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Mapping of the Business and Biodiversity landscape for European Research & Innovation

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Acronyms

Align - Aligning Accounting Approaches for Nature

Arcadis - Global consulting services company

BIOFIN - Biodiversity Finance Initiative

CAP - Common Agricultural Policy

CBD - Convention on Biological Diversity

CEO - Chief Executive Officer

CI - Conservation International

CITES - Convention on International Trade in Endangered Species of Wild Fauna and Flora

COP - Conference of the Parties

CSRD - Corporate Sustainability Reporting Directive

CSDDD - Corporate Sustainability Due Diligence Directive (CSDDD)

EC - European Commission

EEA - European Environmental Agency

ENCORE - Exploring Natural Capital Opportunities, Risks and Exposure

ESG - Environmental, Social and Governance

EIB - European Investment Bank

ESRS - The European Sustainability Reporting Standards

GBIF - Global Biodiversity Information Facility

GBF - Global Biodiversity Framework

GGKP - Green Growth Knowledge Partnership

GDP - Gross Domestic Product

GHG - Greenhouse Gas

GRI - Global Reporting Initiative

IBAT - Integrated Biodiversity Assessment Tool

ICF - Global consulting services company

IFD - Innovation Fund Denmark

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

IUCN - International Union of Conservation of Nature

JRC - Joint Research Centre

KCBD - Knowledge Centre for Biodiversity in EU

KPI - Key Performance Indicator

LEAP - Locate, Evaluate, Assess and Prepare

MEA - Multilateral Environmental Agreement

MEP - Multidisciplinary Expert Panel

NBE - Nature Based Enterprise

NbS - Nature-based Solution

NBSAP - National Biodiversity Strategy and Action Plan

NCA - Natural Capital Accounting

NCFA - Natural Capital Finance Alliance

NGO - Non-Governmental Organisation

OECD - Organisation for Economic Cooperation and Development

PRI - Principles for Responsible Investment

SBTN - Science Based Targets Network

SDG - Sustainable Development Goals

SEEA–EA - System of Environmental Economic Accounting – Ecosystem Accounting

SEI-PCS - Spatially Explicit Information on Production to Consumption Systems

SFDR - Sustainable Finance Disclosure Regulation

SMART - Specific, Measurable, Achievable, Relevant and Time-bound

SME - Small and Medium-sized Enterprises

SPOTT - Sustainability PolicyTransparency Toolkit

SRIA - Strategic Research and Innovation Agenda

STAR - Species Threat Abatement and Restoration Metric

TEEB - The Economics of Ecosystems and Biodiversity

TNFD - Task Force on Nature-related Financial Disclosures

Trase - Intelligence for Sustainable Trade

UN - United Nations

UNFCCC - United Nations Framework Convention on Climate Change

UNCCD - United Nations Convention to Combat Desertification

UNDP - United Nations Development Programme

UNEP - United Nations Environment Programme

VBAG - Value Balancing Alliance Governance

WCMC - World Conservation Monitoring Centre

WBCSD - World Business Council for Sustainable Development

WHO - World Health Organisation

WEF - World Economic Forum

WWF - World Wide Fund for Nature

ZSL - Zoological Society of London

What is Biodiversa+?

Biodiversa+ is the European co-funded biodiversity partnership under Horizon Europe, supporting excellent research on biodiversity with an impact on policy and society. It was jointly developed by BiodivERsA and the European Commission (DG Research & Innovation and DG Environment) and was officially launched on 1 October 2021.

Biodiversa+ aims at making the bridge between science, policy and practice as part of the European Biodiversity Strategy for 2030.

Biodiversa+ currently gathers more than 80 research programmers and funders and environmental policy actors from more than 40 European and associated countries to work on five main objectives contributing to a sustainable ecological transition in Europe:

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 transnational 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 policymaking and implementation in Europe
5. Strengthen the relevance and impact of pan-European research on biodiversity in a global context

For more information: www.biodiversa.eu

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Executive summary

The private and financial sectors are paramount to turn around the global crisis of biodiversity loss. Moreover, the biodiversity crisis should not be seen in isolation but is closely linked to our food production, health, demand for quality water and the pressure from rapidly changing climate. According to the Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES), negative financial flows from the private sector, estimated at approximately 8 trillion USD annually, negatively affect biodiversity, and more than double this amount is not accounted for in economic and financial decisions. Our response options include increased access to and availability of solid information and at the same time decreased direct and indirect incentives to degrade biodiversity. We need to initiate systemic changes in the ways our societies operate.

Almost any business activity will eventually have an impact on biodiversity although the impact will vary greatly. Moreover, impact assessment will have to cover the full business supply chains to sufficiently take the overall impact into account. At the same time businesses in general are dependent on nature and the deterioration of biodiversity and ecosystem services provides a fundamental risk for businesses including financial institutions and ultimately a risk for our way of living.

For these reasons – and because we have agreed that biodiversity has an intrinsic value on its own - biodiversity has become high on the political agenda both within the EU and globally but also at national level. This report is the first published version of a "mapping of the business and biodiversity landscape for European research & Innovation". However, the report goes beyond businesses and deals with nature and economy including public sector finance and overall economy. It should be kept in mind that the field is under rapid development. Thus, it is the intention that Biodiversa+ should provide an updated version of this report in a couple of years.

The report is intended for researchers and donor agencies but may have broader use by parties and practitioners including businesses and financial institutions within the European business and biodiversity landscape. It is the hope that the report will provide a knowledge platform to help stakeholders to navigate in this rapidly developing field. Moreover, it is the hope that it may also inspire joint programming in business, research and innovation and promote collaborations. Key messages in the report for:

a. **Business leaders**: For you as business leaders and your boards, it is key to integrate biodiversity fully into Your company's business strategy and action plan and to fully assess impact and dependencies on biodiversity. Companies should prioritise actions related to biodiversity and disclose findings, making biodiversity an integral part of their business brand. It must be stressed that this requires a fundamental step up in the needed capacities and expertise on biodiversity, a challenge which hardly can be underestimated. Moreover, it requires a strong and persistent motivation from business leaders. Companies are different and so are the challenges. However, both large companies above 500 or 1,000 employees and Small and Medium Enterprises will have to substantially step up their biodiversity assessments and reporting obligations in coming years. As outlined here, tools and methods exist to support companies on their journey, although none of them may be perfect at this moment it should not stop business from engaging in this crucial journey. It is of relevance that private sector biodiversity alliances, comprising companies taking responsibility for biodiversity, have demonstrated to be forerunners of governments in several ways and that these alliances regard "business as usual" not to be an option. To team up with research and other innovation institutions can further strengthen a company's approach and biodiversity profile. Current benchmarking shows there is still a long way to go.
b. **Financial institutions**: The role of financial institutions in contributing to and steering a green biodiversity transition cannot be underestimated. Biodiversity screening and assessments are key for investing in companies and in portfolio management and to start steering away from investments in biodiversity harmful activities. Biodiversity impacts and dependencies should be fully integrated in investment strategies. Biodiversity expertise and allocation of resources to build up the necessary capacities in financial institutions are crucial. Again, there are actual examples that financial institutions are frontrunners in leveraging the biodiversity agenda with a massive positive impact. Several strong alliances comprising institutions committed to be biodiversity responsible have been established. Clear institutional goals aligned with strong commitment to global biodiversity targets and EU policies will help shape motivation as well as a commitment to disclose information and step up to current EU reporting obligations. As outlined in the report various frameworks, tools and metrics exist to support financial institutions in embarking or continuing their biodiversity journey. As well as for other businesses in-house capacity remains crucial.

