial Disclosures (TNFD)** has emerged as a widely used reference for private sector organisations exploring their nature-related dependencies, impacts and risks. Its LEAP approach, *Locate, Evaluate, Assess, Prepare*, is suggested within the ESRS standards for the assessment of nature- and biodiversity-related impacts, dependencies, risks and opportunities to disclose on. It supports organisations in identifying their interactions with nature, evaluating their dependencies and impacts, assessing related risks and opportunities, and preparing a strategic response. The approach highlights the importance of geospatial data, local context, and stakeholder engagement. It also aligns closely with the EU's double materiality perspective, offering private sector organisations a structured way to think about what to disclose under regulations like the CSRD (TNFD, 2023). Other nature-related assessment and disclosure frameworks exist as well and a comparison of the seven most used approaches can be found in the Accountability for Nature report (UNEP FI, 2025).

The **Science Based Targets Network (SBTN)** complements this by providing a framework for setting science-based targets to reduce impacts and dependencies related to nature. Its guidance focuses on land, freshwater and oceans. For private sector organisations developing transition plans or long-term strategies, these targets offer a way to connect nature data to business actions (SBTN, 2024).

The **Nature Positive Initiative** is working to build consensus around how to measure progress. Its proposed *State of Nature Metrics* aim to consolidate a wide range of biodiversity indicators into a core, minimum set, helping private sector organisations make sense of an otherwise fragmented landscape of measurement approaches (Nature Positive Initiative, n.d.). The metrics are designed to be embedded in a consistent manner within existing frameworks and standards, such as TNFD, SBTN and GRI.

Finally, the **Capitals Coalition** offers foundational concepts for recognising and valuing nature in decision-making. Its Natural Capital Protocol and related resources support private sector organisations in identifying, measuring and valuing their impacts and dependencies across different forms of capital. This can be particularly useful for organisations at the early stages of integrating nature considerations into their operations or investment decisions (Capitals Coalition, 2025).

2.4 What are biodiversity- and nature-related data?

Effective biodiversity-related, and more broadly nature-related assessments, rely on access to the right data. In line with the definitions provided earlier in chapter 2.1, biodiversity-related data refers to information on the diversity of life (genetic, species, and ecosystems) and the ecological interactions that sustain them. This includes data on the state and trends of biodiversity, such as species abundance, habitat extent and quality, and ecosystem integrity (IPBES, 2019).

Nature-related data builds on this, covering both biodiversity (the living components) and the non-living components of ecosystems (such as soil, water, and air), as well as the functions and services they provide. It can also include pressure data (*e.g.* land use change, pollution, overexploitation), which are critical to understanding and addressing biodiversity loss (adapted from TNFD, 2023).

The combined term biodiversity- and nature-related data is used when the scope explicitly covers both biodiversity-specific information and the broader set of environmental data needed to interpret, manage, or act on biodiversity outcomes. This applies, for instance, in sections that address the full data landscape, where information on biodiversity state is considered together with pressure data, ecosystem functions, and abiotic factors. Using the combined term indicates that both dimensions are within the scope of the analysis or recommendations.

Location matters!

Biodiversity- and nature-related risks and opportunities are inherently local. Business activities that take place in the natural environment, such as deforestation and land conversion and overfishing, can cause localised harm to biodiversity and the wider natural environment. This harm may include the loss of ecosystem integrity or the decline of certain species. The significance of these impacts depends largely on the specific ecosystems affected and the locations where the activities occur or upon which they rely. Therefore, spatially explicit data is critical for identifying areas of elevated risk or opportunity and guiding appropriate responses (TNFD, 2023). Without geographic context, organisations may overlook sensitive ecosystems, misjudge their level of exposure or apply mitigation measures in the wrong locations, thereby undermining the credibility or effectiveness of their strategies.

Public, shared, and private biodiversity- and nature-related data

To support effective assessments and decision-making, it is important to distinguish between three categories of data, based on their accessibility: public (open) data, public data with restrictions, and private (closed) data. Each category carries distinct implications for data use, licensing, and availability (European Commission, 2023; Open Data Institute, 2019).

Public (open) biodiversity- and nature-related data

Public data refers to data that is freely accessible to all without significant barriers. It aligns with the concept of *open data*, defined as data that anyone can access, use, and share freely, subject only to minimal requirements like attribution (Open Knowledge Foundation, 2015).

The European Commission emphasizes that publicly funded or publicly relevant biodiversity- and nature-related data (*e.g.* species occurrences, climate data) should be treated as a public good and shared openly to foster transparency, innovation, and broad reuse (European Commission, 2023).

In practice, public biodiversity- and nature-related data are typically released under open licenses such as Creative Commons CC0 or CC-BY, which permit reuse without significant restrictions. While also allowing CC-BY-NC, which places restrictions on commercial use, GBIF encourages that species occurrence datasets be licensed under recognised open licenses to ensure global data accessibility (GBIF Secretariat, 2022a). Similarly, India's National Data Sharing and Accessibility Policy (NDSAP) mandates that government-funded data should be open by default (Government of India, 2012).

Public data with restrictions

Between public and private lies a significant middle category: public data with restrictions. These datasets are publicly available in principle but are subject to certain conditions, licenses, or usage restrictions that prevent them from being completely open (Open Data Institute, 2019).

The Open Data Institute (2019) describes such data as *shared data*, which can range from access limited to specific groups (*e.g.* researchers) to public access under terms like non-commercial use only. A common example is data licensed under Creative Commons CC-BY-NC, which allows free use for non-commercial purposes but prohibits commercial exploitation without separate permission (GBIF Secretariat, 2022a). For instance, the UK's National Biodiversity Network Atlas offers certain biodiversity datasets under CC-BY-NC licenses, requiring businesses to negotiate additional rights for commercial applications (NBN Trust, 2022).

Public data with restrictions thus occupy a middle ground. They enable broader data use while safeguarding legitimate concerns such as privacy, commercial interests, or biodiversity protection (Open Data Institute, 2019).

Private (closed) biodiversity- and nature-related data

Private (closed) data consists of biodiversity- and nature-related data that is not publicly accessible. Such data is typically kept within organisations or shared only under specific agreements. Often, these are proprietary datasets owned by private sector organisations, consultancies, or government bodies and are protected by intellectual property rights, confidentiality, or commercial interests (U.S. Geological Survey, 2020).

The U.S. Geological Survey (2020) defines proprietary data as information whose ownership rights restrict free distribution. For example, biodiversity surveys conducted for private environmental impact assessments are frequently kept confidential, accessible only through direct negotiations or legal agreements (U.S. Geological Survey, 2020). Even public authorities may withhold certain data to prevent harm, for example, concealing exact locations of endangered species to avoid poaching risks (EOSC Association, 2021). The principle remains that data should be open unless there is a strong, justified reason for restriction (European Commission, 2023).

In sum, private biodiversity- and nature-related data remains confidential and inaccessible to the public without explicit permission or legal obligations to disclose (U.S. Geological Survey, 2020). It represents a significant, often essential, portion of biodiversity and environmental knowledge, albeit out of reach for broader public use.

Openness as a spectrum

These three categories, public, public with restrictions, and private, should be understood not as rigid silos but as positions along a continuum of data accessibility (Open Data Institute, 2019). Data may shift along this continuum as legal, ethical, or commercial circumstances evolve (European Commission, 2023). For instance, proprietary data might become publicly available after embargo periods, while open data could become restricted if new privacy or ecological concerns arise.

As biodiversity-related issues become more prominent, organisations are increasingly relying on open nature- and biodiversity-related data to ensure transparency, sustainability reporting, and regulatory compliance. Clarity about the data's licensing, sensitivity, and scope, is critical for its lawful and effective use. Understanding openness as a spectrum helps organisations to remain adaptable and aware of the opportunities and constraints involved in using such data for decision-making purposes.

3

Who to contact and where to find & access biodiversity data?

This Biodiversa+ guide for private sector organisations focuses primarily on public data. However, to provide a more complete picture, it also includes some publicly restricted and private data sources.

Public data refers to openly accessible, free-to-use datasets, often originating from publicly funded research or monitoring initiatives. This report focuses on the wider data landscape for a number of reasons:

1. Depending on the data provider's mandate and funding model, processed data products may either be made openly available to maximise impact or licensed and placed behind paywalls to recover the additional resources invested in their curation.
2. Access controls to public data are sometimes also intended to prevent misuse, such as the exploitation of sensitive species location data. They may also be required by other legal restrictions, for example those related to statistical confidentiality or national security.
3. In addition, in some cases, licensing or paywalls could be in place to ensure long-term affordability of maintaining the dataset (Juffe-Bignoli *et al.*, 2016).
4. Including publicly restricted and private data alongside public data helps present a realistic picture of the current biodiversity- and nature-related data ecosystem.

The data landscape can be divided into three groups of 1) biodiversity- and nature-related data providers; 2) biodiversity- and nature-related data intermediaries; and 3) biodiversity- and nature-related data users (Figure 6).

3.1 Who provides the data?

Data collectors

The first category of the landscape (Figure 6) consists of data providers of primary or raw data. This type of data has undergone minimal processing and generally involves only basic cleaning. It encompasses specimen data, field observations, sensor readings, and other direct measurements (Kissling *et al.*, 2018). Traditionally, such data are collected through methods like field surveys and direct observation. However, innovative techniques are increasingly being developed and adopted. Examples of these emerging methods include GPS-tagged species sightings, environmental DNA sequencing, and raw satellite imagery (Financial for Biodiversity Foundation, 2025).

Primary data is collected by a wide range of actors, including academic researchers, non-governmental organisations, citizen scientists, government agencies, remote sensing companies and the private sector. Additionally, local and Indigenous knowledge holders play a crucial role in generating and maintaining valuable biodiversity- and nature-related knowledge, as reaffirmed during COP16 (Vanegas, 2024).

Data aggregators

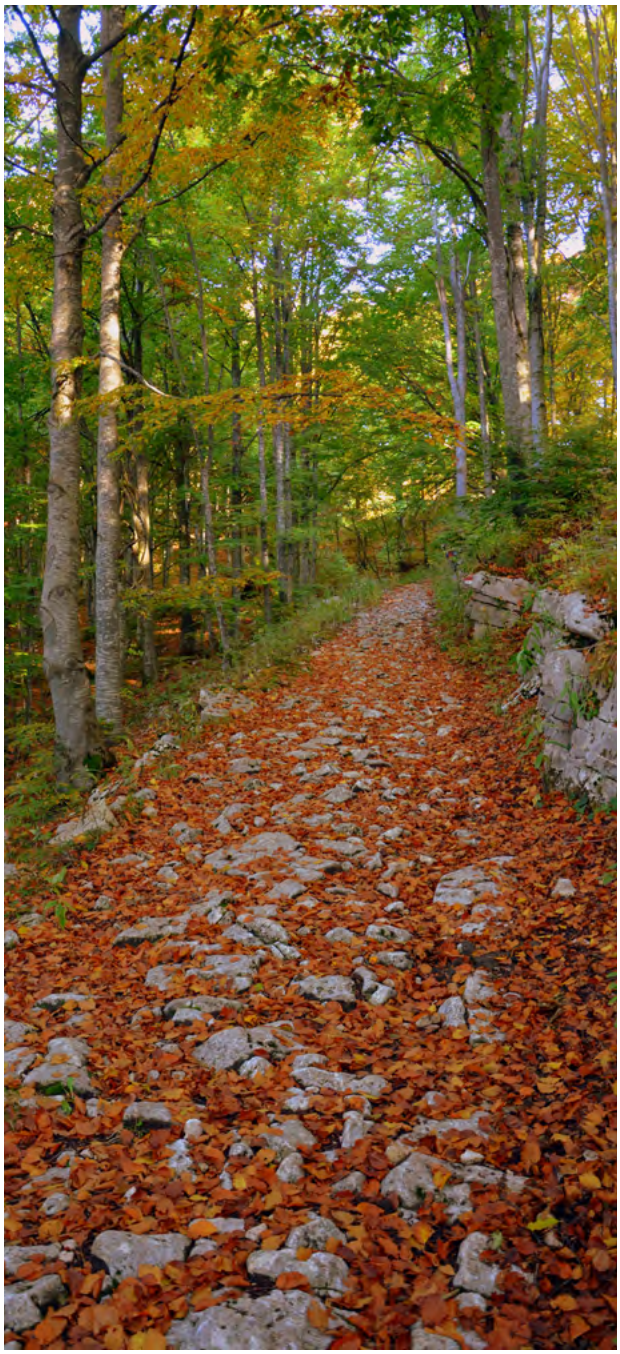
Due to the wide range of stakeholders involved, primary data can be quite scattered and is often stored locally by its owners. To overcome this fragmentation, organisations such as national information systems, the 'Global Biodiversity Information Facility' (GBIF) and the 'Ocean Biodiversity Information System' (OBIS) aggregate primary data and make it accessible to a broader audience via a single access point.

Aggregating and standardising data involves harmonising data formats and applying consistent metadata and classification standards. Commonly used Data frameworks such as the Darwin Core (Wieczorek *et al.*, 2012) and ABCD standard (Access to Biological Collection Data task group, 2007) are widely used. These frameworks provide a structured glossary of terms that facilitates the sharing of information about species, their occurrences, and related data through standardised identifiers, labels, and definitions. The result is a streamlined dataset that is easier to work with, interpret, and apply in various contexts.

Aggregated data usually focuses on particular themes related to biodiversity, such as species distribution or ecosystem extent, and is made accessible through platforms. The Biodiversa+ report on the harmonisation and interoperability of datasets across regions and countries provides an extensive list of (sub-)national databases and initiatives that aggregate data (Basset *et al.*, 2023).

Aggregated datasets can vary widely in scope and content. For the purposes of this guidance, four key categories of aggregated data were distinguished in the data landscape (Figure 2). They were based in part on the Essential Biodiversity Variables (EBVs) and in part on what is decision-relevant for private sector organisations. These categories are:

1. ecosystem extent and condition,
2. protected and conservation areas,
3. species data,
4. data on pressures driving biodiversity loss.



3.2 What role do data intermediaries play?

To enable meaningful decision-making by a private company, data must eventually be analysed and interpreted. This represents a major hurdle for many businesses due to a lack of technical capacity.

To bridge this gap, tools, platforms, indicators, metrics and methods have been developed by scientists, service providers, data and analytics tool providers and others (Lammerant *et al.*, 2021; WWF, 2022; TNFD, 2022).

Two primary types of services were identified (Figure 2):

- dashboards and tools, which simplify or clarify biodiversity information in user-friendly interfaces;
- (modelled) metrics and methods, which aim to quantify biodiversity information (such as pressure data and state of nature data) and express this as a metric.

Data intermediaries help bring data closer to end-users by making it more user-friendly or by creating indices, to support decision-making and disclosure. Indicators vary considerably in quality and intended use. It is important to recognise that tools and metrics are developed for specific use cases and are based on different underlying data and assumptions. Although doing so requires some expertise and time, users must carefully assess the appropriateness of these methods and tools for their specific business context. With a wide and rapidly evolving range of methods and tools emerging, it is essential to understand the data and methods used, and to verify that they are ecologically sound and supported by peer-reviewed science.

3.3 Who uses the data?

Anyone can be a biodiversity data user. While this guidance focuses primarily on corporates and financial institutions, it also recognises the importance of the biodiversity- and nature-related data landscape for the public sector, non-profit organisations, and other stakeholders (Figure 6).

Corporates and financial institutions can leverage biodiversity- and nature-related data for various purposes, including but not limited to double materiality assessments, regulatory compliance, reporting, assessing risks and strategic decision-making. In some cases, private sector organisations also generate biodiversity data themselves (*e.g.* through monitoring at project sites). There is growing encouragement for such data to be shared more openly to strengthen the overall biodiversity knowledge base and enable wider use across sectors (Ostermann *et al.* 2025). However, despite the availability of public nature data, significant challenges remain in accessing, interpreting, and effectively integrating this data into decision-making processes. The following chapter explores these challenges in greater detail.

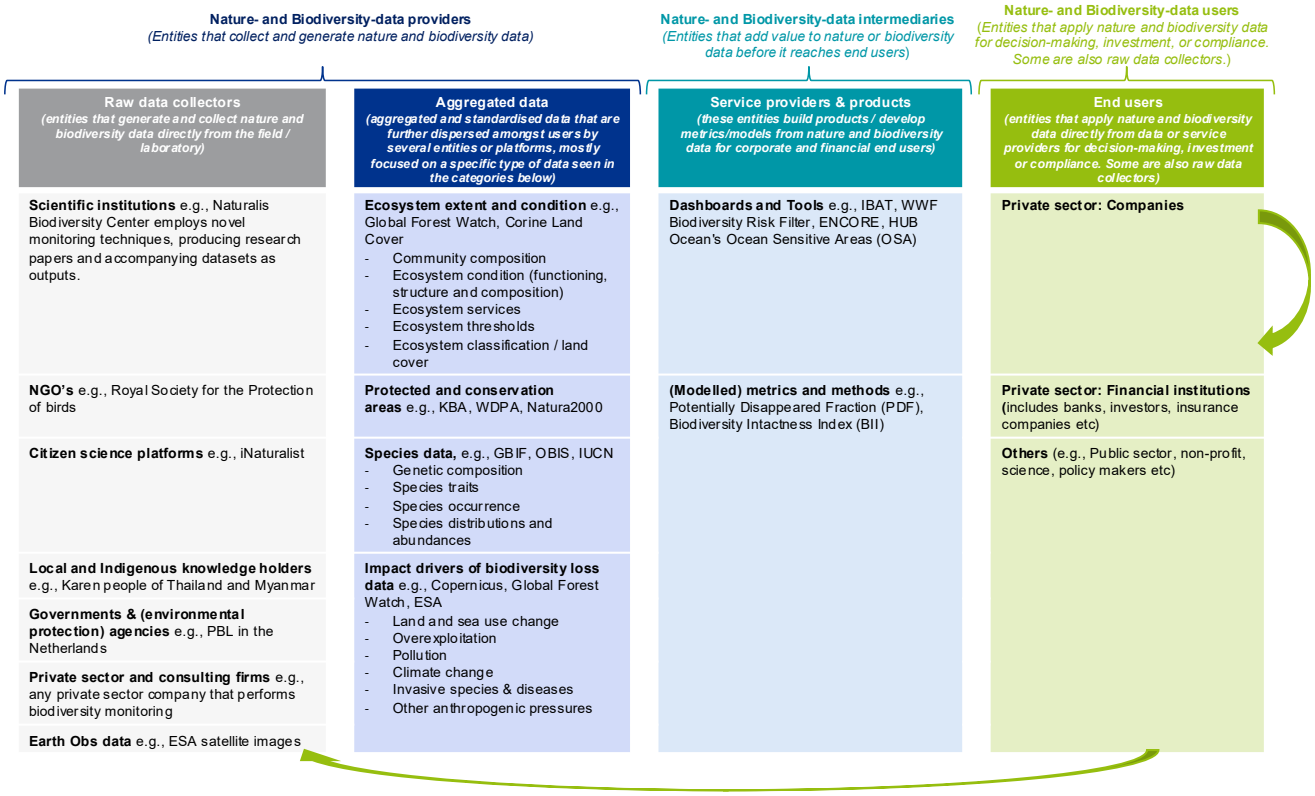
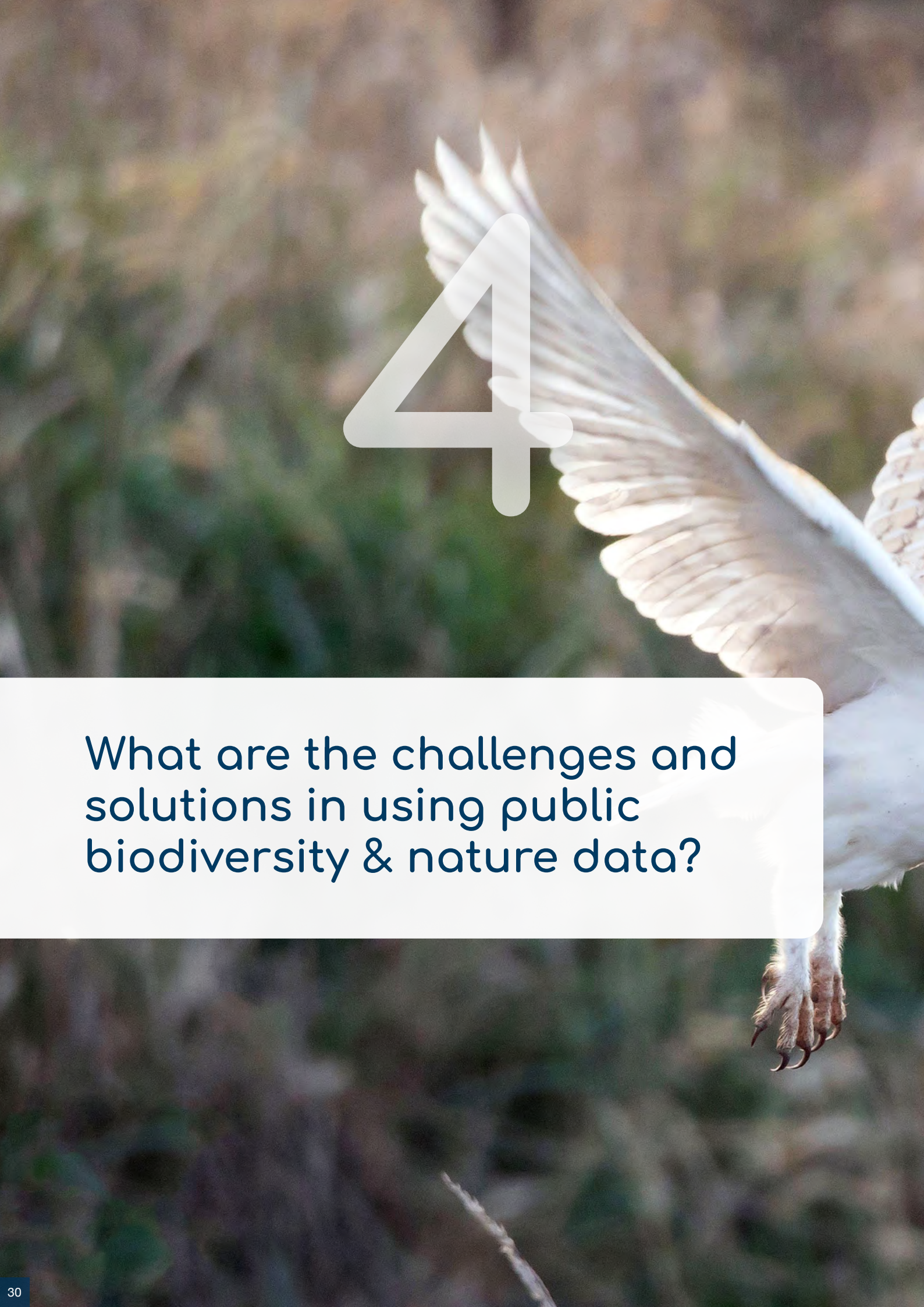


Figure 6: Nature- and biodiversity-data landscape based on the level of processing of the data. This figure was adapted from TNFD and their concept model for the Nature Data Public Facility and WWF (TNFD, 2024; WWF, 2022).