c. **Researchers**: Biodiversity encompasses complex interactions and processes and multiscale dimensions. Biodiversity is complex to comprehend, understand and communicate. In contrast to measuring climate change in CO_2-equivalents there is not a unanimous agreed "currency" for biodiversity and its complex processes and functions. And it may indeed not be feasible because biodiversity is geographically specific, unique and irreplaceable. Local site-based assessments and approaches will be paramount and unavoidable. Research contributes to understanding biodiversity and natural functions and processes in space and time. However, it is still remarkable that only an estimated 15% of the expected species on Earth have been scientifically described and an even smaller number are ecologically well-known. Thus, basic biodiversity research is crucial and a continuous task. Increasingly, interdisciplinary research is required linking economy, social and natural sciences to be able to inform the necessary change. Research and innovation to inform guidance, approaches and options for the assessment and validation of biodiversity trends, impact and dependencies is crucial. Research involvement and collaboration with the private sector may take many forms and will significantly improve the quality of deliverables towards EU and global policy requirements outlined in this report.

d. **Research funders**: Research funders will have responsibility to leverage the business-biodiversity agenda by supporting research and innovation and by supporting engagement between researchers and private sector companies and/or financial institutions. Examples include traditional biodiversity research biodiversity-business twinning projects and support to interdisciplinary research and innovation to develop and demonstrate best practices in the business sectors. More case studies combining biodiversity research and demonstrating responsible business operations are needed.

It is documented by the science-policy platform IPBES, that human activities come with a cost. Moreover, taking a holistic approach and biodiversity into account in decision making at all levels will promote viable and systemic solutions. The acknowledgement by the private and financial sectors of the fundamental role played by biodiversity is crucial in pushing for this change.

Introduction

Engaging with the European nature and economy landscape

This report is developed to provide an overview for research, innovation and businesses on the rapidly developing field of biodiversity in the private and financial sectors. The report aims to provide an overview of different policy instruments, initiatives and actors as well as highlighting research and innovation gaps.

The report is intended to be useful for researchers and agencies among the Biodiversa+ partners but may also have broader use by parties and practitioners within the European landscape on business and biodiversity. It is our hope that the report may also help the research community and other stakeholders to identify Biodiversa+ opportunities for joint programming and further collaborations. Moreover, we hope it will help all stakeholders to navigate in the rapidly developing business and biodiversity landscape.

Almost any business or citizen activity will have an impact on biodiversity, although the scale and effect of such impact will vary greatly. Businesses (or nations) may have an impact on biodiversity in other countries, often without realising or accounting for this in their decisions (e.g. IPBES 2019, European Business and Biodiversity Platform 2023, IPBES 2024b) and business impacts may become more apparent further up or down the business supply chains. The process of transformative change outlined by IPBES to address biodiversity loss involves all actors of society, including governments, citizens and businesses depending upon and affecting biodiversity and as a complement to approaches already applied, new and systemic paths need to be explored and promoted (Eggermont 2021, IPBES 2024a, 2024b). At the same time businesses in general are dependent on nature (World Economic Forum 2022) and deterioration of biodiversity and ecosystem services provide a fundamental risk for businesses and ultimately human life (IPBES 2019).

At present, negative annual financial flows - estimated at least at a scale of approximately 8 trillion USD annually, are negatively affecting biodiversity. Furthermore, an additional amount, potentially two to three times larger, is not accounted for in economic and financial decisions (IPBES 2024b). These negative flows are many times higher than the positive flows supporting and conserving biodiversity. Response options include increased access to and availability of information and at the same time decreased direct and indirect incentives which increase economic pressure to degrade biodiversity (IPBES 2024b).

The EC presidency (European Commission 2019) summed up the crisis from an EU perspective: “Climate change, biodiversity, food security, deforestation and land degradation go together. We need to change the way we produce, consume and trade. Preserving and restoring our ecosystem needs to guide all of our work. We must set new standards for biodiversity, cutting across trade, industry, agriculture, and economic policy”. Overall, “those who act first and fastest will also be the ones who grasp the opportunities from the ecological transition”. Research and innovation towards efficiency in reporting, alignment among initiatives and achieving results on the ground remains a priority.

Box 1 – A bit of history

The economic growth paradigm has come at a cost for nature and multiple anthropogenic drivers and pressures negatively affect biodiversity and several ecosystem services (IPBES 2019, 2022). Worldwide, nature is declining at rates unprecedented in human history – and the reduction in population abundance and distribution as well as the rate of species extinction is accelerating and following with a marked reduction in genetic diversity (Exposito-Alonso et al. 2022) with grave impacts on ecosystems, climate, health, economy and society (IPBES 2019).

The value of biodiversity and the ecosystem services it provides are not included in key decision-making processes (IPBES 2022). Which leads to the undervaluation of biodiversity and “business as usual” scenarios have continued regardless of these severe biodiversity impacts (IPBES 2019). Up to recently, biodiversity has received the least priority among sustainability issues managed within large companies (Schaltegger et al. 2022).

The value of biodiversity continues to be underrated (World Economic Forum 2020, IPBES 2022) and therefore

biodiversity concerns have been considered unimportant or even disturbing in economy, trade policy and decision-making. Investment decisions in different sectors regularly have failed to take their potential impacts on biodiversity into account or to recognise the contribution that biodiversity is making to the desired achievements. In parallel, it is increasingly recognised that biodiversity loss is not decoupled from economic growth (IPBES 2019, Dasgupta 2021) and that the current economic model continues to contribute to the loss of biodiversity (IPBES 2019, 2022).

The focus on biodiversity in the businesses and financial sectors is, however, rapidly increasing in recent years (e.g. CBD 2022). According to the World Economic Forum, biodiversity loss represents an unprecedented systemic portfolio risk for investors as $44 trillion of economic value generation is moderately or highly dependent on nature and the services it provides. Thus, biodiversity loss has recently been ranked as one of the top risks for continued economic development (WEF 2022). The Kunming-Montreal Global Biodiversity Framework targets for 2030 signal a fundamental policy turning point and include targets directly addressing the private and financial sectors (CBD 2022). As a direct follow-up to the GBF targets, new policies and regulations require private and financial sectors to account for and disclose their risks, impacts and dependencies on biodiversity, with an increasing focus on compliance with those policies (see the examination of EU and global policies, chapter 1).

Overall, the answer to the challenges of biodiversity loss calls for transformative change in our society, policies, economies and technological capacities and changes in how we think, act and measure success (IPBES 2019, Dasgupta 2021, IPBES 2022; 2024). The global biodiversity assessment from IPBES (2019) states that it is still possible through societal change to reverse negative biodiversity trends. Moreover, the recent IPBES report on transformative change identifies challenges and opportunities to tackle the crisis with a focus on changing our societal values, structures and activities (IPBES 2024). At the same time, reports from IPCC (2022) underline that the 1.5 C and even 2.0 C visions are increasingly growing out of reach contributing further to putting biodiversity under increasing pressure. The changing climate is a key driver to the loss of biodiversity surpassed on a global scale only by land and sea use change and exploitation (IPBES 2019). The world population is expected by the UN to grow to about 10 billion in 2050 (United Nations 2017) putting biodiversity and the environment under unprecedented pressure.

Policy landscape and actors

The diversity of the policy landscape relevant to valuate and address the impacts and dependencies of the private sector on biodiversity has increased enormously within the last few years. A large number of important new policies and laws within the EU and global policy frameworks have a direct bearing on businesses and the financial sector. Section 1 of the report introduces the major components of the EU and global policy landscape for business and biodiversity.

Furthermore, the risk for business from the degradation of nature and the environment has become increasingly clear (e.g. Dasgupta 2021) and the number and variety of private sector biodiversity initiatives, pledges and alliances are growing fast, becoming an important and powerful voice in environmental decision-making, of which some key examples are presented in section 2 of this report. At the same time, the private sector is identifying and developing new business opportunities in and after this transition. Private business initiatives and/or policy messages are now in some instances ahead of national governments in terms of both requesting high levels of policy ambition and the need for obligatory and transparent targets in national and international policymaking and legislation, or in their criteria for investments.

Tools and methods

The number of tools and methods to assess business impact and dependencies as well as business risks relying on biodiversity (Figure 1) is rapidly developing, although quality, scale, relevance and precision is a constant issue. A selection of relevant tools and methodological approaches are presented in section 3 of this report. One earlier example is the Navigation Wheel initiated by the European Business and Biodiversity Platform in 2018 and developed by ICF and Arcadis (Lammerant 2021). However, the number of initiatives are growing fast and a large number of reports have been published (or are in pipeline).

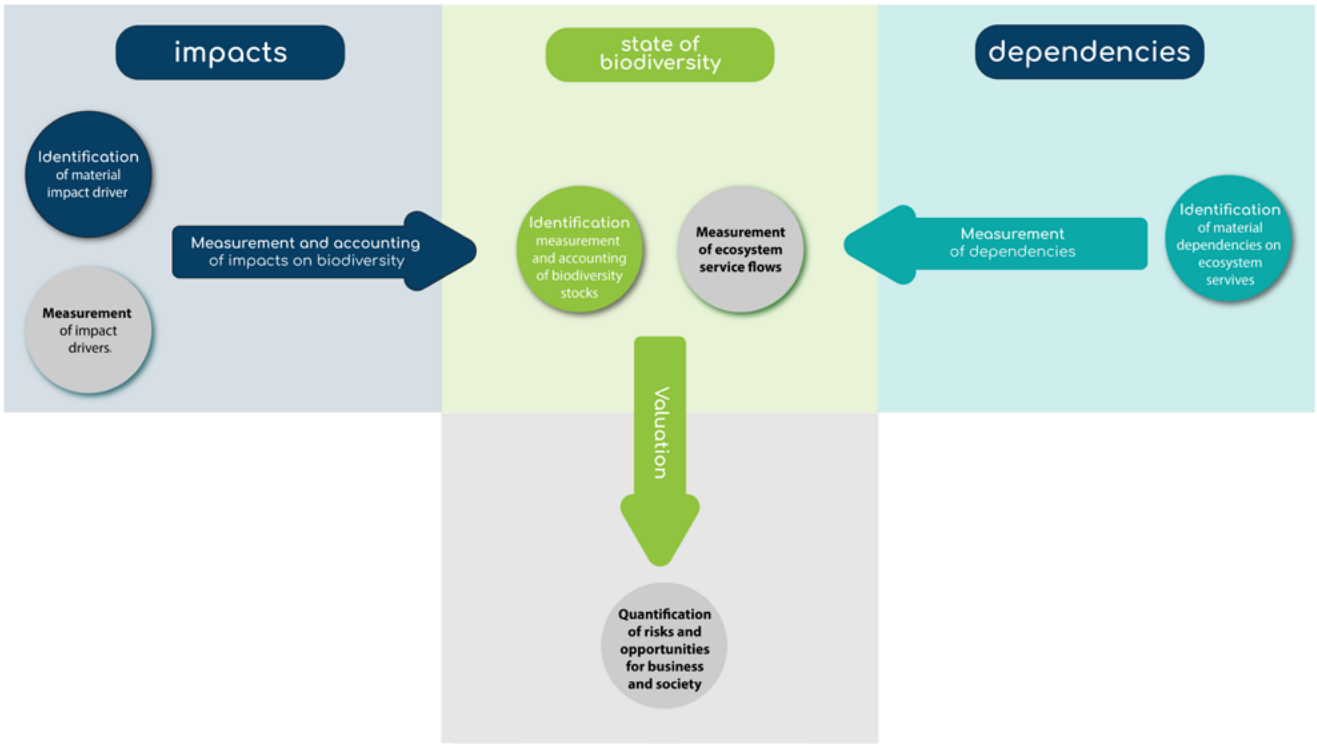


Figure 1: **Standard Natural Capital/Accounting Process (UNEP-WCMC 2022)**

The International Union for Conservation of Nature (IUCN) was one of the first organisations to publish a comprehensive report on the development and use of biodiversity indicators applications for business through the value chain (Addison et al. 2018) going from the site and landscape level to third-party performance assessment and rating of biodiversity management and performance. Good quality data and indicators are needed to assess and monitor impact, risks and dependencies. However, data input and indicators will differ depending on sector, supply chain and local settings. Furthermore, questions of geographical scale, the use of baselines and evaluation of impact are still in their infancy and under constant development.

Another challenge at this point is that different methodological approaches generate different outcomes to the same questions, as highlighted in Box 2. These examples illustrate some of the complexities at the practical level and the need for carefully chosen approaches to biodiversity and business questions (see also Section 4 of this report).

Box 2 – The importance of methods behind decision-support tools

Biodiversity is divided into three general categories (genetic diversity, species diversity and ecosystems – see Figure 2, CBD 1992), all fundamentals of our economy (Dasgupta 2021). Most tools and frameworks consider species, and several frameworks include habitats and ecosystems and increasingly ecosystem services (Stephenson & Carbone 2021, Lammerant 2021, Align project, see chapter 3). Still, our knowledge is limited, and, for example, key knowledge aspects of population and genetic diversity are lacking (see also UNEP-WCMC 2022).