4

What are the challenges and solutions in using public biodiversity & nature data?

This chapter focuses on challenges related to the use of ***public* biodiversity- and nature-related *data*: datasets produced or funded by public institutions and made accessible to external users, either as open data or under specific use conditions**. While private sector organisations also rely heavily on internal data, such as information on operations, asset locations, and supply chains, this guidance concentrates on external, biodiversity-related datasets such as species occurrence, ecosystem condition, and habitat maps.

It is important to underscore that effective biodiversity assessment and management is only possible when public and internal data are linked, especially through spatial information. However, gaps in internal corporate data should not be confused with limitations in public biodiversity- and nature-related data. This chapter focuses on the latter: helping private sector organisations to better understand and use the biodiversity- and nature-related datasets that are already available.

Based on interviews and literature, five cross-cutting themes are identified that shape how the private sector engages with public biodiversity- and nature-related data:

1. Knowledge, capacity & culture
2. Availability, quality & affordability
3. Complexity & fragmentation
4. Policy, regulation & incentives
5. Integration & application barriers

Figure 7: Overview of challenges and responses to using public nature data by the private sector.

4.1 Knowledge, capacity & culture

Why does it matter?

Although many challenges are technical, they are often underpinned by foundational factors, such as how people within private sector organisations understand and relate to biodiversity, and how they can have a role in addressing issues. Several interviewees noted that confusion surrounding concepts such as biodiversity, nature, and ecosystem services can lead to internal misalignment, affecting not only different departments, but also between sustainability and operational teams. Integrating biodiversity- and nature-related considerations into corporate practice takes time. Private sector organisations emphasised that progress depends not only on tools, but also on developing internal confidence, a shared understanding and a clear sense of purpose when it comes to addressing biodiversity.

Core challenge

A common barrier is the absence of a shared language and basic ecological literacy. Although biodiversity is a well-defined concept, it is often perceived as more abstract or complex than it really is. Much of this perceived complexity stems from the wide variety of metrics and tools available to measure biodiversity, rather than from the concept of biodiversity itself. Complexity also arises from the fact that biodiversity and its value differ across locations, making it challenging for private sector organisations to account for site-specific ecological importance within their operations. Limited in-house ecological expertise can make it more challenging to judge which data is most relevant and how to apply it correctly. Moreover, there is often no common understanding of when public biodiversity data is sufficient and when new, site-level primary data collection is needed. Therefore, building confidence through practical training and better communication is critical. Cultural factors, such as differing mindsets, ways of working, and levels of motivation across teams, can also influence how seriously biodiversity is prioritised and integrated into decision-making.

These barriers can be overcome: they are the first, addressable steps in an organisation's journey toward meaningfully integrating biodiversity considerations into business.

Implications for business

- Difficulties in understanding and distinguishing between nature and biodiversity and why they are both important to businesses
- Difficulty in aligning internal teams around biodiversity priorities
- Limited confidence to assess or act on biodiversity risks and dependencies
- Fragmented ownership and unclear responsibilities

Suggested solutions

Suggested solutions to the above challenges are organized by actor groups: data intermediaries, and data users, i.e. the private sector in this case. These responses outline how each group can contribute to accelerating the use of public biodiversity- and nature-related data. For data users, the actions include both ways to apply data effectively and ways to support broader data adoption. A comprehensive list of solutions for each data actor is provided in Appendix II.

For Data intermediaries

- Curate biodiversity and nature data tools by user profile and maturity level
  - » Improve clarity around biodiversity tools, datasets, metrics and indicators, tailored to varying business roles, industries, and levels of expertise.
  - » Help users navigate the complex biodiversity- and nature-related data landscape by offering curated directories, decision trees, and platform comparisons that clarify which tools are suitable for specific tasks or organisational maturity levels.
  - » Publish clear user guidelines and ensure transparency on how data and tools are documented, including how source data is modelled and what assumptions or limitations apply. This enables organisations to interpret outputs correctly, compare between tools, and avoid misapplication.
  - » Create clear and transparent tools which identify source data and any specific limitations around that data. This should clearly set out any assumptions they have used.
- Provide guidance on required knowledge, skills, and resources
  - » Publish guidance outlining the types of knowledge, technical skills, and organisational resources needed for effective biodiversity data management. Recognise that capacity requirements differ substantially between large corporations and small and medium-sized enterprises (SMEs). For example, larger private sector organisations may need advanced analytics teams and dedicated biodiversity specialists, while SMEs might require simpler tools and more hands-on support. Include recommendations for capacity-building pathways, training opportunities, and potential collaborations with external experts or service providers to help organisations close capability gaps.

For Data users – Private sector

- Offer cross-functional, foundational training and practical examples
  - » Delivering tailored, practical training sessions. Incorporate storytelling techniques, real-world case studies, and visual communication to make biodiversity concepts tangible and relatable.
  - » Design programs for both operational staff and (senior) leadership, including boards and CEOs, to ensure commitment at all organisational levels.
  - » Base training content on authoritative frameworks such as the TNFD Learning Lab, TNFD sector guidance, the "TNFD in a Box" toolkit, and relevant sector-specific standards like the PBAF biodiversity accounting framework for financial institutions. Where appropriate, integrate requirements from (emerging) regulations such as the CSRD to ensure both relevance and compliance (TNFD, 2025; PBAF, 2024).
  - » Additionally, consider sector-specific biodiversity dependencies and impacts to tailor training more effectively. The TNFD sector guidance provides an initial, high-level overview of this (TNFD, n.d. b).
  - » Embed ecological expertise within the organisation by incorporating ecologists into the organisation. This builds an internal ecological memory and provides a guiding point for the rest of the organisation, ensuring biodiversity considerations are embedded in decision-making and strategy.
- Promote consistent terminology across teams and documents
  - » Develop and disseminate a shared vocabulary for biodiversity-related concepts to reduce confusion and promote alignment across business divisions.
  - » Standardise definitions and terminology using established references, such as the UN CBD, TNFD, and IPBES.
- Develop communities of practice across sectors or industries
  - » Foster peer-learning networks and communities of practice where organisations can exchange case studies, lessons learned, and emerging best practices.
  - » Engage participants from different industries, NGOs, and academic institutions to facilitate cross-sector collaboration, accelerate learning, and harmonise methodologies.
  - » Consider establishing regular forums, online platforms, or working groups focused on specific challenges, such as biodiversity data management, biodiversity- and nature-positive strategies, or integration of biodiversity- and nature-related risks into financial decision-making. In line with its mandate, Biodiversa+ aims to foster such exchanges by engaging stakeholders across research, policy and business, and by promoting collaborative approaches to biodiversity monitoring and data use. Examples from other initiatives include the Nature Action Dialogues by UNEP-WCMC, an annual cross-sector forum for technical exchange between businesses and biodiversity practitioners. Another is the Proteus Partnership, a long-term collaboration advancing the uptake of biodiversity data and science in business. Both foster shared learning and accelerate collective progress.

4.2 Data availability, quality & affordability

Why does it matter?

Once private sector organisations move beyond high-level commitments to operational action, such as site selection, supplier engagement, or impact monitoring, the limitations of public biodiversity- and nature-related data become more tangible.

Core challenge

Key concerns include spatial and temporal resolution, thematic coverage, licensing restrictions, and hidden costs of data preparation, validation and the use of different monitoring systems. Coverage of public data tends to be stronger for terrestrial and charismatic species than for freshwater and marine systems, invertebrates, or soil biodiversity. Licensing also emerged as a recurring concern. Platforms like GBIF offer clearly defined licensing models (see definitions in Box 1), but private sector organisations are not always aware of the licensing and/or can still find it challenging to interpret their implications for commercial use or to locate relevant licensing information. Additionally, concerns exist around the scientific robustness of the data itself: the extent to which data is peer-reviewed or produced by scientifically reputable institutions defines its quality, but this information is not always easily accessible or transparent for users seeking to evaluate data credibility.

Many public datasets were not originally designed for business users, but for research or conservation, which can limit their practical relevance for corporate decision-making. For example, public data often lacks the granularity needed for site-level or value chain analysis, making it difficult for companies and financial institutions to translate broad biodiversity insights into actionable decisions for specific locations or supply chain actors. In other cases, however, data providers such as GBIF provide highly detailed, geographically explicit data that can reach site-level resolution. Here, the challenge is reversed: the data may be too fine scale for businesses that rely on and focus on broad models and indicators.

Similar considerations apply to tools and metrics derived from these datasets. There is considerable diversity among indicators and methodologies, each developed for specific purposes and grounded in varying assumptions and data sources. In practice, this means users must carefully evaluate whether a given tool or metric is scientifically robust, ecologically meaningful, and suitable for their business context. The rapidly evolving landscape of methods can create uncertainty, reinforcing the importance of understanding both the quality of the underlying data and the scientific credibility behind the tools being used.

Box 1: Definitions of the licensing models used by GBIF (Creative Commons, 2023)

- CC0: Data are made available for unrestricted use, with no requirements or conditions imposed on users.
- CC BY: Data can be used freely for any purpose, provided that proper attribution is given to the data sources, following the specifications set by the data owner.
- CC BY-NC: Data are available for any non-commercial use, as long as appropriate attribution is provided to the data sources, and the use is not primarily intended for commercial advantage or monetary compensation.

A further underlying challenge is funding and continuity. Many public biodiversity and nature datasets depend on short-term, project-based financing, which makes it difficult to ensure regular updates, high-quality documentation, and long-term maintenance. For example, four global knowledge products (the IUCN Red List of Threatened Species, Protected Planet, the World Database of Key Biodiversity Areas, and the IUCN Red List of Ecosystems) have required about US$160 million in historic investment, plus substantial volunteer contributions. In 2013, the annual cost of maintaining three of these datasets was estimated at US$6.5 million, and achieving full baseline coverage was projected to require an additional US$103–114 million, with ongoing upkeep of around US$12–13 million per year (Juffe-Bignoli *et al.*, 2016). These figures only cover the global aggregation layer, not the primary data collection or many national processes. For businesses, the resource needs are often even greater, since private sector organisations require finer spatial and temporal resolution and more frequent updates than those originally designed for science or policy use. Regional examples also show the effect of under-investment: in Brazil's Amazon, biodiversity research receives a much smaller share of federal funds

per km², is highly concentrated in two cities, and often depends on international financing, demonstrating how unstable funding undermines data coverage where it is most needed (Stegmann *et al.*, 2024). For private sector organisations, this means that critical datasets may not be maintained at the level needed for decision-making, underscoring both the risks of relying solely on public data and the opportunity to engage in co-financing models that ensure their continuity and business relevance.

Implications for businesses

- Public data is not always suitable for site-level or value chain analysis, depending on the location of the assessment. It's also not always clear how and if the data was validated.
- Uncertainty over licensing terms limits reuse
- The financial cost associated with accessing data can be restrictive, especially for small and medium-sized enterprises in the early stages of integrating biodiversity considerations into their operations.
- Continuity of public datasets depends on short-term project funding, limiting updates and reliability
- Cleaning and processing impose hidden costs, especially for smaller firms

Suggested solutions

Suggested solutions to the above challenges are organized by actor groups: data providers, data intermediaries, and data users, including both policy makers and the private sector. These responses outline how each actor can contribute to accelerating the use of public biodiversity- and nature-related data. For data users, the actions include both ways to apply data effectively and ways to support broader data adoption. A comprehensive list of solutions for each data actor is provided in Appendix II.

For Data providers

- Adopt clear licensing models and data standards
  - » Adopt and clearly communicate a licensing model for the dataset, for example Creative Commons licenses, and specify what this means for potential commercial use.
  - » Adopt widely used data standards, such as DarwinCore (Wieczorek *et al.*, 2012), and, where relevant, newer extensions like the Humboldt Extension for Ecological Inventories (TDWG, n.d.), which enable more comprehensive ecological data descriptions. Using harmonised licensing frameworks helps reduce legal uncertainties for businesses and facilitates broader data sharing and integration across sectors. Where open licenses are not feasible, provide clear guidance on negotiated or tiered access to data under specific conditions.
  - » Apply and maintain metadata standards such as Ecological Metadata Language (Jones *et al.*, 2019) or INSPIRE (European Commission, 2025) to ensure consistent documentation of data sources, collection methods, temporal and spatial coverage, and data quality indicators.
- Invest in technology and data quality
  - » Accelerate the deployment of advanced technologies, such as satellites, drones, hyperspectral imaging, LIDAR, and Internet of Things (IoT) sensors, to monitor biodiversity over large geographic scales at high resolution efficiently and cost-effectively.
  - » Invest in research and development to enhance the resolution, frequency, and interpretability of these advanced technologies for biodiversity applications, while remaining mindful of their current limitations (Ramilo-Henry *et al.*, 2024).
  - » Create rigorous validation protocols and transparent quality indicators to ensure the reliability and credibility of biodiversity datasets. Pay particular attention to the integration of citizen science data, which is a valuable addition. However, robust validation and monitoring processes are essential to ensure data quality and to strengthen confidence in the use of such datasets.
- Support data users with tools and training
  - » Encourage integration of multi-source data streams to improve biodiversity assessments, habitat mapping, and early detection of ecosystem changes.
  - » Develop training materials and decision-support tools to help data users translate the data these advanced technologies produce into practical insights.
  - » Provide clear documentation of data provenance and quality assessments to support traceability and build trust among users, particularly businesses and policymakers who rely on data for decision-making and compliance reporting.

- Ensure long-term funding stability

  - » Secure recurring government funding by treating biodiversity data as national infrastructure. For example, the Atlas of Living Australia is fully funded through the Australian Government's research infrastructure programme, with every AUD $1 invested estimated to return AUD $3.5 in societal and economic benefits (CSIRO, 2024). Similarly, the Netherlands is anchoring its National Database Flora and Fauna (NDFF) in law, ensuring structural financing from central and provincial governments (NDFF, n.d.).

For Data intermediaries

- Create accessible and standardised platforms

  - » Create centralized platforms or biodiversity- and nature-related data "hubs" that provide standardised, aggregated, and quality-assured datasets accessible to a broad range of users.
  - » Encourage public–private partnerships to invest in shared infrastructure, including open-access portals and collaborative tools that enable peer review, user feedback, and continuous data improvement.
  - » Provide clear documentation of data provenance and quality assessments to support traceability and build trust among users, particularly businesses and policymakers who rely on data for decision-making and compliance reporting.

- Develop co-financing partnerships

  - » Pooling resources across actors can help sustain core datasets. The UNEP-WCMC Proteus Partnership demonstrates how private sector organisations collectively fund annual work programmes to improve global biodiversity data (UNEP-WCMC, 2024a; UNEP-WCMC, 2024b). Similarly, the Global Biodiversity Information Facility is maintained by >60 governments paying GDP-linked annual contributions (GBIF, n.d.), showing how international cooperation can sustain open-data infrastructures.

For Data users – Policy makers

- Enhance regional monitoring and comparability

  - » Support the development of regional biodiversity monitoring networks and national coordination centres to address spatial and thematic gaps. Particular attention is needed for under-represented ecosystems such as freshwater, soil, and marine environments. These efforts align closely with the efforts of Biodiversa+, which is working to establish transnational monitoring networks, national coordination centres, and thematic hubs to improve data coverage and interoperability (Bresadola & Bjärhall, 2025; Basille, Vihervaara, & Winkler, 2025). Ensuring data comparability across borders is essential for coordinated decision-making.
  - » Encourage, or where appropriate require, private sector organisations to submit data collected as part of environmental impact assessment (EIA) baselines or monitoring. Methodologies used in baseline and monitoring surveys should be aligned with those applied by regional monitoring networks to ensure interoperability and strengthen the collective knowledge base. More on data sharing can be found in the Biodiversa+ report on data sharing by the private sector (Ostermann *et al.* 2025).

- Embed funding mandates in policy

  - » Governments can reduce reliance on project-based financing by embedding biodiversity data systems in law or national budgets. For example, the NDFF is transitioning into a legal "national nature register," securing permanent financing through environmental legislation (NDFF, n.d.).

For Data users – Private sector

- Strengthen data quality and resolution
  - » Prioritise investments that increase spatial resolution and update frequency of biodiversity- and nature-related data. Support technological innovations to improve the precision and timeliness of biodiversity data, *e.g.* higher-resolution remote sensing, drones, IoT sensors and biodiversity monitoring devices, eDNA sampling, hyperspectral imaging, and satellite inference techniques.
  - » Share data collected as part of environmental impact assessment (EIA) baselines or monitoring and ensure that the methodologies they apply are consistent with those used by regional monitoring networks to enable interoperability and strengthen the collective knowledge base. More on data sharing can be found in the Biodiversa+ report on data sharing by the private sector (Ostermann *et al.* 2025).
- Define project-relevant data needs
  - » Focus data collection on biodiversity elements that are directly relevant to the potential impacts of a project. This helps reduce unnecessary effort and cost while ensuring that collected data is meaningful and fit for purpose.
- Use scientific literature and expert knowledge as supplementary data sources
  - » Use scientific literature and expert knowledge to validate whether publicly available biodiversity data is appropriate and accurate for your organisation's specific context.
  - » Where gaps or uncertainties remain, complement public datasets with insights from scientific studies, local ecological assessments, or expert consultations to ensure the data is fit for purpose and robust enough to inform your objectives.
- Co-finance critical datasets
  - » Private sector organisations can directly sustain the public data they depend on. By subscribing to the Integrated Biodiversity Assessment Tool (IBAT), more than 200 private entities contributed USD 2.5 million in 2024 alone, with revenues reinvested into the Red List, WDPA, and KBA datasets (UNEP-WCMC, 2024b). Likewise, Toyota's multi-year partnership with IUCN supported ~28,000 additional Red List assessments (Toyota Motor Corporation, 2016). These examples illustrate how corporate contributions can be treated as part of sustainability commitments while delivering measurable improvements in public biodiversity data.