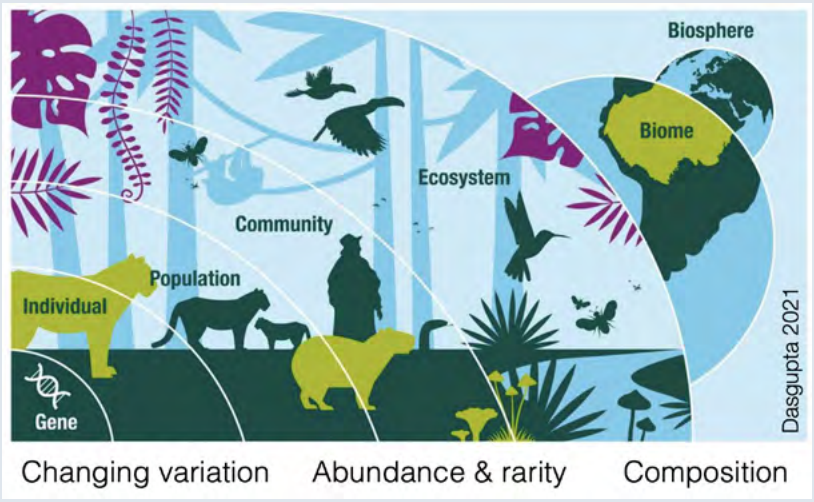


Fig. 2. **Biodiversity from micro to macro level (from Dasgupta 2021, the Economics of Biodiversity).**

Joshua Berger at CDC Biodiversity (Lammerant 2021) has provided two illustrative (theoretical) examples of practical challenges related to the choice of method to support decision-making on biodiversity. One is on the planned development of an undisturbed grassland. In this case, the perceived grassland has just a few dozen species not endangered and is situated far from human activity. Thus, different assessment methods provide different results in terms of proposing developing the grassland (e.g. for agriculture) or conserving it for biodiversity. Methods using biodiversity intactness result in warnings of losing the undisturbed nature if the grassland is cultivated. Species-focused methods may on the contrary inform that few species and no threatened ones are lost and e.g. still other methods dealing with ecosystem services may conclude that since the grassland is remote several services such as its recreational value are of limited value. In any case, the potential ploughing of the grassland in question will result in the loss of ecological functions and destruction of natural habitats and species populations (Lammerant 2021).

Another example given by Berger in Lammerant (2021) is the transformation of two patches of forest into farmland. One (A) with many species including endangered ones and the other (B) with many fewer species and only a single endangered species. Intact methods will consider both forests equally because both are undisturbed. Species-focused methods will favour cutting down the species-poor forest and results from ecosystem service assessments may prioritise forests close to human settlements providing human opportunities (ecosystem services).

While disclosure and reporting requirements are identified according to relevant policies and legislation, the selection of data input and tools/methods to obtain the quality and required type of output are critical for private and financial sectors. The requirements on disclosure and reporting vary and allow for adjusting and revising approaches and monitoring along the way.

Research, innovation and capacities

As laid out in section 5 of this report, innovation and research will contribute to filling in knowledge gaps and to bridge the gap between science and policy and the realities faced by the private and financial sectors in making impact and an enabling framework for a transition.

The involvement of different research disciplines and innovations is needed to create holistic encompassing approaches and to fully understand the field of biodiversity and to create change within the businesses themselves. Impact and dependencies differ enormously between businesses and a larger number of more sector-specific guidance documents are appearing. Moreover, the size of the company and financial institutions is important and for example, SMEs have limited capacity to deal with issues compared to larger and international companies. This leads to different needs and demands for research, networking, support and guidance.

All in all, we intend this report as a navigable mapping of major processes, initiatives and topics for engaging European research and business in valuation of biodiversity, alongside opportunities for researchers, organisations and business actors seeking to address biodiversity dependency and impacts in different research and business relations and contexts.

1. Global and EU policy framework for economy and nature

1. Global and EU policy framework for economy and nature

International agreements and related policy targets are increasingly seeking to push for disclosure of impacts and dependencies on biodiversity. The Kunming-Montreal Global Biodiversity Framework and the SDGs are setting the scene at the global policy level towards 2030 (see e.g. also UNEP-WCMC 2022). Based on previous experiences, delivery towards targets will be more closely followed than previously, including the requirement of intermediate status assessments and milestones and more detailed sets of indicators and reporting through the national NBSAPs. It remains to be seen, however, if these mechanisms will facilitate the desired changes. In Europe, a green EU policy framework is supporting implementation at the regional level. Focusing on the need to document, report and disclose biodiversity information is key in this regard and a first important step. Implementation is largely undertaken at the national level; hence these global and EU policy targets should increasingly influence national and local levels. This chapter will provide an overview of the most pertinent policy initiatives at EU and global levels (see Figure 3).

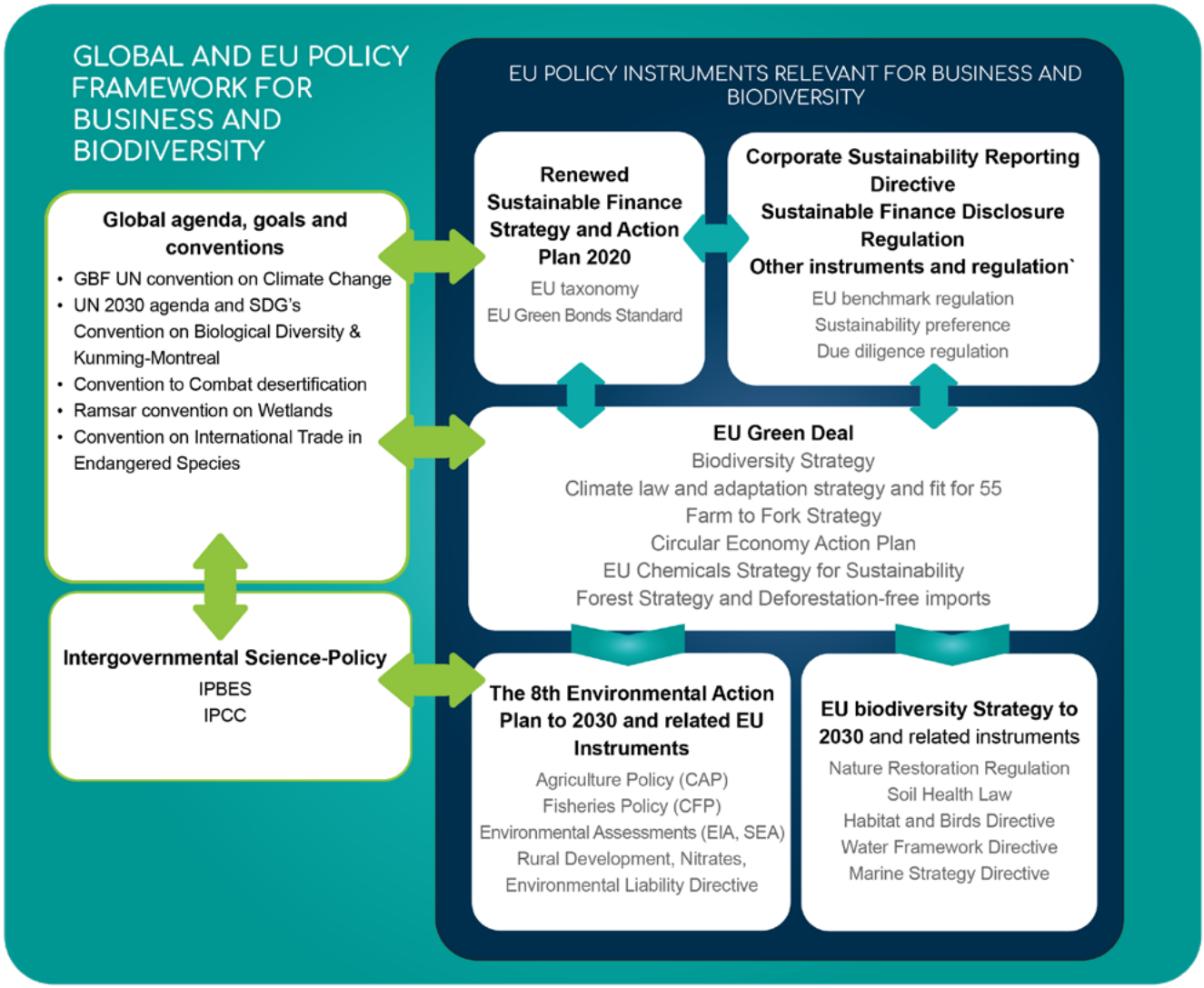


Figure 3: Global and EU policy framework for business and biodiversity.

1.1. EU policy instruments relevant to nature and economy

1.1.1. Renewed sustainable finance strategy and implementation of the action plan on financing sustainable growth

The Action Plan on Sustainable Finance

The action plan was communicated in 2018 (Figure 4) and forms part of a broader connection between finance and the explicit needs of the European and the global economy (European Commission 2018, updated May 2020). It is part of the EU implementation of the Paris Agreement and the **Sustainable Development Goals 2030** (European Union, no date (e)). The Action Plan includes ten key actions and it has three main objectives: 1) An approach to reorient capital flows towards a more sustainable economy (under which e.g. the **EU Taxonomy** falls), 2) to address and mainstream sustainability into risk management and 3) fostering transparency and long-term commitment (European Union, no date (c)). These objectives aim to initiate sourcing of private finance to assist sustainable economic growth and to handle risk stemming from environmental, social and governance activities (European Union, no date (c)) and prompt action reforms. It is in line with the commitment in the action plan to phase out environmentally harmful subsidies at the national level and make the best use of market-based instruments and green budgeting tools to support businesses and other stakeholders in developing standardised natural capital accounting practices.

More information here.

Figure 4: **EU Action Plan on Financing Sustainable Growth**

EU-Taxonomy

The EU Taxonomy came into force in 2020 and is a classification system that defines activities that can be considered environmentally sustainable (European Union, no date (c)). Thus, aiming at measures promoting a climate-neutral and environmentally sustainable economy. It is implemented through delegated acts (see below). The taxonomy is essentially set up to prevent greenwashing and classifies economic activities contributing to meeting its defined environmental objectives and forming part of the **European Green Deal**.

Six environmental objectives are defined: 1) Climate change mitigation, 2) climate change adaptation, 3) the sustainable use and protection of water and marine resources, 4) the transition to a circular economy, 5) pollution prevention and control, and 6) the protection and restoration of biodiversity and ecosystems (European Union, 2020).

Moreover, the taxonomy contains four overarching conditions to be included by an economic activity to meet the criteria to be categorised as sustainable. These include 1) Making a substantial contribution to at least one of the six environmental objectives, and at the same time 2) doing no significant harm to any of the other five environmental objectives. Moreover, 3) complying with minimum social safeguards is necessary, and 4) complying with the technical screening criteria to be set out in the beforementioned taxonomy delegated acts for each of the objectives (European Union 2020, 2023). So far criteria on climate have been published through the Climate Delegated Act (July 2022). The delegated act on protection and restoration of biodiversity covers criteria on three themes (May 2024): Nature conservation, nature restoration and nature tourism. Other important themes on biodiversity are missing at this point and neither a timeline nor the full range of criteria have been established.

The EU Taxonomy intends to provide knowledge on all biodiversity-relevant sectors including agriculture, manufacturing, transportation, energy, construction, and communications and prompt screening of such activities (European Union, no date (c)). Similarly, the other non-climate delegated acts cover activities, which intend to contribute to the relevant objective.

Companies that report to the **Corporate Sustainability Reporting Directive (CSRD)** must report to what extent their activities are covered by the Taxonomy (taxonomy-eligibility) and to what extent they comply with the criteria in the delegated acts (taxonomy-alignment). Further, the Taxonomy requires companies to report on their performance by disclosing defined financial key performance indicators (KPIs). Thus, companies must disclose the proportion of the turnover that is aligned with the taxonomy, the proportion that is eligible but not aligned, and the proportion that is not eligible. Companies that do not fall under CSRD can decide to disclose this information voluntarily.

The first round of reporting originally involved more than 11.700 companies across the EU with more than 500 employees (Neosfer 2022) and was mandatory for 2024 to be reported in 2025. However, the February 2025 omnibus has postponed these reporting obligations. The Taxonomy targets both financial markets and non-financial companies in the key sectors but also applies to any measures, taken by EU Member States or the EU, that define requirements for environmentally sustainable financial products.

More information here.

1.1.2. The European Green Deal

The European Green Deal is an overarching EU policy framework in the European green transition and the platform for several political initiatives that link to biodiversity and sustainable use, including the **EU Biodiversity Strategy for 2030** and e.g. **the Nature Restoration and Soil Health Laws** (see Figure 5). Moreover, the **Farm to Fork and Forest Strategies and Deforestation-free** imports are important elements.

The European Green Deal brings attention to climate change adaptation and mitigation and points to the fact that environmental degradation is an existential threat to Europe and the world. It carries a vision for a new growth strategy to transform the EU into a modern, resource-efficient, and competitive economy with three overall objectives: 1) No net emissions of greenhouse gases by 2050, 2) economic growth is decoupled from resource use, and 3) no person or place is left behind, guided overall by a vision of turning climate and environmental challenges into opportunities (European Union 2023). The action programme reiterates the EU's long-term vision to 2050 of living well within planetary boundaries (see annex 1).

Other EU Policies and Action plans like **Financing Sustainable Growth** including the **EU Taxonomy** are aligned with the European Green Deal. The European Green Deal and its related actions are expected to shape the different sectors including energy, transport, industry, finance, construction, food, tourism, and digital industries and markets for the coming decades and intend to offer opportunities for businesses and financial markets as well to engage in transformative change and actions (Europe Commission 2019).