4.3 Data complexity & fragmentation

Why does it matter?

Public biodiversity- and nature-related data is often fragmented across platforms, presented in inconsistent formats, and accompanied by limited metadata. This makes it difficult for users to assess comparability or integrate datasets into business workflows.

Core challenge

Without shared standards and clearer metadata, private sector organisations risk misapplying data, or falling into "data washing," where tools serve optics more than outcomes. The lack of reliable baselines also undermines monitoring and performance tracking. This is particularly problematic for private sector organisations operating across multiple jurisdictions, where national systems vary in structure and accessibility.

Users often lack clarity on the provenance of biodiversity- and nature-related data, when, where, and how it was collected. This makes it difficult to assess its fitness for specific decisions. These issues are closely linked to the quality of associated metadata, which should document collection methods, temporal and spatial coverage, and update history.

There is also a lack of versioning clarity, private sector organisations may unknowingly use outdated datasets or apply them inconsistently across locations, weakening auditability and comparability. Private sector organisations may use public data as a practical first step, even if it is not a perfect fit for their context. This highlights the value of knowing when to complement it with new site-level data.

Implications for business

- Datasets are often difficult to compare, depending on the format and metadata.
- Similarly, (modelled) indicators can be hard to compare across different sources or contexts, depending on the monitoring protocols used to collect the underlying data.
- Uncertainty around data reliability due to data provenance or assumptions
- Misalignment between indicators and baselines, as well as difficulties in establishing robust, verifiable targets.

Suggested solutions

Suggested solutions to the above challenges are organized by actor groups: data providers, data intermediaries, and data users, i.e. the private sector in this case. These responses outline how each actor can contribute to accelerating the use of public biodiversity- and nature-related data. For data users, the actions include both ways to apply data effectively and ways to support broader data adoption. A comprehensive list of responses for each data actor is provided in Appendix II.

For Data providers

- Adopt and mandate (meta)data standards
  - » Encourage universal adoption of data standards such as DarwinCore (Wieczorek *et al.*, 2012) and other taxonomies (*e.g.* Catalogue of Life, IUCN) to improve consistency in how biodiversity data is described, shared, and interpreted.
  - » Mandate essential (meta)data fields (*e.g.* location, collection date, provenance, methodology, licensing information) for all datasets to ensure completeness and facilitate data integration.
- Plan for continuity and updates
  - » Establish multi-year funding lines and update schedules for key datasets to ensure their long-term availability, transparency, and reliability for business users.

For Data providers & Data intermediaries

- Enhance transparency of tools and methodologies
  - » Require biodiversity tools and data platforms to publish clear documentation of their underlying methods, assumptions, and limitations.
  - » Ensure version control is publicly available so users can identify whether datasets or tools are outdated or have changed over time.

For Data intermediaries

- Standardise and centralize data
  - » The Nature Data Public Facility (NDPF) by the TNFD is designed as an open and distributed-access facility. It will be pilot-tested in 2025 to improve data discovery across existing nature-data sources and provide decision-useful information for corporate reporting, science-based target setting and transition planning. The pilot also proposes common data and metadata principles for providers, helping to build a more harmonised global nature data ecosystem (TNFD, 2024).
- Improve interoperability and comparability of data
  - » Intermediaries can help reduce fragmentation by promoting shared standards, methodologies, and transparent outputs. This makes biodiversity metrics, graphics, and analyses easier to compare and benchmark across private sector organisations, supporting consistency in reporting and decision-making.
- Publish practical guidance for data users
  - » Develop practical guidelines on how to handle the complexity of biodiversity data, including advice on metadata and other robustness checks, indicator selection, setting of baselines, selecting reference sites and handling regional differences in data coverage.
- Foster consensus on core methodologies and indicators
  - » o Nature Positive Initiative works as an intermediary to assess the existing biodiversity metrics landscape and build consensus on an aligned minimum set of indicators, helping businesses and financial institutions understand which indicators to focus on to start measuring nature outcomes.
  - » o Promote alignment across global frameworks (*e.g.* TNFD, GBF, CSRD) to ensure private sector organisations can engage with consistent methodologies, indicators, and taxonomies, while maintaining flexibility to integrate local knowledge, values, and context-specific needs.
  - » o Encourage sector-wide alignment on overarching biodiversity metrics and principles for disclosure and comparability, while allowing flexibility for decision-making metrics to adapt to local contexts, project scales, and evolving data quality and availability. This balance helps private sector organisations translate site-level biodiversity data into corporate-wide reporting, while ensuring that local realities and ecological outcomes remain central.

For Data users – Private sector

- Develop a clear understanding of the objective and specific use case for the biodiversity data
  - » Identify what information is needed and why
  - » Assess whether the identified data supports the objective of the use case and can be clearly linked to the actions taken; otherwise, it will be difficult to demonstrate that biodiversity improvements at the site result from those interventions.
  - » Evaluate the scientific robustness and reliability of the data and consult available guidance on public data sources for your use case, as well as sector-specific guidance such as that provided by the TNFD.
  - » Validate insights through expert review and, where possible, on-the-ground verification, and supplement findings with additional literature or expert knowledge.

4.4 Policy, regulation & incentives

Why does it matter?

Demand for biodiversity- and nature-related data is rising as new regulations and reporting requirements come into force. Frameworks such as the CSRD, the EU Taxonomy, EUDR, and the proposed CSDDD increasingly require spatially explicit and auditable information.

Core challenge

However, private sector organisations face uncertainty about what data and methodologies are considered acceptable for compliance. Under the CSRD, for example, whether biodiversity disclosures are required depends on the outcome of the double materiality assessment (DMA). This process can create limitations if not applied robustly (KPMG & Naturalis, 2024). More broadly, regulatory ambiguity limits private sector organisations' ability to prepare and invest with confidence, while financial incentives or ESG frameworks may remain misaligned with biodiversity goals.

The absence of a shared infrastructure to assure biodiversity- and nature-related data, akin to third-party emissions verifiers, creates uncertainty about whether datasets meet regulatory expectations. Finally, unlike carbon, biodiversity impacts, risks, and dependencies are not yet routinely integrated into financial statements or balance sheets, making it harder for businesses and financial institutions to treat biodiversity as a material factor in economic decision-making.

Implications for businesses

- Difficulty demonstrating compliance with evolving regulation
- Confusion over data quality expectations and audit readiness
- Lack of rewards for early action or good biodiversity performance

Suggested solutions

Suggested solutions to the above challenges are organized by actor groups: data intermediaries, and data users, including both policy makers and the private sector. These responses outline how each actor can contribute to accelerating the use of public biodiversity- and nature-related data. For data users, the actions include both ways to apply data effectively and ways to support broader data adoption. A comprehensive list of responses for each data actor is provided in Appendix II.

For Data intermediaries

- Simplify regulatory complexity and enhance guidance
  - » Translate complex legal texts (*e.g.* CSRD, CSDDD, EUDR, EU Taxonomy) into practical checklists, guidance, and tools tailored for different sectors and company sizes.
  - » Provide clear interpretative guidance, reference datasets, and curated resources to help businesses understand, navigate, and comply with regulatory requirements.
  - » Address misaligned incentives within ESG and financial systems that may hinder effective biodiversity action.
  - » Develop mechanisms where datasets are tagged to specific use cases (*e.g.*, TNFD's Nature Data Public Facility). This would help users assess whether a dataset is fit for purpose and aligned with regulatory expectations.
- Promote harmonisation of data
  - » Promote harmonisation of methodologies, taxonomies, and indicators to enable consistent and comparable biodiversity assessments across sectors and geographies.

For Data users – Private sector

- Prepare for regulatory compliance
  - » Take proactive action and engage in thorough preparation to reduce risks associated with regulatory uncertainty.
- Integrate biodiversity into corporate strategy and reporting
  - » Put nature on the balance sheet: Begin integrating biodiversity-related risks, dependencies, and impacts into financial and accounting processes to ensure nature is recognised as a factor with tangible business value.
  - » Integrate biodiversity systematically into corporate strategy and reporting, treating biodiversity as a finite, material resource and as a basis for restoration and nature-based solutions.

For Data users – Policy makers

- Build enabling infrastructure and harmonised regulations
  - » Direct public funding towards building authoritative reference datasets and shared infrastructures for biodiversity data, ensuring these resources align with regulatory requirements.
  - » Develop harmonised regulations and disclosure requirements and publish regulatory roadmaps to help businesses anticipate upcoming requirements.

4.5 Integration & application barriers

Why does it matter?

The ultimate value of biodiversity- and nature-related data lies in how it changes decisions, and in how those decisions translate into actions by the company that deliver measurable benefits for biodiversity. If data is not embedded early in business planning, it risks being sidelined or used superficially.

Core challenge

Most public biodiversity datasets are primarily designed to support screening-level assessments, rather than provide detailed company-specific insights. Their effective use therefore depends on appropriate interpretation, validation and integration with internal data. Biodiversity- and nature-related data is often introduced too late to meaningfully influence decisions, and when it is used, it can be hard to measure impact, attribute outcomes, or track progress over time. Attribution challenges, lack of continuity, and absence of internal accountability mechanisms further limit uptake.

Another barrier is data security: many tools require companies to upload sensitive internal information (*e.g.* asset locations, supply chain data) to combine it with public biodiversity datasets. Without strong security and confidentiality guarantees, companies may be hesitant to use such platforms, limiting the integration of public biodiversity data into business decision-making.

A cultural challenge also exists, as integrating biodiversity- and nature-related data often requires shifting mindsets, overcoming resistance to change, and building trust in new types of information and ways of working. This is closely linked to the first category of challenges (Knowledge, capacity & culture) around developing a shared language and ecological literacy, and reflects cultural barriers, such as the tendency to think in the status quo rather than embracing new approaches.

Finally, smaller value chain partners, such as suppliers who are often situated in biodiversity-rich regions, may lack the required resources to meet biodiversity- and nature-related data requests from downstream customers (*e.g.* for them to meet disclosure obligations).

Implications for businesses

- Missed opportunities to avoid impacts, reduce risks or create opportunities for business and biodiversity
- Inconsistent or non-credible monitoring of interventions
- Unclear ownership of biodiversity within business units

Suggested solutions

Suggested solutions to the above challenges are organized by actor groups: data providers, data intermediaries, and data users, i.e. the private sector in this case. These responses outline how each actor can contribute to accelerating the use of public biodiversity- and nature-related data. For data users, the actions include both ways to apply data effectively and ways to support broader data adoption. A comprehensive list of responses for each data actor is provided in Appendix II.

For Data providers & intermediaries

- Collaborate with business to tailor data solutions
  - » Participate in collaborations with businesses to tailor biodiversity data products and services for operational decision-making.
  - » Support development of contribution-based reporting metrics and landscape-level initiatives to bridge gaps between scientific data and business reporting needs.

- Advance biodiversity monitoring technologies and methods
  - » Invest in the advancement of new biodiversity monitoring technologies such as eDNA sampling, IoT biodiversity monitoring devices, drone surveys, and high-resolution satellite imagery.
  - » Engage in pilot studies and partnerships to test innovative tools and integrate them into standard monitoring protocols.

For Data intermediaries

- Facilitate data sharing and standardisation
  - » Develop shared disclosure platforms to facilitate data sharing, reduce the reporting burden on smaller organisations, and enable consistency across value chains.
  - » Promote standardised protocols and baselining pilots to create consistent reference points for long-term monitoring efforts.
- Ensure security and confidentiality standards
  - » Build trust by ensuring that biodiversity platforms and tools meet strong data security and confidentiality requirements, enabling companies to safely integrate sensitive internal data with public biodiversity datasets.

For Data users – Private sector

- Integrate biodiversity data into planning and operations
  - » Embed biodiversity considerations into early-stage planning tools and procurement processes, such as feasibility studies and site selection, to identify potential impacts and dependencies upfront.
  - » Develop long-term biodiversity monitoring protocols and integrate them into biodiversity management plans to ensure consistent tracking over time.
  - » Tailor existing biodiversity metrics and monitoring methods to specific sectors, leveraging guidance from TNFD, WBCSD, PBAF, and Nature Positive Initiative.
- Collaborate beyond company boundaries
  - » Engage in landscape-level collaborations to share monitoring costs, data, and management solutions for ecosystems beyond individual sites.
  - » Collaborate with NGOs and local communities early to gain context-specific insights and build social license to operate.
- For responses on the cultural barriers related to integration, please refer to the responses discussed in Chapter 4.1 on knowledge, capacity, and culture.

4.6 Bridging the gap between data and action

While biodiversity- and nature-related data is becoming more accessible and comprehensive, its value ultimately depends on how it is used. Across the five themes discussed in the sections before, private sector organisations consistently need data that is:

- **Spatially and thematically relevant** to their operations and decision points
- **Clear in terms of licensing and rights**, reducing uncertainty around usage
- **Accompanied by guidance, metadata, and interpretation support**, making it possible to apply data responsibly
- **Embedded in usable tools and workflows**, not treated as a standalone requirement

Additionally, as part of the roadmap for their Nature Data Public Facility (see Box 2 below), the TNFD has defined several other data principles which are also important considerations alongside the findings of this report.

Box 2: The draft data principles defined by the TNFD as part of their roadmap for upgrading market access to decision-useful nature-related data by a Nature Data Public Facility (TNFD, 2024)

1. Transparency and verifiability: Provide an accurate summary of the available data in non-technical language. Clearly document the sources, methodologies, underlying assumptions and processes used in data collection and processing. Ensure users understand the context and limitations of the data and that the data faithfully represents the phenomena it purports to represent.
2. Accuracy and faithful representation: Provide high-quality, reliable and precise data that is complete, neutral and free from error. Regularly validate and update the data to reflect the most accurate information possible.
3. Accessibility and usability: Make data easily accessible to all potential users, ensuring it can be retrieved and used free from unnecessary barriers. Ensure the ease with which users can find, retrieve, understand and use data.
4. Relevance: Ensure that the data provided is relevant to the needs of the user community and can support meaningful decision-making and analysis. Ensure data is capable of making a difference in the decisions made by users, showing it has predictive value or confirmatory value.
5. Timeliness: Provide data that is up to date and reflects the most recent conditions or trends. Establish regular intervals for data updates to make information available to decision makers in time to influence their decisions.
6. Reliability and completeness: The data contains all the necessary elements and observations for the given purpose or analysis. The data can be relied on to be consistent and free from errors across time and sources.
7. Comparability and consistency: Maintain consistent data formats, structures and definitions across datasets to facilitate ease of use, comparison and integration. Help users to compare data and choose among alternatives.
8. Interoperability: Design data systems to be compatible with other datasets and platforms, enabling users to combine and analyse data from different sources.
9. Clarity and understandability: Ensure data is presented in a clear, concise and understandable manner, with appropriate metadata and descriptions to guide users. Classifying, characterising and presenting information clearly and concisely makes it understandable.
10. Privacy, ethics and protection: Uphold people-oriented, ethical standards in data collection and sharing, respecting privacy and avoiding harm to biodiversity or communities involved in data collection. Include security to protect data integrity and prevent unauthorised access or tampering, ensuring that sensitive information is adequately safeguarded.

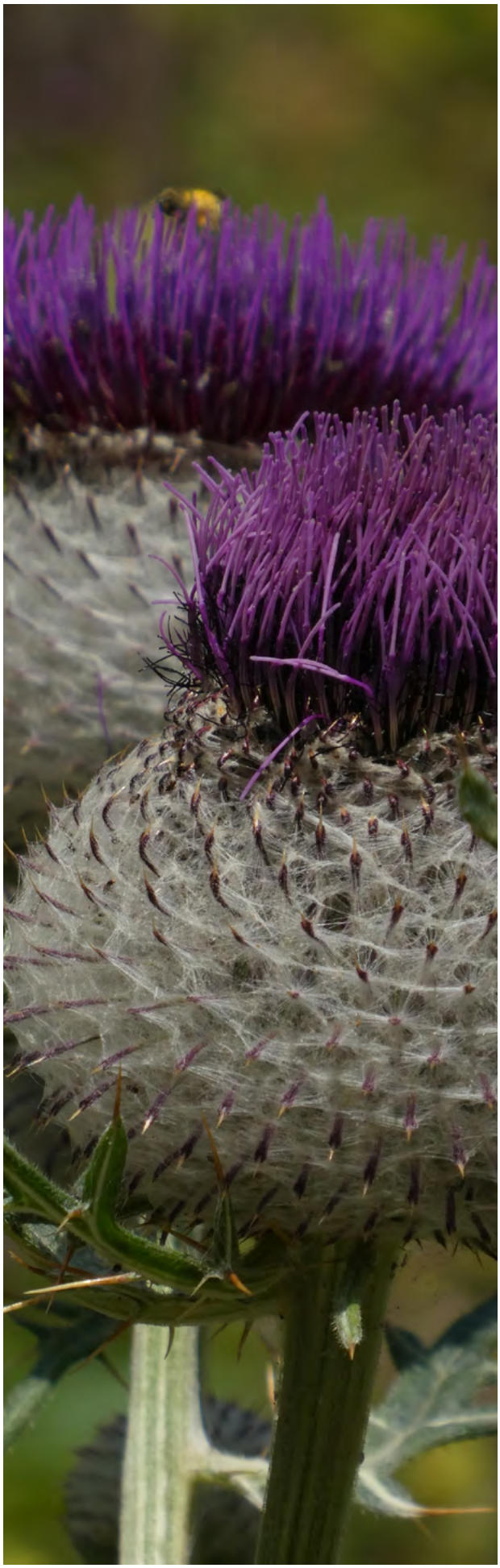
At the same time, improving the uptake of public biodiversity- and nature-related data depends not only on internal company actions but also on how the broader data ecosystem is structured and supported. Public institutions, tool developers, and standard-setting bodies influence how accessible, usable, and relevant data is for business use. Their actions can support uptake by:

- Ensuring that data follows FAIR principles (making it Findable, Accessible, Interoperable and Reusable) and improving overall data consistency.
- Designing datasets and tools with real-world use cases and constraints in mind
- Supporting shared infrastructures and sustained capacity-building

While there are still important gaps in biodiversity-related data, particularly in underrepresented ecosystems, geographies, and species groups, many of the current challenges relate to how existing datasets are used. Improving clarity on licensing, enhancing interoperability, strengthening operational relevance, and embedding data into decision-making processes are immediate priorities. When these conditions are met, public data on biodiversity becomes more actionable for private sector organisations, supporting more consistent assessment, planning, and reporting.

Despite these challenges, public biodiversity- and nature-related data is already being used in a variety of business contexts. These examples show that, while limitations exist, available data can support meaningful assessments and decision-making when used with appropriate methods, tools, and internal alignment. Understanding how different organisations approach this in practice can provide useful insights into what is feasible today, and where further support may be needed.

The following chapter highlights a range of practical applications of public biodiversity- and nature-related data across different stages of corporate decision-making. These use cases illustrate how private sector organisations and supporting initiatives are navigating data constraints, adapting existing datasets to their needs, and integrating biodiversity considerations into strategic, operational, and disclosure processes.



5

How to use public biodiversity and nature-related data in practice?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Public biodiversity data is increasingly used by private sector organisations to assess risks, define strategy, respond to regulation, and drive operational change. However, public datasets rarely provide a full solution on their own. Instead, private sector organisations combine them with internal data, partnerships, or tailored tools to make biodiversity- and nature-related data actionable.

This chapter presents practical examples of **how organisations across sectors are using, and adapting, public data to support their decision-making**, even in the face of gaps, uncertainty, or complexity.

A structured lens: the ACT-D framework

To organise these examples, the ACT-D framework developed by the Capitals Coalition is used. ACT-D describes four typical phases in a company's nature journey:

- **Assess**: identifying where biodiversity risks and dependencies occur
- **Commit**: setting goals, targets, and internal governance structures
- **Transform**: integrating nature, including biodiversity, into core operations, sourcing, or business models
- **Disclose**: reporting performance under regulatory or voluntary frameworks

These phases reflect how organisations translate data into action over time. While not always linear, the ACT-D structure helps clarify how data needs, and barriers, evolve at different stages of decision-making (Capitals Coalition, 2024).

Each section of this chapter includes:

- A brief overview of the relevant decision context and typical data needs
- A link to the most common data-related barriers (as identified in Chapter 4)
- A series of real-world use cases showing how private sector organisations are responding
- A mapping of each use case to the data landscape described in Chapter 3, indicating which types of data sources and services were used (*e.g.* raw observations, aggregated datasets, decision-support tools)

Visuals are used to highlight which parts of the data landscape were activated in each case, offering a clearer view of how public biodiversity data flows into practice.