Figure 5: The European Green Deal (source: European Commission)

In the 2024-29 programme of the commission (European Commission 2024) it is stated that "we must also continue the protection of our natural world. Our forests and woodlands, our wetlands and our grasslands are not only our home and landscapes of the lives of Europeans but are also essential to regulating our climate and ensuring food and water security".

More information here.

EU's 8th Environment Action Programme 2030

The eighth EU Environment Action Programme 2030 entered into force in May 2022 and is the legally agreed agenda for EU environment policy until 2030. The programme builds upon the **European Green Deal** and aims to speed up the green transition and deliver a platform for the **SDGs** to be met in 2030. It has a major focus on greenhouse gas reductions and reaching climate neutrality in 2050, on circular economy and zero pollution and protecting and restoring biodiversity. Focus includes reducing environmental and climate pressures related to production and consumption and involves business sectors e.g. energy, industry, buildings and infrastructure, mobility, tourism, international trade and the food system. The EU **Biodiversity Strategy** is directly aligned with the implementation of the action program.

More information here.

EU Biodiversity Strategy for 2030

The EU Biodiversity Strategy 2030 was launched in 2020 delivering a set of ambitious nature-related targets for the EU and introducing the business case for nature. The strategy underlines the dependency and impact of business on biodiversity. And the importance of nature-based innovation, and action to restore ecosystems and conserve biodiversity (European Commission 2021). The strategy highlights business opportunities from investing in biodiversity worldwide, which was estimated worth 2-6 trillion USD a year by 2050 (TEEB 2022).

The strategy outlines biodiversity targets leading to e.g. the **Nature Restoration Regulation and Soil Health Law** with commitments and actions to restore degraded ecosystems across the EU (see below). Moreover, targets inter alia include the reduction of use and risk from chemical pesticides as well as nutrient losses by at least 50% and protecting 30% of the land and sea areas for biodiversity including 10% of strict protection. Of the 25% of the EU budget dedicated to climate action, a significant proportion is envisaged to be invested in nature-based solutions and thereby biodiversity and GHG emission reductions at the same time as well as other potential synergies.

The business and financial sector is crucial as outlined in section 3.3 of the strategy: "Building on an integrated and whole-of-society approach" acknowledging that businesses both have an impact on nature and also provide innovations, partnerships and expertise to address biodiversity loss. The European Business and Biodiversity Platform (see section 2 of this report) is referred to as an important knowledge base and the importance of removing barriers to the uptake of nature-based solutions as key to job opportunities.

Following the strategy, biodiversity considerations are envisaged to be integrated into business decision-making at all levels by the implementation of for example EU legislation and policies mentioned in this report.

More information here.

Nature Restoration Regulation

The EU Nature Restoration Regulation entered into force in August 2024 and aims to restore 20% of European degraded ecosystems by 2030 (European Union, no date (a)). The longer-term vision is that by 2050, all ecosystems will be restored. The legally binding nature of the Nature Restoration Regulation builds partly on the fact that the voluntary target of the last EU Biodiversity Strategy to be fulfilled by 2020 and to restore at least 15 % of degraded ecosystems was not met, and that 81% of European habitats are in poor condition (European Environmental Agency 2020). The Nature Restoration Regulation includes targets to achieve long-term and sustained recovery of biodiversity and resilient nature and comes with specific targets (see below). The law aims to contribute to climate change mitigation and adaptation targets by promoting nature-based solutions. It links to target 2 in the **GBF**, aiming at effectively restoring 30% of degraded ecosystems globally by 2030 to enhance biodiversity, ecosystem functions, services, ecological integrity, and connectivity.

The impact assessment conducted under the auspices of the EU Commission is that 1 euro spent on restoration adds between 8 and 38 euros in benefits (EU Commission 2022). For example, an estimated 5 billion euros of the EU's annual agricultural output is directly attributed to insect pollinators (Vysna et al. 2021), and for some crops, the contribution can amount to half of the market value. Most of the essential benefits of pollinators, however, remain unquantified.

The Nature Restoration Regulation supplements existing initiatives by the **Birds and Habitats Directives**, the **Water Framework Directive**, and the **Marine Strategy Directive** by proposing specific and legally binding restoration targets. It involves various habitat types, including wetlands, rivers, forests, and grasslands, and specific targets include revised legislation

covering such habitats as well as population levels by improving and enlarging these habitats. Moreover, targets encompass restoring pollinating insect populations, forests, urban, agricultural, and marine ecosystems, and river connectivity. For example, it includes the identifying and removing of barriers that prevent the connectivity of surface waters, so that at least 25,000 km of rivers are restored to a free-flowing state by 2030, restoring at least 30% of drained peatland by 2030 and transforming at least 10% of the agricultural area to high-diversity landscape features. The Regulation provides a comprehensive and detailed examination of needs and targets.

Member states are expected to submit National Restoration Plans to the Commission within two years after the Regulation entered into force, showing how they will deliver on the targets, and the plan shall cover the period up to 2050. It also comes with requirements for monitoring and reporting on progress, including the identification of relevant indicators. Its implementation also prompts research questions still to be more precisely identified to meet the targets and obligations set out in the regulation.

Implementation of the Regulation prompts assessments of ecosystems in good condition, and ones that were degraded during the last 70 years and identifies areas that would be most suitable for restoration, integrating the projected changes to the environment by climate change.

Resources to implement the Nature Restoration Regulation are envisaged from EU sources and national and private funding. A broad range of EU funds are available for restoration, and the **EU Taxonomy** is expected to facilitate greater use of private funds. For example, private initiatives will be available to stimulate private financing, such as the InvestEU Programme offering opportunities to mobilise public and private finance. Member States may promote the deployment of private or public support schemes to the benefit of stakeholders. Member States may also promote the deployment of private or public support schemes to the benefit of stakeholders implementing restoration, including land managers and owners, farmers, foresters and fishers.

The Commission adopted the proposal in June 2022, the revised version was adopted by the Parliament in February 2024, and on 22 June 2024, the Council voted in favour of the Regulation.

More information here.

Soil Strategy and proposed directive on soil monitoring and resilience

Soils have largely been neglected in previous UN and EU policies and legislation. This has changed with the adoption of the EU Soil Strategy in 2021 and a proposed directive on soil monitoring and resilience. Soils host more than 25% of biodiversity and are the second-largest carbon pool on the planet. However, over 60% of European soils are degraded and continue to deteriorate, which poses a serious threat to habitats and species (IPBES 2018; European Union, no date (d)).

It is estimated that between 61% and 73% of agricultural soils in the EU are affected by erosion, loss of organic carbon, nutrient (nitrogen) exceedances, compaction or secondary salinisation or a combination of these threats due to unsustainable management and climate change including e.g. extreme weather events (European Union, no date (d)). Soil degradation has perhaps had an estimated cost of €50 billion per year due to the loss of ecosystem services (European Commission 2023).