Rather than restating the full set of barriers or generic response strategies from Chapter 4, this chapter focuses on how organisations are navigating those challenges in real-world contexts, and what can be learned from these examples.

5.1 Assessing biodiversity impacts, dependencies, risks and opportunities

The first step in integrating biodiversity into business decision-making is to understand in which locations the most material biodiversity **impacts, dependencies, risks and opportunities** occur. This typically involves spatial screening and hotspot mapping, helping private sector organisations identify priority locations for further analysis, stakeholder engagement, or intervention.

This stage is especially relevant for private sector organisations in the early phases of their journey towards sustainability, or that operate in sectors with geographically dispersed supply chains. Public biodiversity- and nature-related data often forms the basis of these assessments.

Typical data needs in this phase include:

- **Species occurrence and habitat data** (*e.g.* GBIF, OBIS, IUCN Red List of Threatened Species, National or Regional protected species lists)
- **Ecosystem extent and condition maps** (*e.g.* Copernicus Land Monitoring, Copernicus Marine Data Store, UN Biodiversity Lab, Nature Map Explorer)
- **Boundaries for biodiversity sensitive areas** (*e.g.* Natura2000 sites (included in the WDPA via IBAT), Key Biodiversity Areas (via IBAT), Ecologically or Biologically Significant Marine Areas (EBSAs), Protected Seas) (EFRAG, 2022).
- **Internal site or asset location data** (*e.g.* company-owned GIS, asset registries, supplier locations)

Relevant barriers in this phase, as discussed in Chapter 4, often include:

- **Limited awareness of public data and tools** ***(Knowledge, capacity & culture)***: Internal teams are often unaware of existing public biodiversity datasets or tools that can support early-stage risk screening.
- **Gaps in spatial or thematic coverage** ***(Data availability, quality & affordability)***: Public biodiversity- and nature-related data may lack sufficient detail for ecosystem types or geographies relevant to company operations.
- **Internal data–nature data mismatch** ***(Integration & application)***: Internal asset or procurement data often lacks the spatial, temporal, or ecological resolution needed to combine effectively with public biodiversity- and nature-related data.

Use case 1: Enedis (energy distribution company) – risk screening and hotspot mapping

Purpose of the data use

Identify sensitive areas for birds linked to the overhead power lines network.

Outcome

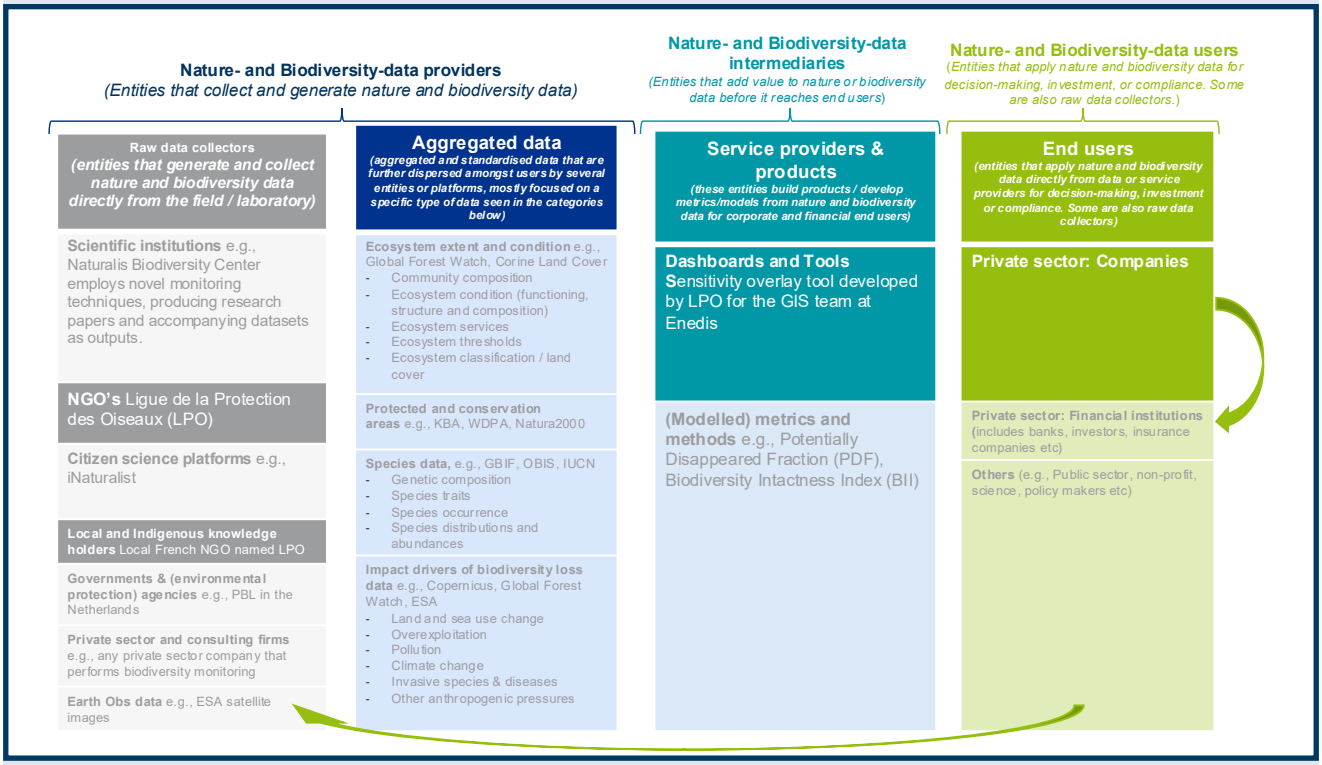
Sensitivity heatmaps of collision and electrocution for bird species.

How the outcome is used

Used to prioritise which overhead lines to modify or place underground, and to target mitigation during maintenance activities.

Data used – mapped to the data landscape (Chapter 3)

- Raw data collectors: Bird occurrence records collected by Ligue de la Protection des Oiseaux (LPO)
- Intermediaries: Bespoke sensitivity overlay tool developed by LPO for the company's GIS team
- User input: Internal asset maps and grid line coordinates used to overlay sensitivity zones



Barriers encountered

- Data sensitivity limits access to species-level data; only aggregated sensitivity zones are provided (Data availability, quality & affordability)
- Data ownership (Data availability, quality & affordability)

Benefits

- Avoids need for direct access to sensitive species data, respecting conservation confidentiality.
- Saves time and resources by outsourcing ecological analysis to a trusted partner.
- Helps build a consensus around the legitimacy of the maps, thanks to the help of experts.

What was learned

- Partnering with NGOs can enable use of public, semi-public or private data without overburdening internal capacity.
- Even generalised data, when spatially explicit, can meaningfully inform operational decisions.
- NGO's can help build a solid methodology that is validated by field experts.

Source: According to information provided by Enedis in July 2025.

Use case 2: Philips – Performing nature-related disclosure through the LEAP framework

Purpose of the data use

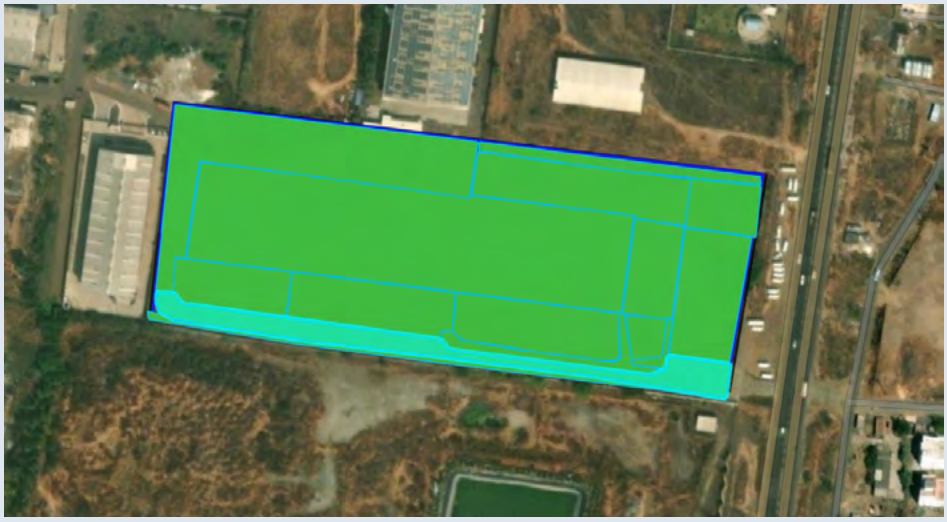
To assess and disclose biodiversity-related dependencies, impacts, risks and opportunities (DIROs) in direct operations using publicly available and internal nature data in line with the LEAP approach.

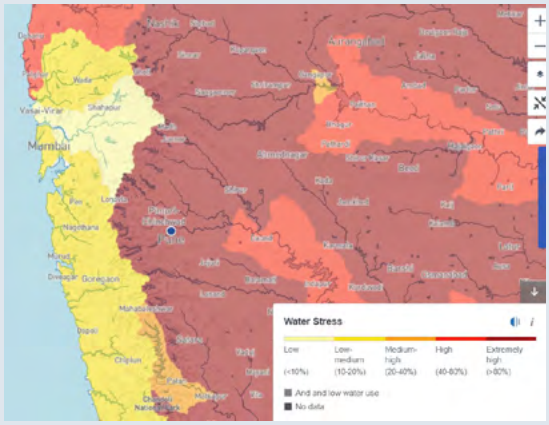
Outcome

The second Taskforce on Nature-related Financial Disclosures (TNFD) report, which applies the LEAP approach, considers manufacturing sites and upstream value chains concerning material flows. The disclosure also integrates ESRS requirements for E5 concerning resource use and the circular economy. The process identifies and addresses risks and opportunities, supporting the Natural Capital program strategic planning.

How the outcome is used

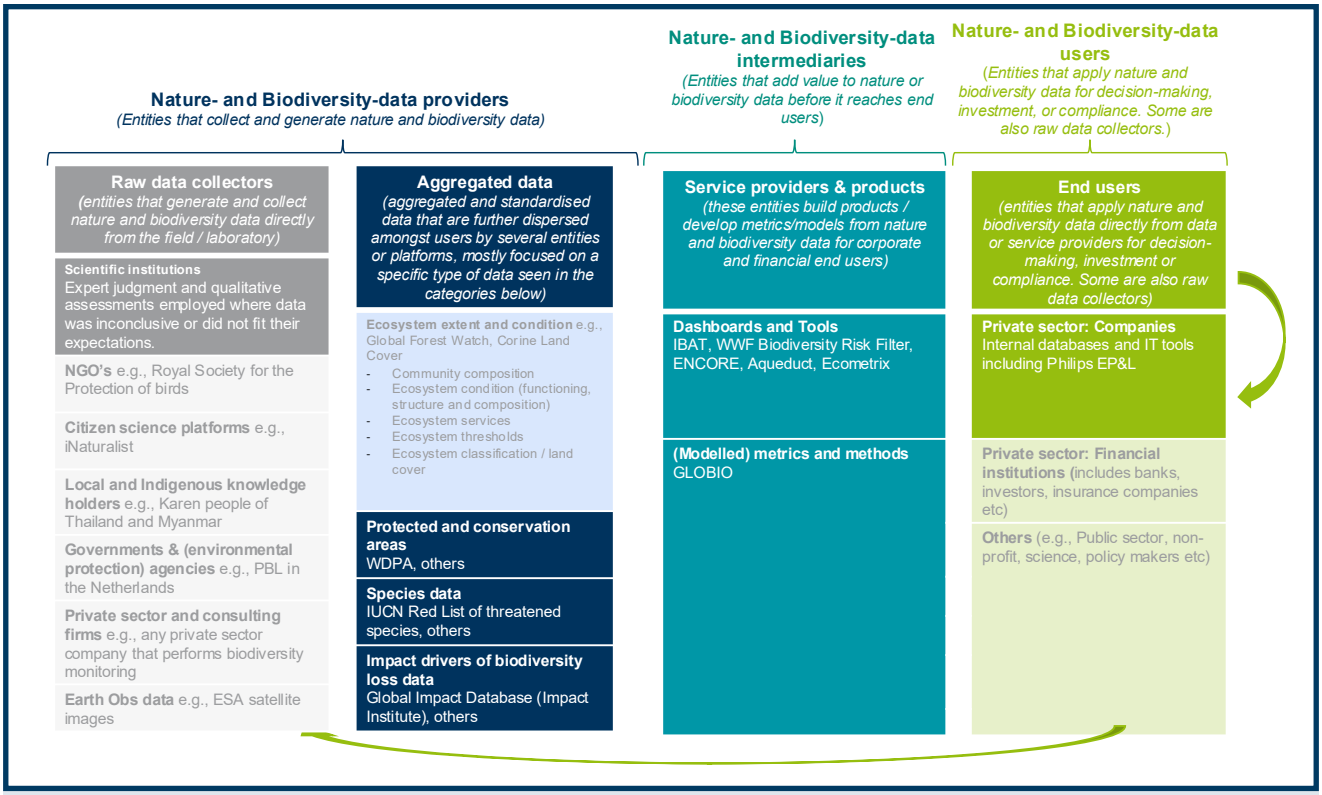
Nature-related risks and opportunities supports internal business continuity management system, aligning with ESRS E5 Resources use and circular economy compliance. The LEAP approach supports the Natural Capital program strategy guiding focus topics and locations. The outcome also provides insights for investors monitoring biodiversity risks and opportunities.





Data used – mapped to the nature data landscape (see Chapter 3)

- Raw data collectors: Expert judgement and qualitative assessments employed where data was inconclusive or did not fit their expectations.
- Data aggregators: Global Impact Database (Impact Institute), World Database on Protected Areas (WDPA), IUCN Red List of Threatened Species, others.
- Intermediaries: ENCORE, Aqueduct tool, IBAT, GLOBIO, WWF Biodiversity Risk Filter, Ecometrix.
- User input: Internal databases and IT tools including Philips EP&L.



Barriers encountered

- Difficulty of defining a standard procedure for impact and dependencies analysis, given intermediaries use multiple methodologies to show results (Complexity & fragmentation).
- Unclarity in interpreting the results at company level due to data allocation by general sectors that may differ at company level. (Complexity & fragmentation).
- Gaps between available biodiversity risk assessment layers and the actual locations of manufacturing sites (Integration & application). For example, a site located in an industrial park could be classified as high-risk for biodiversity depending on the tool or data layer used.

Benefits

- Developing a general nature assessment at the sector level using public available data can be done as a starting point for identifying relevant company topics.
- Combining available public data and internal nature data is a critical element for delivering a better analysis of impact, dependencies, risks and opportunities.
- Creating internal capabilities to develop a nature-related risk assessment, defining the strategy and relevant aspects for continuous improvement process

What was learned

- Nature-related assessment can effectively begin with available public data supplemented by internal data. The combination of both aspects is a good point to start companies' nature journey.
- A continuous improvement approach using both public and internal data to develop the LEAP approach is critical for achieving high quality results.
- Improved understanding of intermediaries' methodologies supports internal teams in validating analysis results and provide better inputs for a nature-related risk assessment.
- Translating nature-related impact, dependencies, risks and opportunities analysis into business language is key for embedding nature in the company strategy.

Source: According to information provided by Philips in August 2025.

5.2 Committing to biodiversity-related goals and internal alignment

Once initial biodiversity impacts, dependencies, risks and opportunities are identified, many organisations formalise their commitment through strategic goals, internal governance, or performance targets. This phase, the "Commit" stage in the ACT-D framework, involves setting direction, integrating biodiversity into corporate planning, and prioritising action areas.

Credible commitments require alignment between sustainability, risk and operational teams. They also require consistency in how private sector organisations define and track progress. Public biodiversity- and nature-related data, especially when adapted or combined with internal insights, can provide a foundation for prioritisation and target setting.

Typical data needs in this phase include:

- Ecosystem extent and condition data (*e.g.* Copernicus, UNBL, ENCORE)
- Global and national species trends and pressures data (*e.g.* IUCN Red List, Global Forest Watch Pro)
- Geospatial overlays with operational or investment portfolios
- Relevant thresholds or reference values for ecosystems (*e.g.* GLOBIO, SBTN materiality guidance)
- Relevant barriers in this phase include:
- Uncertainty about appropriate thresholds or baselines (Complexity & fragmentation): Public data often lacks reference values or temporal depth to determine what constitutes a meaningful or credible target.
- Internal KPIs not aligned with ecological relevance (Integration & application): Business metrics do not always reflect biodiversity outcomes, such as habitat quality or species trends.
- Inconsistent biodiversity goal-setting practices (Knowledge, capacity & culture): Private sector organisations lack a shared language or framework for setting biodiversity goals, making alignment across sectors or peer comparison difficult.

Use case 3: ASN Bank – Biodiversity footprint target for financed activities

Purpose of the data use

Support the goal of achieving a net positive impact on biodiversity by 2030 for all investments.

Outcome

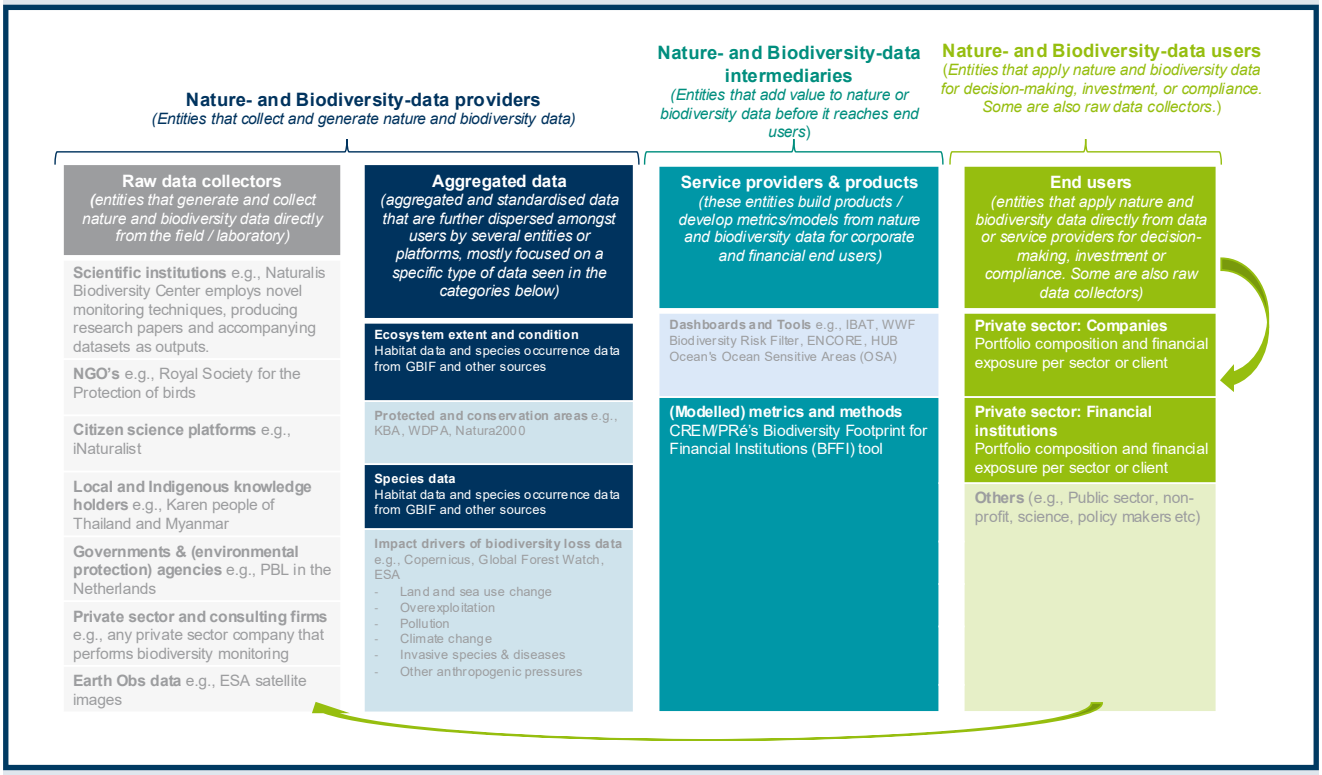
A quantified biodiversity footprint of ASN's loans and investments, enabling the bank to monitor progress against its long-term biodiversity target.

How the outcome is used

The data informs portfolio decisions, client engagement, and external reporting. It also enables ASN to align its financial strategy with the ambition to halt biodiversity loss.

Data used – mapped to the biodiversity- and nature-related data landscape (see Chapter 3)

- Data aggregators: Species occurrence and habitat data from GBIF and other sources; Aggregated biodiversity state and pressure indicators used within the BFFI model
- Intermediaries: CREM/PRé's Biodiversity Footprint for Financial Institutions (BFFI) tool
- User input: Portfolio composition and financial exposure per sector or client



Barriers encountered

- Difficulty aligning biodiversity metrics with financial KPIs and reporting structures (Integration & application)
- Limited spatial resolution of available biodiversity data for certain asset classes (Data availability & quality)

Benefits

- First mover advantage in biodiversity disclosure across a financial portfolio
- Structured approach to tracking progress toward a net-positive goal

What was learned

- Portfolio-level biodiversity metrics can inform strategy and engagement
- Collaboration with expert intermediaries helps overcome technical and data gaps

Source: ASN Bank, 2022

Use case 4: Nature Positive Initiative – Piloting "State of Nature Metrics"

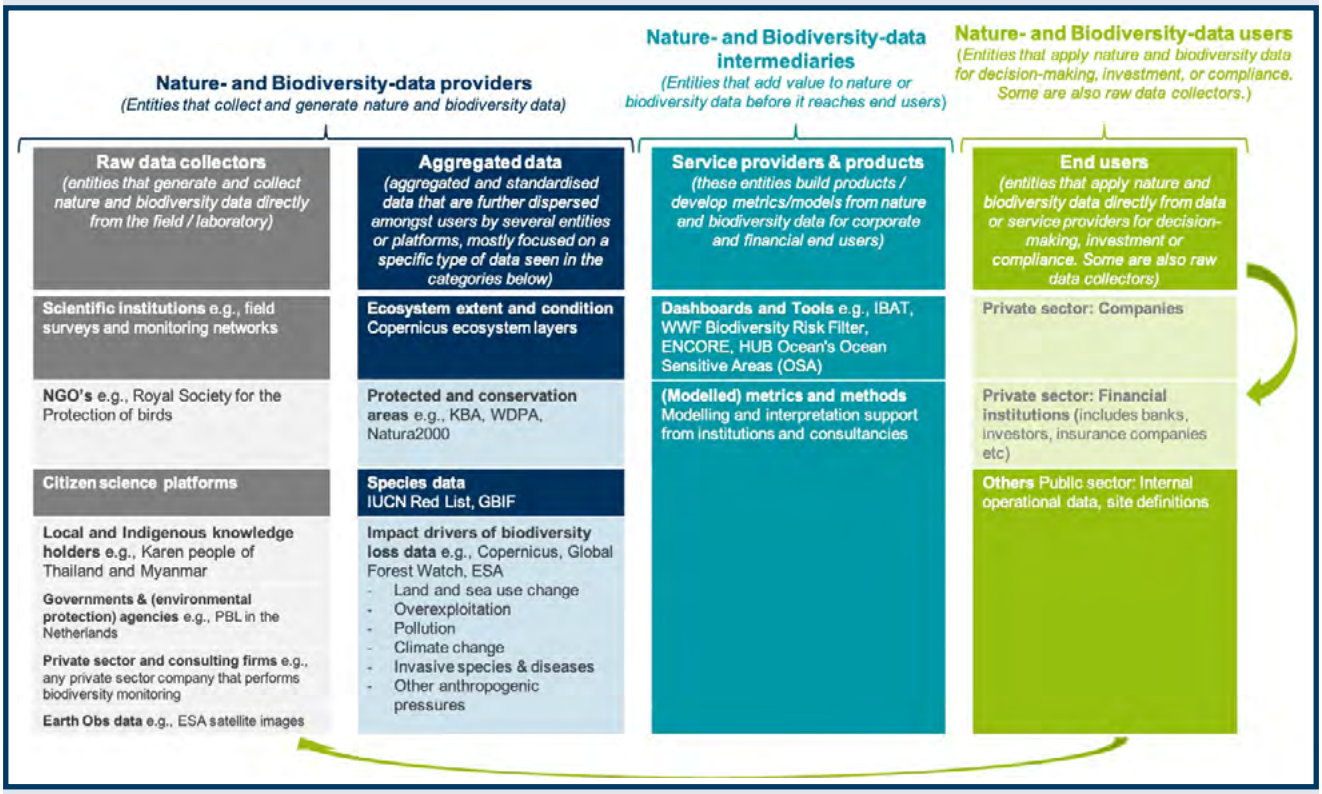
Purpose
Pilot a core set of universal biodiversity indicators, measuring ecosystem extent, condition, and species trends, to support corporate tracking of "nature-positive" outcomes.

Intended projected outcome
A streamlined and credible suite of science-based metrics that can be embedded into corporate strategies and external reporting frameworks. Pilot results are expected by late 2025 or early 2026.

Intended use
- Provide participating organisations with measurable insights into ecosystem health and species trends
- Support adoption in existing frameworks, like TNFD's LEAP, GRI, and SBTN, for strategic planning, disclosure, and target-setting

Data sources (indicative only)
Note: *Specific data sources have not yet been confirmed, this mapping is based on the types of indicators described in the draft design. Final data types used will depend on pilot methods and context.*

- Raw data collectors: field surveys, monitoring networks, citizen science
- Data aggregators: datasets like GBIF, IUCN Red List, Copernicus ecosystem layers
- Intermediaries: modelling and interpretation support from institutions or consultancies
- User input: site definitions, land-use change info, and internal operational data



Relevant barriers (Chapter 4 themes)
- **Uncertainty about baselines or thresholds**: Difficult to find reference states for assessing ecosystem condition and historical baseline data to assess progress (*Complexity & fragmentation*)
- **KPIs not aligned with ecological reality**: The initiative aims to ensure state of nature metrics are both credible and practical for private sector organisations across diverse habitats (*Integration & application*)
- **Lack of shared target definitions**: Harmonising metrics across sectors supports better comparability, shared understanding and cross-sector nature action (*Knowledge, capacity & culture*)

Anticipated benefits
- Create clear links between the state of nature and business performance
- Enable standardised biodiversity performance tracking across organisations
- Foster early consensus on practical biodiversity metrics

What will be learned
- Practical feasibility of applying state-of-nature metrics across diverse sectors and locations
- Key data types and partnerships required for operationalisation
- How biodiversity indicators can effectively support corporate decision-making

Sources: Nature Positive Initiative, 2025a; Nature Positive Initiative, 2025b

5.3 Disclosing biodiversity performance and risks

Disclosing biodiversity- and nature-related risks, impacts, and responses is increasingly expected under regulatory and voluntary frameworks. This phase – the "Disclose" stage in the ACT-D framework – involves reporting outcomes, strategies, and progress using structured indicators and auditable data. Common requirements include explaining biodiversity dependencies and impacts, disclosing how risks are managed, and publishing performance indicators or targets.

Disclosure builds on the results of previous stages (Assess and Commit), but requires data to be standardised, verifiable, and embedded in consistent reporting processes. Data must also be sufficiently robust to justify claims and inform external audiences, including investors, regulators, and civil society.

Typical data needs in this phase include:

- Aggregated and standardised outputs from earlier phases (*e.g.* materiality results, risk maps, or biodiversity targets) that are formatted for external reporting
- Indicators aligned with disclosure frameworks, such as CSRD (*e.g.* closeness to biodiversity sensitive areas, dependencies on ecosystem services)
- Reference datasets to contextualise or benchmark performance (*e.g.* ecosystem condition thresholds, national or EU-level indicators)
- Clear classification systems that ensure consistent reporting across sites and regions (*e.g.* IUCN Red List for species, EUNIS for habitats, NACE/NAICS/ISIC for economic activities)
- Data lineage and metadata that help justify and explain data choices (*e.g.* sources, methods, assumptions) to external stakeholders or auditors

Relevant barriers in this phase include:

- Unclear expectations under evolving regulation (Policy, regulation & incentives): Private sector organisations struggle to interpret what constitutes "decision-useful" or "compliant" data under frameworks such as the CSRD.
- Lack of sector-wide reporting consistency (Knowledge, capacity & culture): Private sector organisations use different indicators, spatial boundaries, or assumptions, making external comparisons difficult.
- Mismatch between public nature data and reporting timelines or granularity (Availability, quality & affordability): Public datasets are often updated infrequently or lack the site-specific detail needed for meaningful disclosure.

Use case 5: Allianz – Piloting biodiversity disclosure through the LEAP framework

Purpose of the data use

To assess and disclose biodiversity-related dependencies, impacts, risks and opportunities (DIROs) in insurance and investment portfolios, using publicly available biodiversity- and nature-related data in line with the LEAP approach.

Outcome

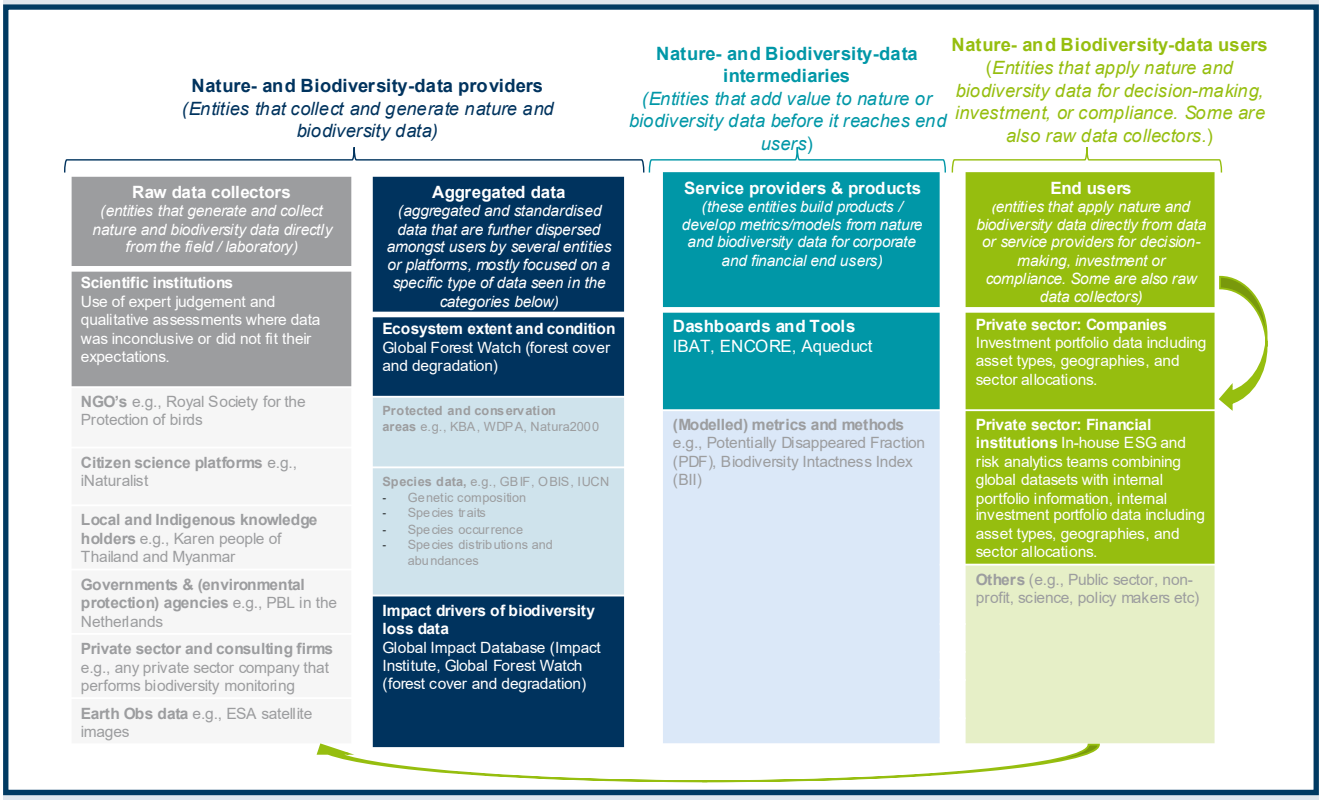
A structured pilot assessment across asset classes (sovereign bonds, corporate loans, and infrastructure) that informed Allianz's approach to emerging biodiversity disclosure requirements, using biodiversity- and nature-related data to locate high-risk exposures and evaluate materiality.

How the outcome is used

Supports internal risk evaluation and informs reporting preparations under CSRD (ESRS E4) and voluntary frameworks. The pilot also provides strategic input for Allianz's role in Nature Action 100 and other investor initiatives on nature-related financial risk.

Data used – mapped to the biodiversity- and nature-related data landscape (see Chapter 3)

- Raw data collectors: Use of expert judgement and qualitative assessments where data was inconclusive or did not fit their expectations.
- Data aggregators: Global Impact Database (Impact Institute), Global Forest Watch (forest cover and degradation)
- Intermediaries: ENCORE, Aqueduct, IBAT (e.g., Key Biodiversity Areas, threatened species)
- User input: In-house ESG and risk analytics teams combining global datasets with internal portfolio information, internal investment portfolio data including asset types, geographies, and sector allocations.



Barriers encountered

- Lack of thresholds or baselines aligned with financial risk assessment (*Complexity & fragmentation*)
- Unclear expectations under evolving regulation: Private sector organisations struggle to interpret what constitutes "decision-useful" or "compliant" data under frameworks such as CSRD (*Policy, regulation & incentives*)
- Gaps between internal financial metrics and biodiversity relevance: Portfolio indicators do not easily map to ecological outcomes (*Integration & application*)

Benefits

- Demonstrated that public data can support preliminary disclosures without requiring proprietary datasets
- Improved cross-functional understanding of nature-related risks across Allianz's insurance and investment arms
- Strengthened Allianz's positioning in industry dialogues and disclosure initiatives

What was learned

- Mapping nature exposure across asset classes is feasible with available data, if combined with expert interpretation
- Clear internal definitions, governance, and documentation of assumptions are critical for credible use of public data
- Disclosure pilots can build internal capacity and prepare for future reporting obligations

Source: Allianz, 2025.

5.4 Transforming decisions and operations

The final phase of the ACT-D framework, Transform, focuses on integrating biodiversity into core business models, operational decisions, and long-term strategies. It moves beyond assessment, commitment, and disclosure, aiming to shift how private sector organisations interact with ecosystems through concrete interventions such as value chain redesign, site management, procurement criteria, or landscape-level collaboration.

In this phase, public biodiversity- and nature-related data can support private sector organisations in evaluating the effectiveness of actions taken, guiding restoration efforts, and scaling biodiversity- and nature-positive practices. However, this is also where data limitations and context-specific challenges become most acute.

Typical data needs in this phase include:

- Ecosystem condition and change data (*e.g.* Copernicus Land Monitoring, GLOBIO, national monitoring programmes)
- Biodiversity outcome indicators, such as species abundance or habitat quality (*e.g.* eDNA, field monitoring data, IUCN indicators)
- Baseline and reference condition maps
- Monitoring data from external collaborations or local partners
- Internal implementation data, such as location, scope and type of interventions (*e.g.* restoration, offsetting, procurement changes)

Relevant barriers in this phase include:

- Difficulty tracking ecological change over time (Integration & application): Monitoring efforts are often costly and inconsistent, and public datasets may lack sufficient resolution or continuity.
- Attribution challenge (Integration & application): Private sector organisations struggle to determine whether observed ecological changes can be attributed to their actions.
- Limited availability of outcome-focused datasets (Data availability, quality & affordability): Most public biodiversity data tracks pressures or inputs, not the ecological results of business interventions.
- Lack of standards for measuring success in restoration (Complexity & fragmentation): While a consensus definition of “nature positive” has been developed by the Nature Positive Initiative (2024), and work is underway to establish metrics and guidance for credible claims, approaches to measuring outcomes such as “restored” still vary widely and are often qualitative.

Use case 6: Philips – Biodiversity & Ecosystem Services footprint at manufacturing sites

Purpose

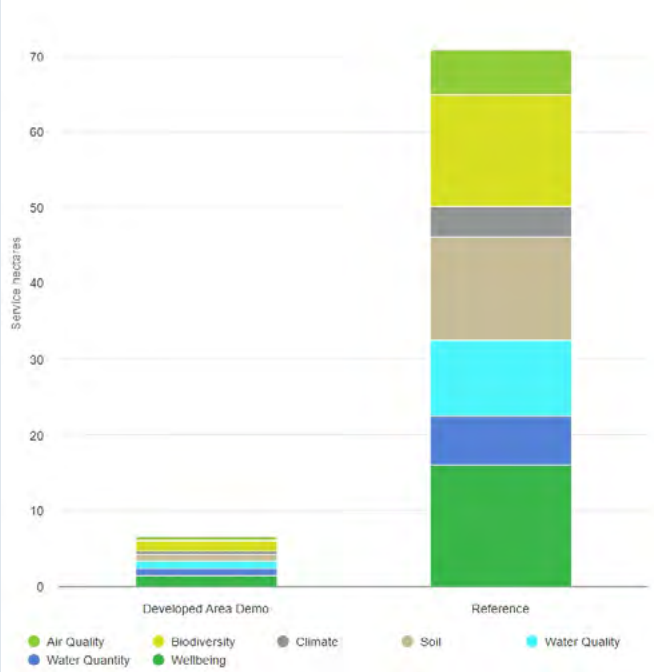
Measuring the extent, condition and quality of biodiversity & ecosystem services extent, to facilitate nature improvement through the Natural Capital Program.

Intended projected outcome

A standardised biodiversity & ecosystem services footprint with metrics to define that defines baseline, guide focus activities for nature-related improvements and track performance to meet corporate annual targets.

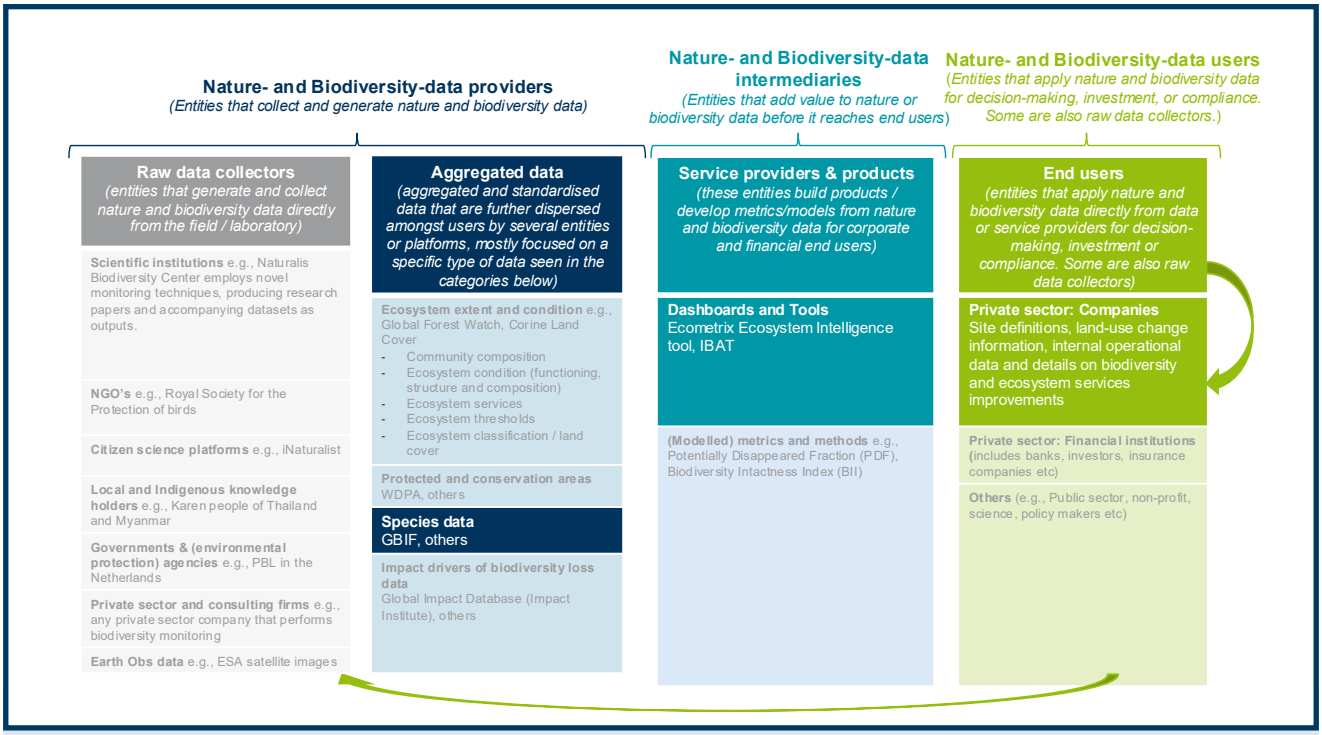
Intended use

- Deliver measurable insights into biodiversity & ecosystem services health and enabling informed decision-making and strategic planning for the Natural Capital Program.
- Facilitate the integration of existing frameworks such as TNFD and LEAP for strategic planning, disclosure, and target-setting.