The soil strategy sets the long-term vision for 2050. By then the strategy aims to bring EU soil ecosystems to a healthy and more resilient condition. The strategy outlines the need to restore degraded soils and enhance soil biodiversity. However, a legislative rather than a non-legislative approach is deemed necessary and work is undertaken on a "soil monitoring law".

Hence, the proposed directive on soil monitoring and resilience aims at putting in place a monitoring framework for soils across the EU (European Union, no date (d)). The directive takes a staged approach and in the first phase, the focus is on setting up the soil monitoring framework, which will include requirements to lay down measures to manage soils sustainably and regenerate unhealthy soils once the condition is established. In a second phase stock of the progress will be taken and a review of the directive to accelerate progress towards 2050 if needed.

The primary objective of the new directive is to introduce a framework to monitor soil health across the EU. Given the complexity of soil, the directive leaves flexibility to the Member States to adapt their approach to local soil conditions. As part of a soil directive, EU Member States should establish soil districts, which will constitute the basic governance units and take measures to comply with the requirements laid down in the directive. Moreover, soil health assessments are performed on a regular basis by each country.

The scientific knowledge of soils in Europe (and elsewhere) is generally poor. The "Soil Deal for Europe" is one of the five EU missions and is expected to improve the knowledge base of more sustainable soil management. The mission includes several research areas for example carbon farming, contamination, restoration, biodiversity, and circular economy related to soils.

However, the research of a more technical character is also directed towards land managers including remediation techniques, sustainable farming practices, materials and tools for advisors and spatial planners. It also includes the creation of a network of 100 living labs and "lighthouses" to test and showcase solutions for sustainable soil management across Europe. And promotes soil monitoring and awareness raising. Also, the EU agricultural policy, the CAP, is envisaged to be a funding opportunity.

A draft directive on soil monitoring and resilience has passed the Parliament's Committee on the Environment, Public Health and Food Safety and in April 2025 a provisional political agreement was reached between the European Parliament and the Council on the proposal for a Soil Monitoring and Resilience Directive.

More information here.

The Farm-to-Fork Strategy

The Farm to Fork Strategy was adopted in May 2020. It aims to revolutionise food production, distribution, and consumption and lays down a new approach to ensure that agriculture, fisheries, aquaculture, and the food value chain as a whole contribute to a green transition. The transition to sustainable food systems may also be seen as an economic opportunity for farmers, fishers and aquaculture producers, as well as food processors and food services. However, its implementation has received protests from EU farmers stemming from concerns over rising production costs and the impact of climate policies on farming livelihoods.

Several elements in the Farm to Fork Strategy are aligned with the **EU Biodiversity Strategy** e.g. the reduction of the use and risk of chemical pesticides as well as nutrient losses by 50% and to have at least 25% of the EU's agricultural land under organic farming by 2030 and a significant increase in organic aquaculture. Implementation of activities to obtain targets in the strategy is key to its success.

The strategy also brings attention to the CAP and it is stated that the EC will also make recommendations to each Member State on the nine specific objectives of the CAP paying attention to addressing the **Green Deal** targets, and those from Farm to Fork and the **Biodiversity Strategy**. The Farm to Fork Strategy is important for biodiversity underlined alone by the fact that the EU is the biggest importer and exporter of agricultural food products and the largest seafood market in the world.

Funding the necessary research and innovation initiatives to spearhead this transition is also linked to e.g. the implementation of the proposed Soil Monitoring and Resilience Directive and the Nature Restoration Regulation.

More information here.

Forest Strategy and Regulation on deforestation-free products

The strategy is from 2021 and replaces the earlier EU strategies on forest. Forests and other wooded land cover over 44% of the EU's land and are essential for people and harbour a rich biodiversity (IPBES 2019). About 40% of EU forests are under different public ownership schemes and there are an estimated 16 million private forest owners in the EU.

The strategy generally urges Member States to strengthen forest protection and restoration efforts in their publicly owned forests to contribute to achieving EU climate and biodiversity targets. Moreover, the share of forest areas covered by forest management plans should cover all managed public forests and an increased number of private forests.

Climate change has a considerable focus in the forest strategy and one of its key roles is to turn the forest sector from a GHG emission source to a carbon sink, however, it does also integrate key elements from the biodiversity strategy. Primary and old-growth forests are of paramount importance for biodiversity and the provision of critical ecosystem services (Barredo et al. 2021) such as storing carbon. The strategy seeks to promote inter alia financial incentives for private forest owners and managers including setting up payment schemes for ecosystem services by Member States.

In 2014-2020, the CAP forestry measures committed EUR 6,7 billion in support of EU policy targets, mostly for afforestation (27%), prevention of forest fires and disasters (24%) and investments in resilience, ecological and social functions (19%). Yet, the uptake of forestry measures is lacking behind, although comprehensive guidance is available (Barredo et al. 2021, European Commission 2023a, European Commission 2023b, European Commission 2023c). There is a need for further research to adopt the most climate and biodiversity-friendly forest management practices outside protected and old-growth forests as well as on climate change impacts, including the role and functions of primary and old-growth forests in relation to climate, diversity of forests, genetic resources, and soils restoration.

Furthermore, the need for improved monitoring (both on-ground and remote sensing) is stressed in the strategy.

The Regulation on deforestation-free products entered into force in June 2023 and was initially set to take effect by the end of 2024, but its implementation has been postponed to 30 December 2025 for large companies, and 30 June 2026 for small enterprises. The Regulation aims to minimise the EU contribution to deforestation and forest degradation in the EU and also globally, thereby contributing to reducing GHG emissions and global biodiversity loss. According to EU studies, this delay could result in an additional loss of 2,300 square kilometres of forest globally (Kastalie et al. 2022).

The private sector and multistakeholder collaborations play a crucial role in driving its implementation and compliance. Businesses and research in collaboration can leverage blockchain, satellite monitoring and digital traceability solutions to

ensure responsible sourcing. The postponement was a result of stakeholder pressure, inadequate benchmarking systems difficulties to ensure compliance, incomplete digital tools for due diligence and risk assessment and the need for more preparation time for its implementation.

This regulation lays down rules regarding forest market products as well as exports, that may have a negative impact. The regulation focuses on specific forest-related commodities: Cattle, cocoa, coffee, oil palm, rubber, soya and wood. These commodities and relevant derived products such as leather, chocolate and furniture shall not be placed or made available on the market or exported, unless the following conditions are fulfilled: (a) they are deforestation-free; (b) they have been produced following the relevant legislation of the country of production; and (c) they are covered by a due diligence statement.

Thus, operators cannot place relevant products on the market or export them without prior submission of a due diligence statement. Moreover, companies will be required to collect precise geographical information on the location of where their commodities have been grown to check for compliance throughout the value chain. With a review once a year. Operators shall also carry out a risk assessment to establish the risk that the products are non-compliant, and products are only allowed where the risk assessment reveals no or only a negligible risk that the relevant products are non-compliant.

More information here.