Data sources – data nature sources allocated in the Ecometrix tool

- Data aggregators: Aggregated datasets and ecosystem layers; GBIF and others.
- Intermediaries: Ecosystem Intelligence tool from Ecometrix provides modelling and interpretation support; Air quality, biodiversity, climate, soil, water quality, water quantity data from IBAT
- User input: site definitions, land-use change information, internal operational data and details biodiversity & ecosystem services improvements.



Relevant barriers (Chapter 4 themes)

- Challenges in aligning biodiversity improvement metrics with financial case studies to support project investments (Integration & application)
- Difficulty in conveying that nature needs to be measured with multiple metrics to show progress (Knowledge, capacity & culture)

Benefits

- Create a standardised approach to track progress towards company biodiversity & ecosystem services ambitions
- Standardised tracking of biodiversity & ecosystem services performance across manufacturing sites and businesses providing visibility and accountability.
- Increased engagement across businesses and functions by showing a numerical trend for nature-related improvement.

What was learned

- Establishing a standard process with defined governance, processes and measuring system builds confidence among internal stakeholders, promoting awareness and actions.
- Presenting the biodiversity & ecosystem services analysis and scoring to internal stakeholders accelerates decision making and continuous improvement efforts.
- Understanding biodiversity & ecosystem services at local level is key for presenting site-specific challenges and opportunities, enabling tailored approach for each one.

Sources: According to information provided by Philips in August 2025.

Use case 7: Wallenius Wilhelmsen – Using spatial data to reduce biodiversity risks in ocean shipping

Purpose of the data use

Support the identification of biodiversity hotspots intersecting with global shipping routes and inform voluntary measures to reduce impacts such as ship strikes and underwater noise.

Outcome

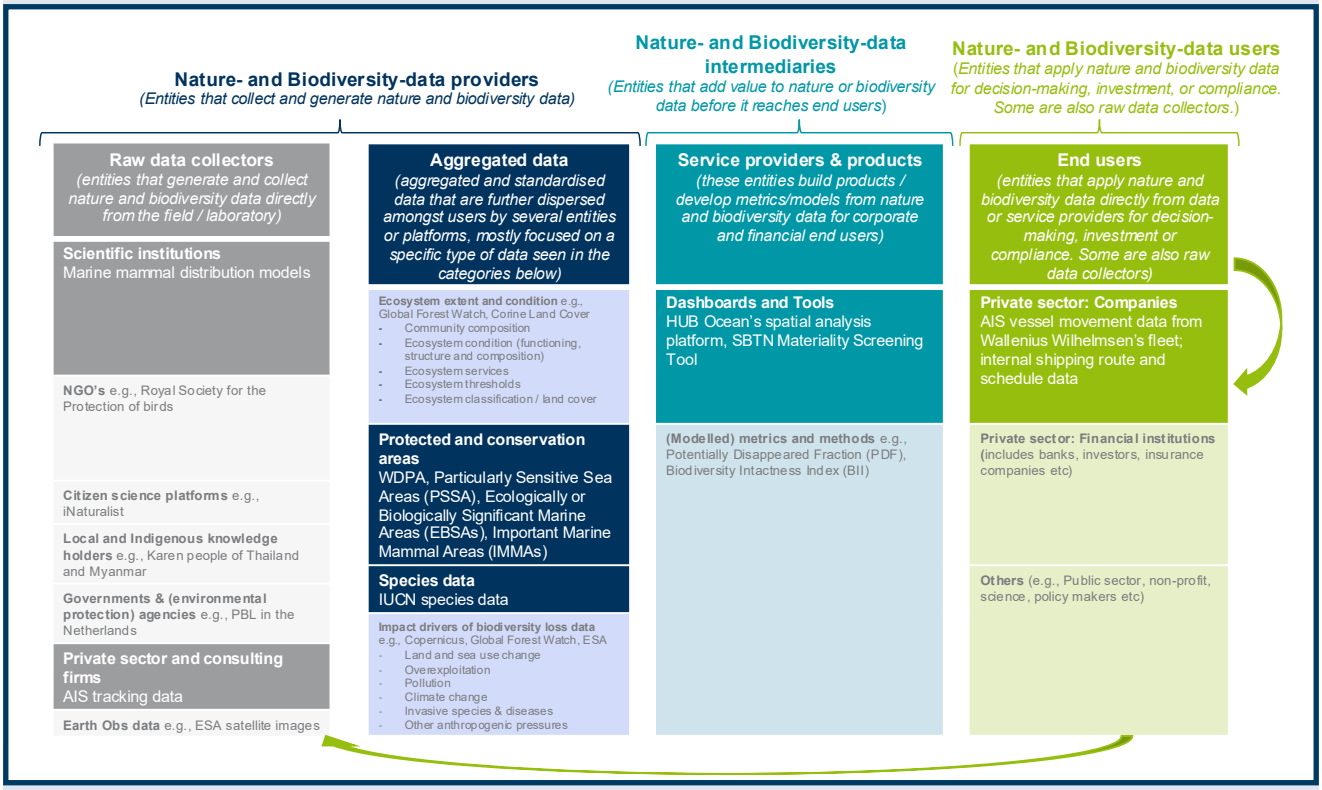
A spatial risk assessment that quantified vessel exposure to sensitive marine areas and species, supporting the development of biodiversity-related performance indicators and targeted operational measures.

How the outcome is used

Used to prioritise voluntary mitigation actions such as speed reductions or route adjustments in high-risk areas; also informs internal biodiversity strategy and stakeholder engagement.

Data used – mapped to the nature data landscape (see Chapter 3)

- Raw data collectors: Global marine biodiversity and conservation datasets (*e.g.* marine mammal distribution models, AIS tracking data)
- Data aggregators: Protected areas (WDPA), Particularly Sensitive Sea Areas (PSSA), Ecologically or Biologically Significant Marine Areas (EBSAs), Important Marine Mammal Areas (IMMAs), IUCN species data
- Intermediaries: HUB Ocean's spatial analysis platform, SBTN Materiality Screening Tool.
- User input: AIS vessel movement data from Wallenius Wilhelmsen's fleet; internal shipping route and schedule data



Barriers encountered

- Limited standardisation of marine spatial datasets across jurisdictions (Complexity & fragmentation)
- Difficulty attributing company-specific impacts in busy marine corridors (Integration & application)
- Gaps in species-specific sensitivity data (Data availability, quality & affordability)

Benefits

- Enabled proactive identification of biodiversity risks along shipping corridors
- Strengthened internal alignment on biodiversity priorities through concrete exposure metrics
- Demonstrated practical application of the TNFD LEAP framework in a high-impact sector

What was learned

- Overlaying public biodiversity data with operational data (*e.g.* AIS) can yield actionable insights for risk mitigation
- Marine biodiversity assessments require tailored approaches due to data variability and ecosystem dynamics
- Transparent, high-resolution data improves the credibility of voluntary measures and stakeholder engagement

Source: Wallenius Wilhelmsen, 2025 & HUB Ocean, 2025

5.5 Overcoming persistent gaps across the corporate nature journey

While public biodiversity- and nature-related data is already being used in corporate decision-making, the journey from first assessments to strategic transformation is rarely linear. Use cases in this chapter have shown how private sector organisations can start applying biodiversity data at each phase of their broader nature journey, from identifying impacts and dependencies to setting goals, improving disclosure, and adjusting operations. However, these examples also reveal persistent gaps and constraints that continue to affect the effective use of public biodiversity- and nature-related data.

A few cross-cutting barriers deserve particular attention:

- **Uncertainty about thresholds and reference states (*Complexity & fragmentation*)**: Private sector organisations struggle to define what constitutes a healthy ecosystem, a meaningful change, or a "biodiversity-positive" outcome. Lack of consensus on reference values makes it difficult to set credible baselines, targets, and metrics.
- **Mismatch between ecological and business classification systems (*Integration & application*)**: Company KPIs or reporting categories often do not align with ecological units or pressure-state-response frameworks, complicating the integration of biodiversity into mainstream management systems.
- **Low capacity among key actors (*Knowledge, capacity & culture*)**: Even when data is available, many private sector organisations, especially SMEs and upstream suppliers, lack the skills, staff time, or confidence to use it effectively.
- **Data usability issues remain (*Availability, quality & affordability*)**: High-quality data may exist, but be difficult to access, costly to process, or poorly documented. This limits uptake beyond frontrunners with specialised in-house teams.

To address these barriers, several promising practices have emerged across sectors:

- **Pairing data use with internal capability-building**: Leading organisations combine spatial analysis or disclosure pilots with targeted training, guidance materials, or cross-team collaboration. This helps embed data use in everyday decisions, not just specialist roles.
- **Clarifying decision context and fitness-for-purpose**: Rather than trying to use one dataset for all purposes, frontrunners identify specific data needs for each step in the decision process, such as scoping, supplier engagement, or restoration design, and tailor data choices accordingly.
- **Collaborating to create shared approaches**: Initiatives like the Nature Positive Initiative, SBTN, or TNFD sector pilots provide a platform for private sector organisations to co-develop indicators, reference states, or disclosure templates that can improve comparability and reduce duplication.
- **Advancing hybrid data models**: A growing number of cases combine public biodiversity- and nature-related data with internal business data, such as asset locations, procurement flows, or investment portfolios to create more actionable insights. This hybrid approach is key to scaling biodiversity- and nature-related data use beyond initial screening.

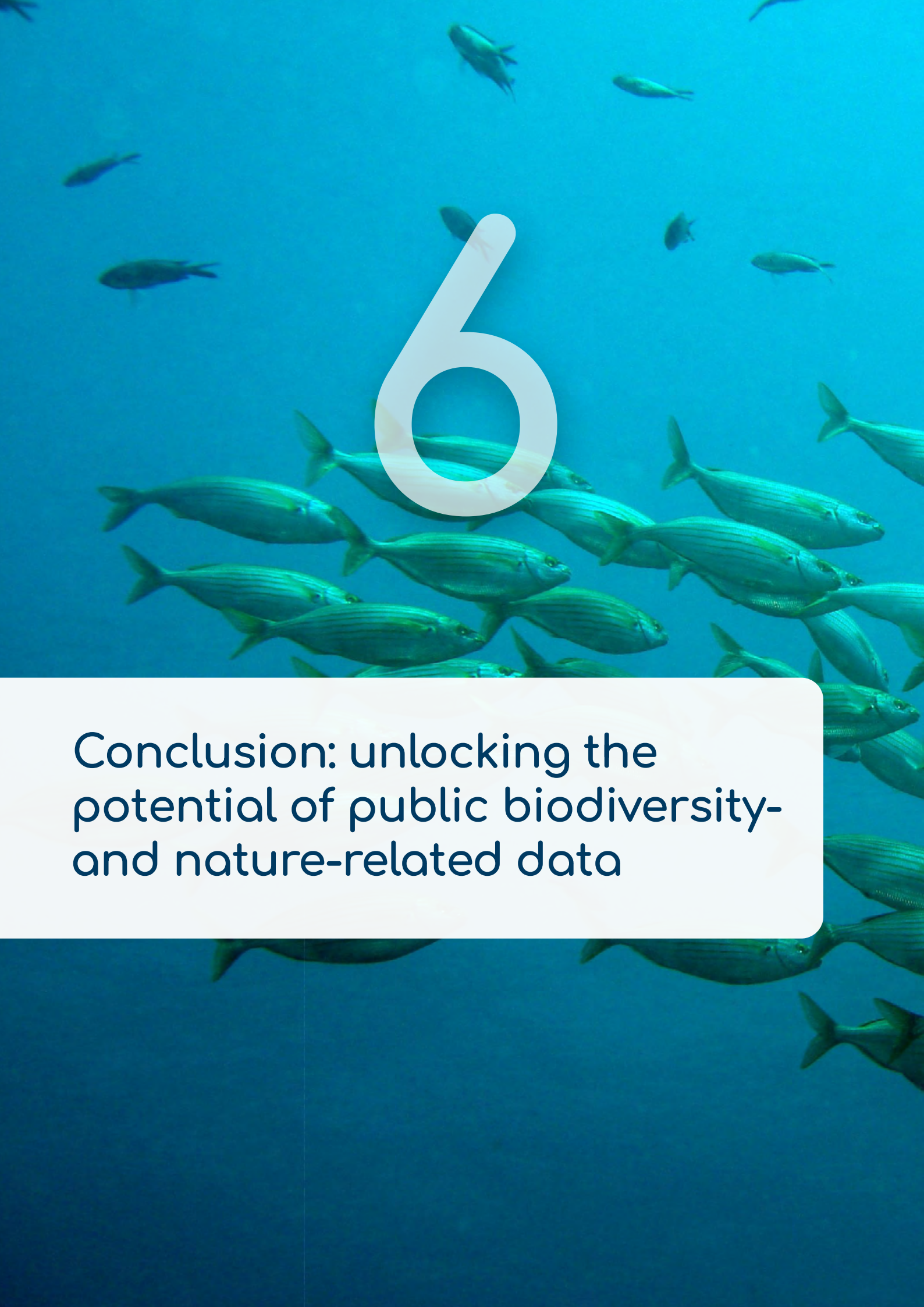
The shift from exploratory pilots to systemic integration requires continued investment, not only in data quality and availability, but also in the broader ecosystem of enablers: skills, platforms, methodologies, and incentives. The next chapter explores how these enablers can be strengthened to unlock further uptake.

Bridging back to systemic enablers

The use cases presented in this chapter illustrate that private sector organisations can already take meaningful steps by combining public biodiversity data with internal insights, partnerships, and tailored tools. These examples highlight practical ways of navigating current challenges: from working with NGOs to overcome access restrictions, to pooling data through intermediaries, or piloting new biodiversity metrics in collaboration with peers. Yet, as the cases also demonstrate, such practices are often resource-intensive, fragmented, and dependent on frontrunners willing to experiment.

To enable broader and more consistent uptake across sectors, the systemic enablers identified in Chapter 4 (Suggested solutions) remain crucial. The continuity of public datasets requires stable financing mechanisms beyond project cycles; the interoperability of datasets depends on harmonised licensing and data standards; and usability at scale calls for accessible platforms, training, and decision-support tools. These are structural issues that individual private sector organisations cannot resolve alone, but which determine whether public biodiversity data becomes a mainstream input for decision-making.

In this sense, Chapter 5 has shown what is possible under current conditions, while Chapter 4 provides the roadmap for making these practices scalable, reliable, and accessible to all actors, not just pioneers with specialised capacity. Together, the two chapters underline that both immediate, pragmatic action and systemic, collective solutions are needed to unlock the full potential of public biodiversity- and nature-related data.



6

Conclusion: unlocking the potential of public biodiversity- and nature-related data

Biodiversity- and nature-related data is no longer a niche concern. As private sector organisations face growing expectations to assess, manage, and disclose their impacts and dependencies on biodiversity, the role of public biodiversity- and nature-related data has become both more visible and more critical. This report has shown that while challenges remain, public datasets are already being used, and adapted, to inform decision-making across sectors.

This report has shown that while challenges remain (Chapter 4), private sector organisations are already finding ways to use and adapt public datasets in practice (Chapter 5). Together, these findings suggest a dual message:

- Private sector organisations cannot wait for "perfect data", they need to begin working with what is already available, building familiarity and internal capability.
- At the same time, systemic support is needed to improve the accessibility, quality, and long-term sustainability of public biodiversity datasets.

Key takeaways from this guidance include:

- **Public biodiversity- and nature-related data is foundational but underused**. Many private sector organisations still struggle to access, interpret, or apply these datasets effectively. Yet the examples in this report demonstrate that meaningful use is possible, even with current data, when the right capabilities, tools, and partnerships are in place.
- **Barriers are as much social as they are technical**. Challenges related to data quality, fragmentation, or licensing are real. But often, the greatest hurdles stem from limited organisational capacity, siloed responsibilities, or uncertainty about how to translate data into action.
- **The private sector cannot address these issues in isolation**. Progress depends on collaboration between private sector organisations, governments, research institutions, and civil society. Public investments in data infrastructure, clearer standards, and long-term maintenance are essential to ensure that biodiversity- and nature-related data becomes more discoverable, usable, and relevant for corporate use.
- **Financing biodiversity- and nature-related data is a shared responsibility**. While many datasets are publicly funded, maintaining and updating them requires ongoing support. As corporate reliance on public biodiversity- and nature-related data grows, there may also be a role for the private sector in supporting the long-term availability, quality, and accessibility of these resources, for example through participation in collective initiatives, licensing models, or support for open data partnerships.
- **Progress is already underway**. From collaborative platforms to tool development, new initiatives are emerging that aim to make biodiversity- and nature-related data more actionable. These efforts benefit from alignment, continuity, and integration into broader systems for disclosure, assessment, and performance tracking.

Improving the use of public biodiversity- and nature-related data depends on two mutually reinforcing developments:

1. Private sector organisations will need to begin working with data that is already available, even if imperfect, to build internal familiarity and demand.
2. Continued support is needed for the broader ecosystem of actors working to improve the quality, accessibility, and relevance of that data.

Both sides of this equation are essential. Without corporate demand, there is limited incentive to improve public datasets. Without improved access and usability, private sector organisations may struggle to act effectively on their biodiversity- and nature-related risks and opportunities.

Stakeholder-specific recommendations

To unlock the full value of public biodiversity- and nature-related data, coordinated action is needed across the data ecosystem:

Private sector organisations and data users

- Work with available datasets to build internal capabilities and familiarity, with a focus on understanding their appropriate use, including what public datasets are and are not suitable for, and developing the ability to assess new data sources accordingly.
- Embed biodiversity data early in decision processes, including procurement, investment screening, and site planning.
- Collaborate with data intermediaries to tailor tools and indicators to specific operational or regional needs.
- Provide feedback to data providers, contribute financial or other resources (*e.g.*, funding for dataset updates or platform maintenance), and participate in pilots to inform tool development and data improvements.

Intermediaries and tool developers

- Clarify methodologies, licensing terms, and data lineage to build user trust.
- Contribute to standardisation efforts by aligning tools with international frameworks and taxonomies (*e.g.* TNFD, Science Based Targets Network (SBTN), Global Reporting Initiative (GRI), the Global Biodiversity Framework Target 15, EU Taxonomy).
- Create modular, interoperable platforms that can accommodate both public and internal company data. Security and accreditation are critical for ensuring company trust in these systems and enabling broader uptake.
- Provide training, use case examples, and sector-specific guidance to accelerate responsible use.

Governments and public funders

- Invest in the maintenance and improvement of public biodiversity datasets, including spatial resolution, thematic coverage, and ecosystem-level indicators.
- Support regional monitoring centres and long-term biodiversity observatories.
- Establish reference datasets and guidance aligned with regulatory and due diligence frameworks (*e.g.* EU Corporate Sustainability Reporting Directive (CSRD), Corporate Sustainability Due Diligence Directive (CSDDD), and national biodiversity strategies).

Standard-setting and reporting bodies

- Clarify data expectations under disclosure and due diligence frameworks (such as CSRD, CSDDD, and emerging guidance under TNFD).
- Align on core definitions, metrics, and taxonomies, such as ecosystem condition classifications (*e.g.* GLOBIO, IUCN), species extinction risk categories (*e.g.* Red List), and sector classification systems (*e.g.* ISIC, NACE, NAICS), to reduce confusion and enhance comparability.
- Encourage integration of public biodiversity- and nature-related data into reporting platforms and audit-ready workflows.

By recognising this shared responsibility, and shared opportunity, stakeholders across the value chain can help make public biodiversity- and nature-related data a more reliable and practical foundation for decision-making, contributing to more robust biodiversity and nature strategies, credible reporting, and resilient business models.

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Glossary

Concepts to explain in this section	Definition/explanation	Source
Key definitions		
Biodiversity	The variability among living organisms from all sources including terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are a part. This includes variation in genetic, phenotypic, phylogenetic, and functional attributes, as well as changes in abundance and distribution over time and space within and among species, biological communities and ecosystems.	IPBES (2019)
Dependencies (on nature)	Dependencies are aspects of environmental assets and ecosystem services that a person or an organisation relies on to function. A company's business model, for example, may be dependent on the ecosystem services of water flow, water quality regulation and the regulation of hazards like fires and floods; provision of suitable habitat for pollinators, who in turn provide a service directly to economies; and carbon sequestration.	Adapted from Science Based Targets Network (2023) SBTN Glossary of Terms; TNFD
Impacts (on nature)	Changes in the state of nature (quality or quantity), which may result in changes to the capacity of nature to provide social and economic functions. Impacts can be positive or negative. They can be the result of an organisation's or another party's actions and can be direct, indirect or cumulative. A single impact driver may be associated with multiple impacts.	Science Based Targets Network (2023) SBTN Glossary of Terms, Climate Disclosure Standards Board (2021) Application guidance for Biodiversity- related Disclosures; See further definition of impacts from Impact Management Platform; TNFD
Nature	The natural world, with an emphasis on the diversity of living organisms (including people) and their interactions among themselves and with their environment.	Adapted by TNFD from Díaz, S *et al.* (2015) The IPBES Conceptual Framework – Connecting Nature and People;
Regulations		
CSDDD	The aim of this Directive is to foster sustainable and responsible corporate behaviour in companies' operations and across their global value chains. The new rules will ensure that companies in scope identify and address adverse human rights and environmental impacts of their actions inside and outside Europe.	Corporate sustainability due diligence - European Commission
EUDR	By promoting the consumption of 'deforestation-free' products and reducing the EU's impact on global deforestation and forest degradation, the new Regulation (EU) 2023/1115 on deforestation-free products is expected to bring down greenhouse gas emissions and biodiversity loss. The Regulation is part of a broader plan of action to tackle deforestation and forest degradation, first outlined in the 2019 Commission Communication on Stepping up EU Action to Protect and Restore the World's Forests. This commitment was later confirmed by the European Green Deal, the EU Biodiversity Strategy for 2030 and the Farm to Fork Strategy The Commission has adopted an Implementing Regulation under the EU Deforestation Regulation (EUDR), which **classifies countries according to their risk of deforestation** when producing the seven commodities covered by EUDR (cattle, cocoa, coffee, oil palm, rubber, soya and wood). The benchmarking methodology is outlined in a Staff Working Document.	Regulation on Deforestation-free products - European Commission

CSRD	EU law requires companies above a certain size to disclose information on what they see as the risks and opportunities arising from social and environmental issues, and on the impact of their activities on people and the environment. This helps investors, civil society organisations, consumers and other stakeholders to evaluate the sustainability performance of companies, as part of the European green deal.	11 Draft ESRS E4 Biodiversity and ecosystems November 2022.pdf; Corporate sustainability reporting - European Commission
EU Biodiversity strategy (2030)	The EU's biodiversity strategy for 2030 is a comprehensive, ambitious and long-term plan to protect nature and reverse the degradation of ecosystems. The strategy aims to put Europe's biodiversity on a path to recovery by 2030 and contains specific actions and commitments. It is the proposal for the EU's contribution to the upcoming international negotiations on the global post-2020 biodiversity framework. A core part of the European Green Deal, it will also support a green recovery following the Covid-19 pandemic.	Biodiversity strategy for 2030 - European Commission
EUDR	By promoting the consumption of 'deforestation-free' products and reducing the EU's impact on global deforestation and forest degradation, the new Regulation (EU) 2023/1115 on deforestation-free products is expected to bring down greenhouse gas emissions and biodiversity loss. The Regulation is part of a broader plan of action to tackle deforestation and forest degradation, first outlined in the 2019 Commission Communication on Stepping up EU Action to Protect and Restore the World's Forests. This commitment was later confirmed by the European Green Deal, the EU Biodiversity Strategy for 2030 and the Farm to Fork Strategy. The Commission has adopted an Implementing Regulation under the EU Deforestation Regulation (EUDR), which **classifies countries according to their risk of deforestation** when producing the seven commodities covered by EUDR (cattle, cocoa, coffee, oil palm, rubber, soya and wood). The benchmarking methodology is outlined in a Staff Working Document.	Regulation on Deforestation-free products - European Commission
EU Taxonomy	The EU taxonomy is a cornerstone of the EU's sustainable finance framework and an important market transparency tool. It helps direct investments to the economic activities most needed for the transition, in line with the European Green Deal objectives. The taxonomy is a classification system that defines criteria for economic activities that are aligned with a net zero trajectory by 2050 and the broader environmental goals other than climate. In order to meet the EU's climate and energy targets for 2030 and reach the objectives of the European green deal, it is vital that we direct investments towards sustainable projects and activities. To achieve this, a common language and a clear definition of what is 'sustainable' is needed. This is why the action plan on financing sustainable growth called for the creation of a common classification system for sustainable economic activities, or an "EU taxonomy".	EU taxonomy for sustainable activities - European Commission

Kunming-Montreal Global Biodiversity Framework	The Kunming-Montreal Global Biodiversity Framework has 23 action-oriented global targets for urgent action over the decade to 2030. The actions set out in each target need to be initiated immediately and completed by 2030. Together, the results will enable achievement towards the outcome-oriented goals for 2050. Actions to reach these targets should be implemented consistently and in harmony with the Convention on Biological Diversity and its Protocols, and other relevant international obligations, taking into account national circumstances, priorities and socioeconomic conditions. TARGET 15: Businesses Assess, Disclose and Reduce Biodiversity-Related Risks and Negative Impacts Take legal, administrative or policy measures to encourage and enable business, and in particular to ensure that large and transnational companies and financial institutions: (a) Regularly monitor, assess, and transparently disclose their risks, dependencies and impacts on biodiversity, including with requirements for all large as well as transnational companies and financial institutions along their operations, supply and value chains, and portfolios; (b) Provide information needed to consumers to promote sustainable consumption patterns; (c) Report on compliance with access and benefit-sharing regulations and measures, as applicable; in order to progressively reduce negative impacts on biodiversity, increase positive impacts, reduce biodiversity-related risks to business and financial institutions, and promote actions to ensure sustainable patterns of production.	2030 Targets (with Guidance Notes)
SFDR	The EU has put in place a transparency framework, the Sustainable Finance Disclosure Regulation (SFDR). By setting out how financial market participants have to disclose sustainability information, it helps those investors who seek to put their money into companies and projects supporting sustainability objectives to make informed choices. The SFDR is also designed to allow investors to properly assess how sustainability risks are integrated in the investment decision process. In this way, the SFDR contributes to one of the EU's big political objectives: attracting private funding to help Europe make the shift to a net-zero economy. The European Commission is currently carrying out a comprehensive assessment of the framework, looking at issues such as legal certainty, usability and how the Regulation can play its part in tackling green washing.	Sustainability-related disclosure in the financial services sector - European Commission
Voluntary frameworks		
Capitals coalition	A capitals approach enables organisations to understand how their success is directly or indirectly underpinned by natural capital, social capital and human capital, empowering them to make decisions that offer the greatest value across all capitals. The Protocols are decision-making frameworks that enable organisations to identify, measure and value their impacts and dependencies on natural capital, social capital and human capital.	Capitals Coalition – building a resilient economy that values what matters
GRI	GRI (Global Reporting Initiative) is the independent, international organisation that helps businesses and other organisations take responsibility for their impacts, by providing them with the global common language to communicate those impacts.	GRI - Topic Standard for Biodiversity

Nature positive initiative	The newly aligned draft State of Nature Metrics for terrestrial ecosystems are the product of months of engaging with more than 100 stakeholders to define a minimum set of metrics that can provide the scalability, practicality, credibility and completeness needed for companies to assess the state of nature across their sites, landscapes and value chains. They are based on a holistic analysis of existing metrics and aim to build consensus on one clear set. The Nature Positive Initiative ran a consultation for wide input to these State of Nature Metrics. This is now closed for input but provided a unique opportunity to build consensus on metrics that will help drive action and transparency and shape the future of reporting on nature. The draft metrics are currently being piloted by over 30 companies and financial institutions across 32 countries. Alongside this, the Initiative is now working with the World Economic Forum and the Ocean Risk and Resilience Action Alliance to develop consensus on measuring marine nature-positive outcomes, as well as launching similar processes for freshwater metrics and nature-positive claims.	Measuring Nature Positive
TNFD	The TNFD Recommendations and Additional Guidance are designed to help organisations to report and act on evolving nature-related issues with the ultimate aim of supporting a shift in global financial flows away from nature-negative outcomes and toward nature-positive outcomes.	The Taskforce on Nature-related Financial Disclosures
SBTN	SBTN defines **science-based targets for nature** (SBTs) as measurable, actionable, and time-bound objectives, based on the best available science, that allow actors to align with Earth's limits and societal sustainability goals. By setting science-based targets for nature, companies and cities can align their actions to both the scientific boundaries that define a safe and just operating space for humanity in terms of Earth's limits and the societal sustainability goals that set out global objectives for equitable human development.	The first science-based targets for nature – Science Based Targets Network
Additional definitions		
Importance of spatial data and scale	Nature-related dependencies and impacts – the ultimate sources of risks and opportunities – are locationspecific. Location therefore matters greatly for the identification, assessment and management of nature-related risks and opportunities for your organisation. Ultimately, the business model and value chain activities of every corporate and financial institution trace back to an interface with nature in a particular place A sub-set of your organisation's interfaces with nature may include dependencies and impacts in ecologically sensitive geographic locations (contributing to illegal deforestation or illegal overfishing for example). These sensitive locations may expose the organisation to elevated risks (both physical and transition) and opportunities that may not yet be captured by standard risk management processes. For example, areas with rapid decline in ecosystem integrity may face elevated systemic risks and areas of high biodiversity may present elevated reputational or liability risks. As a result, it is critical that organisations pay particular attention to any ecologically sensitive locations where their business model or value chain may have an impact or dependency on nature	Guidance_on_the_identification_and_assessment_of_nature-related_Issues_The_TNFD_LEAP_approach_V1.1_October2023.pdf (p. 41)

Nature- related data	Nature-related data refers to any data that enables the identification, measurement, assessment, monitoring, or management of an entity's interactions with nature, including its dependencies on and impacts to natural assets, ecosystem services, and biodiversity.	Adapted from Guidance_on_the_identification_and_assessment_of_nature-related_Issues_The_TNFD_LEAP_approach_V1.1_October2023.pdf; The first science-based targets for nature – Science Based Targets Network; 11 Draft ESRS E4 Biodiversity and ecosystems November 2022.pdf
Public (open) data	Data that anyone can access, use, and share freely, subject only to minimal requirements like attribution.	Open Knowledge Foundation. (2015). *Open Definition 2.1.*
Public data with restrictions	These datasets are publicly available in principle but are subject to certain conditions, licenses, or usage restrictions that prevent them from being completely open.	Open Data Institute. (2019). *The Data Spectrum.*
Private (closed) data	Data that is not publicly accessible. Such data is typically kept within organisations or shared only under specific agreements. Often, these are proprietary datasets owned by companies, consultancies, or government bodies and are protected by intellectual property rights, confidentiality, or commercial interests.	U.S. Geological Survey. (2020). *USGS proprietary and sensitive data policy.*
Sensitive areas	Locations where the assets and/or activities in an organisation's direct operations – and, where possible upstream and downstream value chain(s) – interface with nature in: • Areas important for biodiversity; and/or • Areas of high ecosystem integrity; and/or • Areas of rapid decline in ecosystem integrity; and/or • Areas of high physical water risks; and/or • Areas of importance for ecosystem service provision, including benefits to Indigenous Peoples, Local Communities and stakeholders.	TNFD-Glossary-of-terms-V3.0-January-2025.pdf

Appendix I – Challenges identified in interviews and workshops explained in detail

Knowledge, capacity & culture

#	Challenge	Explanation
1	Lack of understanding of what biodiversity is	Companies lack clarity on what biodiversity refers to, and how it differs from related concepts such as "nature" or "ecosystem health." This makes it difficult to define scope, select appropriate data, or formulate targets.
2	Biodiversity is seen as complex or intangible	Biodiversity is perceived as difficult to quantify, unlike carbon. The absence of a single unit or universal indicator makes it feel abstract and harder to communicate internally and externally. This also complicates the aggregation of site-level data for corporate-level decision-making.
3	Limited internal capabilities to access and analyse nature data	Organisations lack in-house ecologists or biodiversity specialists. Procurement and sustainability teams in particular face challenges when interpreting spatial data, pressure–state indicators, or location-based risks. Finding, cleaning, and combining public datasets also requires skills that are not always present.
4	Low awareness of available data and tools	Practitioners are unaware of available raw nature data sources (*e.g.* citizen science, GBIF, NDFF). This is partly due to fragmentation of sources and partly due to limited internal capacity or training.
5	Personal motivations drive action	Biodiversity initiatives are typically initiated by individual champions rather than embedded in corporate strategy as a material topic or included in key performance indicators (KPIs). This creates a risk of discontinuity due to staff turnover or shifting priorities.
6	Lack of common language	No universally agreed terminology exists for biodiversity topics across sectors and regions. Terms like "biodiversity loss," "ecosystem services," or "nature-positive" are used inconsistently, creating confusion and misunderstandings. This hampers communication and complicates reporting and target-setting.
7	Lack of connection to nature	Many people have limited direct experience with nature, leading to biodiversity feeling remote or irrelevant to their daily work. Without a personal or practical connection, biodiversity risks and opportunities may be undervalued or deprioritized.

Data availability, quality & affordability

#	Challenge	Explanation
8	Resolution of the data	Public nature data lacks sufficient spatial or temporal resolution to support site-level decision-making. This limits its use in project screening, restoration design, or monitoring of ecological change.
9	Data gaps in marine/offshore contexts	Marine and offshore ecosystems are underrepresented in global nature databases. This is a barrier for sectors such as offshore energy and fisheries.
10	Outdated or static datasets	Several commonly used nature datasets are not regularly updated or lack seasonal variation. This restricts their usefulness for tracking trends or monitoring project outcomes over time.
11	Licensing	Licensing conditions are not always clear or adapted to commercial use. Some public nature datasets are restricted to non-commercial applications, limiting their usability for private sector actors.
12	Affordability	While nature data is often labelled as public or open, costs can arise from data cleaning, spatial resolution upgrades, access to interpreted layers, or licensing fees for tools.
13	Limited ecosystem-level data	Public data tends to focus on species occurrences, rather than providing information on ecosystem condition, functionality, or resilience. This constrains its application for nature-positive strategies.
14	Reliability of the data	Nature data can vary in quality, methods, and coverage. Inconsistent standards, outdated surveys, or citizen science data of uncertain accuracy create doubts about reliability for decision-making and reporting.
15	Entities who collect data do not share their data	Data collected by private companies, consultancies, or research projects often remains proprietary or inaccessible. This limits data availability, creates duplication of effort, and leaves key gaps in public biodiversity knowledge.
16	All potential for data and no measures for outcomes	Many datasets focus on pressures, risks, or habitat presence but lack clear links to ecological outcomes. This makes it hard to track whether actions taken improve biodiversity condition or resilience.

Data complexity and fragmentation

#	Challenge	Explanation
17	Data is complex and scattered	Nature data is spread across multiple platforms, formats and initiatives, while often drawing from a similar set of core sources. New tools or combinations do not necessarily reflect new underlying data. This makes it difficult for companies to identify overlaps, compare sources, or efficiently combine datasets.
18	Lack of interoperability of datasets	Nature datasets often use inconsistent structures, classifications, or taxonomies, which limits their ability to be combined or compared. For example, species data may be reported using different names or formats across platforms.
19	Lack of metadata / easy insight into reliability	Users cannot always assess the reliability, quality, or completeness of nature datasets. Metadata is missing or insufficiently standardised. This limits trust and appropriate application of the data.
20	Fragmentation across countries and systems	National and regional nature data platforms vary widely in their accessibility, licensing, language, and structure. This limits cross-border comparisons and hinders multinational companies.
21	Misuse of generic data & tools ('data washing')	Tools that are not context-appropriate are sometimes applied broadly, leading to oversimplified conclusions or the appearance of action ("data washing"). For example, overlaying generic biodiversity heatmaps on project areas without assessing underlying drivers.
22	Incompatibility with asset data	Internal business systems are not always compatible with nature datasets in terms of data format, spatial resolution, or classification (*e.g.* administrative units vs. ecological zones). In tools like ENCORE, sector classifications may not reflect the ecological relevance of an activity (*e.g.* a printer might be classified under agriculture). Furthermore, companies and databases use different classification systems (*e.g.* NACE, NAICS, ISIC, GICS), and harmonised crosswalk tables are lacking. This hampers the extraction of sector-related biodiversity impacts and dependencies from public data platforms.
23	Lack of data to make a baseline	Organisations often cannot establish a reliable biodiversity baseline due to missing historical data or insufficient detail at relevant scales. This makes it difficult to measure changes over time or set credible targets.
24	Fragmentation in time as well as in space	Nature data is unevenly collected across both geographic areas and time periods. Gaps in temporal coverage make it hard to detect trends, while spatial inconsistencies hinder comprehensive assessments across landscapes or jurisdictions.
25	How to define your impact buffer is different for everyone and between business activities	There is no standard method for defining how far business impacts extend beyond direct project boundaries ("impact buffers"). Different sectors apply varying assumptions, leading to inconsistencies in risk assessment, footprint calculations, and reporting.

Policy, regulation & incentives

#	Challenge	Explanation
26	Uncertainty about future reporting requirements	Companies are unclear about what will be required under emerging regulations and frameworks such as CSRD, CSDDD, the EU Taxonomy, TNFD and SBTN, especially regarding scope, indicators, value chain expectations, and materiality thresholds. This creates uncertainty around which data to prioritise and how to align internal systems.
27	Limited financial or ESG incentives	Biodiversity performance is rarely reflected in ESG scores, lending criteria, or investment risk assessments. This reduces the motivation for companies to prioritise biodiversity relative to more financially material topics like carbon or water.
28	Too much focus on compliance	Biodiversity action often centres on meeting minimum legal or reporting requirements rather than driving genuine positive outcomes. This compliance-driven mindset limits ambition, stifles innovation, and can lead to box-ticking instead of integrating biodiversity into core business strategy.

Integration and application barriers

#	Challenge	Explanation
29	Lack of integration of biodiversity considerations early-on in decision making processes	Biodiversity is often considered too late in investment or procurement processes, after key project parameters are already fixed. This limits opportunities to avoid or reduce negative impacts through design choices.
30	Lack of standardised (impact) metrics	There is no agreed-upon way to quantify or compare biodiversity impacts across companies or projects. This makes it difficult to set targets, track progress, or benchmark performance.
31	Challenge to track change over time which requires additional monitoring efforts	Public datasets often lack the spatial or temporal resolution needed to detect whether restoration or mitigation efforts are having a meaningful ecological effect. Satellite data can be used for some purposes, but monitoring of some aspects of the state of nature over time (*e.g.*, ecosystem integrity) is required to understand what actions to take.
32	Attribution challenge	It is unclear how much of a biodiversity impact, dependency or restoration outcome can be credibly attributed to a specific company or intervention. This complicates target-setting, disclosure, and claims of progress.
33	Baseline uncertainty	There is no clear standard for how companies should define a biodiversity baseline, including what reference state, timeframe or metric to use. This makes it difficult to determine whether progress has occurred, or targets have been met.
34	Company internal IT infrastructure challenges (financial sector)	Financial institutions often lack IT systems capable of handling spatial, ecological, or geospatial data. Existing infrastructures are designed for financial data and cannot easily integrate biodiversity datasets, limiting analysis, reporting, and risk assessment.
35	Resources and conventional thinking	Companies may lack the resources, capacity, or internal mandate to prioritise biodiversity, while established business practices favour short-term financial metrics over ecological considerations. This limits innovation and delays integration of biodiversity into decision-making. This also links to knowledge, capacity & culture.
36	Gap between what large companies can do, and large companies will ask	Even when large corporations have the resources and tools to act on biodiversity, they may not translate these expectations into practical demands on suppliers or partners. This creates a gap between corporate commitments and supply chain action.
37	Competition barrier	Companies may hesitate to share biodiversity data, methodologies, or lessons learned due to concerns about competitive advantage. This limits collective progress, learning, and the development of sector-wide best practices.
38	There is no standard for what good restoration is + how can you measure this	Clear, shared standards are lacking for defining and measuring successful ecological restoration. Metrics, methodologies, and success criteria vary widely, making it hard to evaluate outcomes, report progress, or compare projects.

Appendix II – Responses per data actor.

Data providers

Adopt clear licensing models and data standards

- Adopt and clearly communicate a licensing model for the dataset, for example Creative Commons licenses, and specify what this means for potential commercial use.
- Adopt widely used data standards, such as DarwinCore (Wieczorek *et al.*, 2012), and, where relevant, newer extensions like the Humboldt Extension for Ecological Inventories (TDWG, n.d.), which enable more comprehensive ecological data descriptions. Using harmonised licensing frameworks helps reduce legal uncertainties for businesses and facilitates broader data sharing and integration across sectors. Where open licenses are not feasible, provide clear guidance on negotiated or tiered access to data under specific conditions.
- Apply and maintain metadata standards such as Ecological Metadata Language (EML; Jones *et al.*, 2019) or INSPIRE (European Commission, 2025) to ensure consistent documentation of data sources, collection methods, temporal and spatial coverage, and data quality indicators.

Invest in technology and data quality

- Accelerate the deployment of advanced technologies, such as satellites, drones, hyperspectral imaging, LIDAR, and Internet of Things (IoT) sensors, to monitor biodiversity over large geographic scales at high resolution efficiently and cost-effectively.
- Invest in research and development to enhance the resolution, frequency, and interpretability of these advanced technologies for biodiversity applications.
- Create rigorous validation protocols and transparent quality indicators to ensure the reliability and credibility of biodiversity datasets. Pay particular attention to the integration of citizen science data, which can be valuable but variable in quality depending on the way it was collected and the expertise of the people gathering the data. Effective validation and monitoring processes are therefore critical to strengthen confidence in such datasets.

Support data users with tools and training

- Encourage integration of multi-source data streams to improve biodiversity assessments, habitat mapping, and early detection of ecosystem changes.
- Develop training materials and decision-support tools to help data users translate the data these advanced technologies produce into practical insights.
- Provide clear documentation of data provenance and quality assessments to support traceability and build trust among users, particularly businesses and policymakers who rely on data for decision-making and compliance reporting.

Ensure long-term funding stability

- Secure recurring government funding by treating biodiversity data as national infrastructure. For example, the Atlas of Living Australia is fully funded through the Australian Government's research infrastructure programme, with every AUD $1 invested estimated to return AUD $3.5 in societal and economic benefits (CSIRO, 2024). Similarly, the Netherlands is anchoring its National Database Flora and Fauna (NDFF) in law, ensuring structural financing from central and provincial governments (NDFF, n.d.).

Adopt and mandate data standards

- Encourage universal adoption of data standards such as DarwinCore (Wieczorek *et al.*, 2012) and other taxonomies (*e.g.* IUCN) to improve consistency in how biodiversity data is described, shared, and interpreted.
- Mandate essential (meta)data fields (*e.g.* location, collection date, provenance, methodology, license) for all datasets to ensure completeness and facilitate data integration.

Plan for continuity and updates

- Establish multi-year funding lines and update schedules for key datasets to ensure their long-term availability, transparency, and reliability for business users.
- Enhance transparency of tools and methodologies
- Require biodiversity tools and data platforms to publish clear documentation of their underlying methods, assumptions, and limitations.
- Ensure version control is publicly available so users can identify whether datasets or tools are outdated or have changed over time.
- Collaborate with business to tailor data solutions
- Participate in collaborations with businesses to tailor biodiversity data products and services for operational decision-making.
- Support development of contribution-based reporting metrics and landscape-level initiatives to bridge gaps between scientific data and business reporting needs.

Advance biodiversity monitoring technologies and methods

- Invest in the advancement of new biodiversity monitoring technologies such as eDNA sampling, IoT biodiversity monitoring devices, drone surveys, and high-resolution satellite imagery.
- Engage in pilot studies and partnerships to test innovative tools and integrate them into standard monitoring protocols.

Data intermediaries

Curate biodiversity and nature data tools by user profile and maturity level

- Improve clarity around biodiversity tools, datasets, metrics and indicators, tailored to varying business roles, industries, and levels of expertise.
- Help users navigate the complex biodiversity- and nature-related data landscape by offering curated directories, decision trees, and platform comparisons that clarify which tools are suitable for specific tasks or organisational maturity levels.
- Publish clear user guidelines and ensure transparency on how data and tools are documented, including how source data is modelled and what assumptions or limitations apply. This enables organisations to interpret outputs correctly, compare between tools, and avoid misapplication.
- Create clear and transparent tools which identify source data and any specific limitations around that data. This should clearly set out any assumptions they have used.

Provide guidance on required knowledge, skills, and resources

- Publish guidance outlining the types of knowledge, technical skills, and organisational resources needed for effective biodiversity data management. Recognise that capacity requirements differ substantially between large corporations and small and medium-sized enterprises (SMEs). For example, larger companies may need advanced analytics teams and dedicated biodiversity specialists, while SMEs might require simpler tools and more hands-on support. Include recommendations for capacity-building pathways, training opportunities, and potential collaborations with external experts or service providers to help organisations close capability gaps.

Create accessible and standardised platforms

- Create centralized platforms or biodiversity- and nature-related data "hubs" that provide standardised, aggregated, and quality-assured datasets accessible to a broad range of users.
- Encourage public–private partnerships to invest in shared infrastructure, including open-access portals and collaborative tools that enable peer review, user feedback, and continuous data improvement.
- Provide clear documentation of data provenance and quality assessments to support traceability and build trust among users, particularly businesses and policymakers who rely on data for decision-making and compliance reporting.

Develop co-financing partnerships

- Pooling resources across actors can help sustain core datasets. The UNEP-WCMC Proteus Partnership demonstrates how companies collectively fund annual work programmes to improve global biodiversity data (UNEP-WCMC, 2024a; UNEP-WCMC, 2024b). Similarly, the Global Biodiversity Information Facility is maintained by >60 governments paying GDP-linked annual contributions (GBIF, n.d.), showing how international cooperation can sustain open-data infrastructures.

Enhance transparency of tools and methodologies

- Require biodiversity tools and data platforms to publish clear documentation of their underlying methods, assumptions, and limitations.
- Ensure version control is publicly available so users can identify whether datasets or tools are outdated or have changed over time.

Standardise and centralize data

- The Nature Data Public Facility (NDPF) by the TNFD is designed as an open and distributed-access facility. It will be pilot-tested in 2025 to improve data discovery across existing nature-data sources and provide decision-useful information for corporate reporting, science-based target setting and transition planning. The pilot also proposes common data and metadata principles for providers, helping to build a more harmonised global nature data ecosystem (TNFD, 2024).

Improve interoperability and comparability of data

- Intermediaries can help reduce fragmentation by promoting shared standards, methodologies, and transparent outputs. This makes biodiversity metrics, graphics, and analyses easier to compare and benchmark across companies, supporting consistency in reporting and decision-making.

Publish practical guidance for data users

- Develop practical guidelines on how to handle the complexity of biodiversity data, including advice on metadata and other robustness checks, indicator selection, setting of baselines, selecting reference sites and handling regional differences in data coverage.

Foster consensus on core methodologies and indicators

- Nature Positive Initiative works as an intermediary to assess the existing biodiversity metrics landscape and build consensus on an aligned minimum set of indicators, helping businesses and financial institutions understand which indicators to focus on to start measuring nature outcomes.
- Promote alignment across global frameworks (*e.g.* TNFD, GBF, *CSRD*) to ensure companies can engage with consistent methodologies, indicators, and taxonomies, while maintaining flexibility to integrate local knowledge, values, and context-specific needs.
- Encourage sector-wide alignment on overarching biodiversity metrics and principles for disclosure and comparability, while allowing flexibility for

decision-making metrics to adapt to local contexts, project scales, and evolving data quality and availability. This balance helps companies translate site-level biodiversity data into corporate-wide reporting, while ensuring that local realities and ecological outcomes remain central.

Simplify regulatory complexity and enhance guidance

- Translate complex legal texts (*e.g.* CSRD, CSDDD, EUDR, EU Taxonomy) into practical checklists, guidance, and tools tailored for different sectors and company sizes.
- Provide clear interpretative guidance, reference datasets, and curated resources to help businesses understand, navigate, and comply with regulatory requirements.
- Address misaligned incentives within ESG and financial systems that may hinder effective biodiversity action.
- Develop mechanisms where datasets are tagged to specific use cases (*e.g.*, TNFD's Nature Data Public Facility). This would help users assess whether a dataset is fit for purpose and aligned with regulatory expectations.

Promote harmonisation of data

- Promote harmonisation of methodologies, taxonomies, and indicators to enable consistent and comparable biodiversity assessments across sectors and geographies.

Collaborate with business to tailor data solutions

- Participate in collaborations with businesses to tailor biodiversity data products and services for operational decision-making.
- Support development of contribution-based reporting metrics and landscape-level initiatives to bridge gaps between scientific data and business reporting needs.

Advance biodiversity monitoring technologies and methods

- Invest in the advancement of new biodiversity monitoring technologies such as eDNA sampling, IoT biodiversity monitoring devices, drone surveys, and high-resolution satellite imagery.
- Engage in pilot studies and partnerships to test innovative tools and integrate them into standard monitoring protocols.

Facilitate data sharing and standardisation

- Develop shared disclosure platforms to facilitate data sharing, reduce the reporting burden on smaller companies, and enable consistency across value chains.
- Promote standardised protocols and baselining pilots to create consistent reference points for long-term monitoring efforts.
- Ensure security and confidentiality standards
- Build trust by ensuring that biodiversity platforms and tools meet strong data security and confidentiality requirements, enabling companies to safely integrate sensitive internal data with public biodiversity datasets.

Data users – Private sector

Offer cross-functional, foundational training and practical examples

- Delivering tailored, practical training sessions. Incorporate storytelling techniques, real-world case studies, and visual communication to make biodiversity concepts tangible and relatable.
- Design programs for both operational staff and (senior) leadership, including boards and CEOs, to ensure commitment at all organisational levels.
- Base training content on authoritative frameworks such as the TNFD Learning Lab, TNFD sector guidance, the "TNFD in a Box" toolkit, and relevant sector-specific standards like the PBAF biodiversity accounting framework for financial institutions. Where appropriate, integrate requirements from (emerging) regulations such as the CSRD to ensure both relevance and compliance (TNFD, 2025; PBAF, 2024).
- Additionally, consider sector-specific biodiversity dependencies and impacts to tailor training more effectively. The TNFD sector guidance provides an initial, high-level overview of this (TNFD, n.d. b).
- Embed ecological expertise within the organisation by incorporating ecologists into the organisation. This builds an internal ecological memory and provides a guiding point for the rest of the organisation, ensuring biodiversity considerations are embedded in decision-making and strategy.

Promote consistent terminology across teams and documents

- Develop and disseminate a shared vocabulary for biodiversity-related concepts to reduce confusion and promote alignment across business divisions.
- Standardise definitions and terminology using established references, such as the UN CBD, TNFD, and IPBES.

Develop communities of practice across sectors or industries

- Foster peer-learning networks and communities of practice where organisations can exchange case studies, lessons learned, and emerging best practices.
- Engage participants from different industries, NGOs, and academic institutions to facilitate cross-sector collaboration, accelerate learning, and harmonise methodologies.

- Consider establishing regular forums, online platforms, or working groups focused on specific challenges, such as biodiversity data management, biodiversity- and nature-positive strategies, or integration of biodiversity- and nature-related risks into financial decision-making. In line with its mandate, Biodiversa+ aims to foster such exchanges by engaging stakeholders across research, policy and business, and by promoting collaborative approaches to biodiversity monitoring and data use.

Examples from other initiatives include the Nature Action Dialogues by UNEP-WCMC, an annual cross-sector forum for technical exchange between businesses and biodiversity practitioners. Another is the Proteus Partnership, a long-term collaboration advancing the uptake of biodiversity data and science in business. Both foster shared learning and accelerate collective progress.

Strengthen data quality and resolution

- Prioritise investments that increase spatial resolution and update frequency of biodiversity- and nature-related data. Support technological innovations to improve the precision and timeliness of biodiversity data, *e.g.* higher-resolution remote sensing, drones, IoT sensors and biodiversity monitoring devices, eDNA sampling, hyperspectral imaging, and satellite inference techniques.
- Share data collected as part of environmental impact assessment (EIA) baselines or monitoring and ensure that the methodologies they apply are consistent with those used by regional monitoring networks to enable interoperability and strengthen the collective knowledge base. More on data sharing can be found in the Biodiversa+ report on data sharing by the private sector.

Define project-relevant data needs

- Focus data collection on biodiversity elements that are directly relevant to the potential impacts of a project. This helps reduce unnecessary effort and cost while ensuring that collected data is meaningful and fit for purpose.

Use scientific literature and expert knowledge as supplementary data sources

- Use scientific literature and expert knowledge to validate whether publicly available biodiversity data is appropriate and accurate for your organisation's specific context.
- Where gaps or uncertainties remain, complement public datasets with insights from scientific studies, local ecological assessments, or expert consultations to ensure the data is fit for purpose and robust enough to inform your objectives.

Co-finance critical datasets

- Companies can directly sustain the public data they depend on. By subscribing to the Integrated Biodiversity Assessment Tool (IBAT), more than 200 private entities contributed USD 2.5 million in 2024 alone, with revenues reinvested into the Red List, WDPA, and KBA datasets (UNEP-WCMC, 2024b). Likewise, Toyota's multi-year partnership with IUCN supported ~28,000 additional Red List assessments (Toyota Motor Corporation, 2016). These examples illustrate how corporate contributions can be treated as part of sustainability commitments while delivering measurable improvements in public biodiversity data.

Develop a clear understanding of the objective and specific use case for the biodiversity data

- Identify what information is needed and why
- Assess whether the data you have identified is suitable to help achieve the objective of the specific use case in mind.
- Evaluate the scientific robustness and reliability of the data and consult available guidance on public data sources for your use case (*e.g.* guidance provided by TNFD).
- Validate insights through expert review and, where possible, on-the-ground verification, and supplement findings with additional literature or expert knowledge.

Prepare for regulatory compliance

- Take proactive action and engage in thorough preparation to reduce risks associated with regulatory uncertainty.

Integrate biodiversity into corporate strategy and reporting

- Put nature on the balance sheet: Begin integrating biodiversity-related risks, dependencies, and impacts into financial and accounting processes to ensure nature is recognised as a factor with tangible business value.
- Integrate biodiversity systematically into corporate strategy and reporting, treating biodiversity as a finite, material resource.

Integrate biodiversity data into planning and operations

- Embed biodiversity considerations into early-stage planning tools and procurement processes, such as feasibility studies and site selection, to identify potential impacts and dependencies upfront.
- Develop long-term biodiversity monitoring protocols and integrate them into biodiversity management plans to ensure consistent tracking over time.
- Tailor existing biodiversity metrics and monitoring methods to specific sectors, leveraging guidance from TNFD, WBCSD, PBAF, and Nature Positive Initiative.

Collaborate beyond company boundaries

- Engage in landscape-level collaborations to share monitoring costs, data, and management solutions for ecosystems beyond individual sites.
- Collaborate with NGOs and local communities early to gain context-specific insights and build social license to operate.

Data users – Policy makers

Enhance regional monitoring and comparability

- Support the development of regional biodiversity monitoring networks and national coordination centres to address spatial and thematic gaps. Particular attention is needed for under-represented ecosystems such as freshwater, soil, and marine environments. These efforts align closely with the efforts of Biodiversa+, which is working to establish transnational monitoring networks, national coordination centres, and thematic hubs to improve data coverage and interoperability (Bresadola & Bjärhall, 2025; Basille, Vihervaara, & Winkler, 2025). Ensuring data comparability across borders is essential for coordinated decision-making.
- Encourage, or where appropriate require, private sector organisations to submit data collected as part of environmental impact assessment (EIA) baselines or monitoring. Methodologies used in baseline and monitoring surveys should be aligned with those applied by regional monitoring networks to ensure interoperability and strengthen the collective knowledge base. More on data sharing can be found in the Biodiversa+ report on data sharing by the private sector.

Embed funding mandates in policy

- Governments can reduce reliance on project-based financing by embedding biodiversity data systems in law or national budgets. For example, the NDFF is transitioning into a legal "national nature register," securing permanent financing through environmental legislation (NDFF, n.d.).

Build Enabling Infrastructure and Harmonised Regulations

- Direct public funding towards building authoritative reference datasets and shared infrastructures for biodiversity data, ensuring these resources align with regulatory requirements.
- Develop harmonised regulations and disclosure requirements and publish regulatory roadmaps to help businesses anticipate upcoming requirements.

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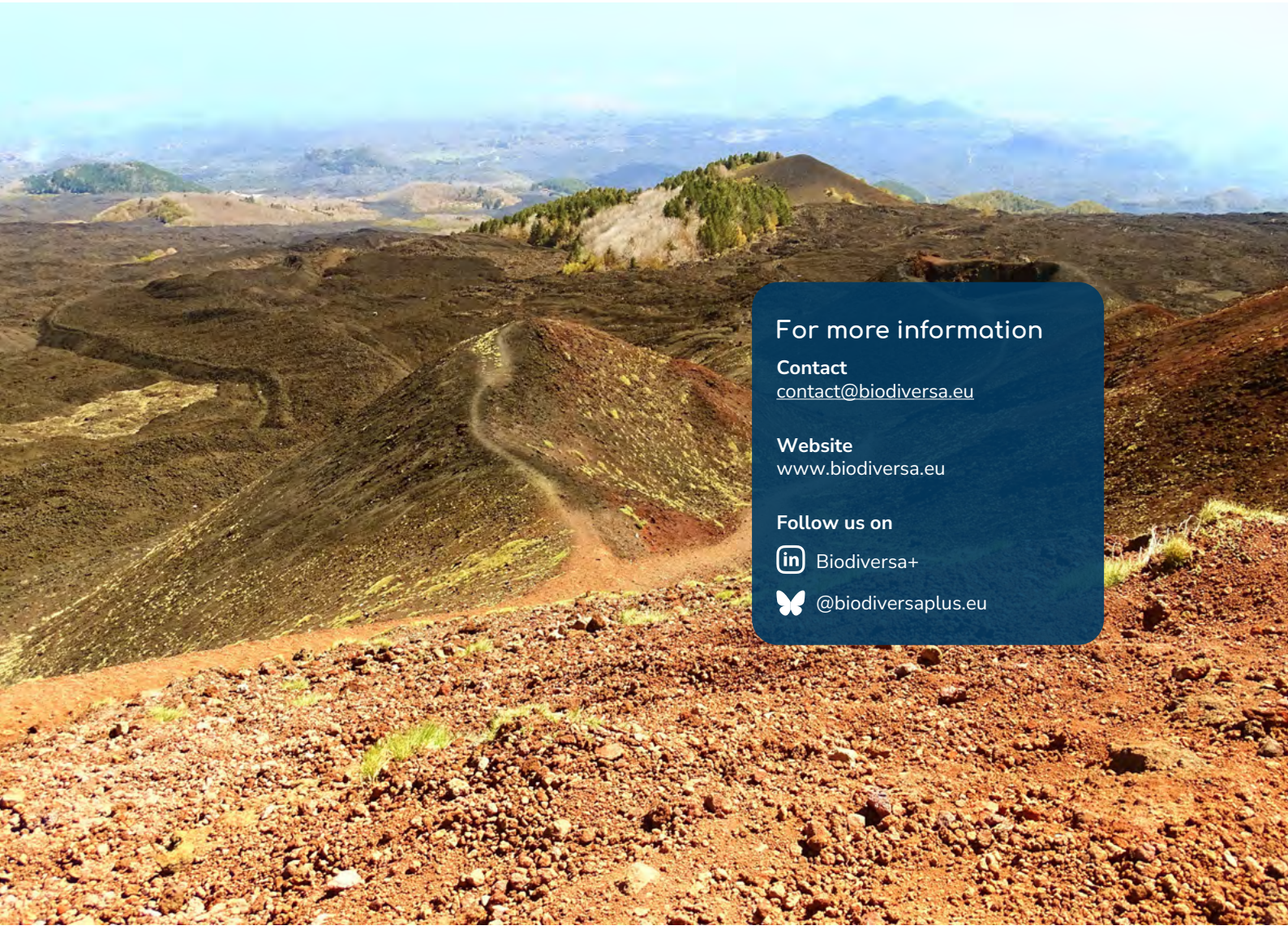

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