Chemical and waste legislation

Pesticides are chemical compounds that are used to eliminate insects, rodents, fungi, and weeds. The use of chemicals like pesticides comes with certain costs and benefits but poses often significant hazards to the environment and public health. The interlinkages between chemicals, waste and the biodiversity loss and climate change is well-known and widely recognised e.g. by FAO. Historically, pesticide manufacturers and distributors have been averse to new restrictions on pesticides. Bans have usually been seen as bad for business and pesticide companies. Hence, the pesticide industry has a reputation for working to water down, delay or block new regulations.

The EU has a protective regulatory framework for chemicals. The Sustainable Use of Pesticide Directive aims to achieve the reduction of the risks and impacts of pesticide use, and the promotion of the use of Integrated Pest Management (IPM) and alternative approaches or techniques, such as non-chemical alternatives to pesticides including biological control. In June 2022 the EC tabled a revision of the directive aligned with the **EU Farm to Fork and Biodiversity Strategy** and to reduce by 50% the use and the risk of chemical pesticides. This is in line with the globally adopted Target 7 – reducing excess nutrients lost to the environment by at least half, including through more efficient nutrient cycling and use, and reducing the overall risk from pesticides and highly hazardous chemicals by at least half. Research needs are many and include integrated pest management and food security issues related to wild pollinators.

The Commission proposal on a directive on the Sustainable Use of Pesticides was withdrawn in March 2024. No agreement was foreseeable, in view of the rejection of the proposal by the European Parliament and lack of progress of the discussions in the Council. Thus the Sustainable Use of Pesticides Directive (2009/128/EC) remains in force.

Further, to protect human health and reduce pollution from chemicals, the EU adopted the Waste Framework Directive. The Waste Framework Directive sets the basic concepts and definitions related to waste management, including definitions of waste, recycling and recovery. The directive has undergone significant amendments in recent years to address emerging priorities in waste management. Two notable changes have been introduced: Directive (EU) 2018/851, which introduced broader changes to strengthen waste prevention and the circular economy, and the Batteries Regulation in 2023.

More information here.

Box: Case study – Biodiversity and commercial forest production, Sweden

Sveaskog is a state-owned company and the largest forest owner in Sweden. The company owns 14% of Sweden's forests and has approx. 800 employees across Sweden. Sveaskog's core business is to manage the forest, and provide timber, pulpwood, wood chips, biofuel, seedlings and forest services. The customers are mainly in the Swedish forest industry and the Swedish energy sector. In addition, Sveaskog makes land concession deals and develops the forest as a place for fishing, hunting, tourism and other nature experiences. A research collaboration labelled GreenFutureForest brought scientists and Sveaskog together and represents a step forward in including biodiversity considerations in forestry management, particularly in Sweden. Sveaskog has included biodiversity conservation within its overall commitment to generate profit.

GreenFutureForest's research focus: GreenFutureForest, a pioneering research initiative, focuses on understanding and mitigating the impacts of forestry practices on biodiversity, especially in the context of Sweden's boreal forests. The project examines the consequences of conventional clearcutting forestry methods on various species of conservation concern, ranging from deadwood fungi crucial for ecosystem health to bird species dependent on specific habitat structures. Central to GreenFutureForest's approach are scenario simulations that project the long-term effects of different management strategies on biodiversity. These simulations, based on rigorous scientific monitoring and citizen science data, highlight the potential benefits of alternative management regimes such as continuous forest cover and clearcutting-free practices. By modelling these scenarios, the project provides valuable insights into how forest landscapes can be managed to enhance biodiversity while maintaining economic viability.

Collaboration with Sveaskog: The collaboration with Sveaskog emerged from a shared interest in integrating scientific research with practical forest management strategies. Sveaskog's vast land holdings, which include substantial areas designated for conservation, provided an ideal setting for applying GreenFutureForest's findings. The collaboration aimed to assess and implement conservation-focused management practices that could safeguard biodiversity across large-scale forest landscapes.

Impact on Sveaskog's management practices: Peter Bergman, representing Sveaskog, underscored the importance of GreenFutureForest's research in informing their conservation efforts. The project's simulations have demonstrated that retaining set-aside areas and diversifying management regimes can significantly benefit species with slow colonization rates, such as the lungwort lichen and Siberian Jay. These findings have influenced Sveaskog's strategic decisions, encouraging them to increase the presence of keystone tree species and explore alternative harvesting techniques beyond traditional clearcutting. Implementing alternative management regimes poses challenges, particularly in transitioning away from established practices like clearcutting. However, GreenFutureForest's evidence-based approach has shown that these changes can rebuild forest green infrastructure and improve biodiversity outcomes without compromising economic sustainability. Sveaskog announced in 2003 its commitment to set aside 20% of their forested lands for conservation, despite the economic implications.

Future directions: Looking forward, the collaboration between GreenFutureForest and Sveaskog is set to evolve. A continued dialogue and projects aim to refine forest management strategies in response to emerging challenges such as biodiversity conservation goals. This partnership is integrating research with practical forestry applications. The collaboration has fostered learning and innovation between researchers and forest managers in an interdisciplinary way and in addressing complex environmental challenges.

1.1.3. Corporate and sustainable finance directives and regulations

Corporate Sustainability Reporting Directive (CSRD)

This directive entered into force in 2023 and is modernising and strengthening the rules on the social and environmental information that companies must report. It comes as a replacement for the Non-Financial Reporting Directive (NFRD) and amends the Accounting Directive. The CSRD aims to guide businesses and assist investors to engage in sustainable activities by increasing transparency and direct businesses into more sustainable business models. This may imply major changes in supply chains, operations, and business activities based on evidence-based reporting structures throughout business operations. Reporting obligations also included, for example, the requirement to report on a transition plan to ensure that the business model and strategy of a company are compatible with the transition to a sustainable economy.

Core in the implementation of the CSRD are the European Sustainability Reporting Standards (ESRS) that companies need to follow in their reporting, and which need to be embedded in the long-term business models and strategies. The ESRS comprise 12 horizontal standards (introduced in 2023) of which five correspond to the environmental objectives in the **EU Taxonomy** and include e.g. biodiversity and ecosystems (ESRS E4). As required by the Accounting Directive, and as amended by the CSRD, the ESRS take a "double materiality" approach. This means that companies need to report both on their impacts on the environment (inside-out) and on how environmental (and social) conditions create financial risks and opportunities for the company (outside-in). The delegated act defining the ESRS was published and adopted by the EU Commission in July 2023 and will apply from 1 January 2024 to those companies already required to report non-financial information according to NFRD but see also the February 2025 Omnibus below, which have postponed and relaxed some of these requirements.

Furthermore, specific standards were prepared to guide the various sectors. However, these standards are now postponed two years from their previous deadline of mid-2024 to mid-2026. This is designed to provide time for companies to align with the horizontal standards described above before introducing the sector-specific standards thereby reducing the reporting burden for companies. However, with the new February 2025 Omnibus the reporting will not intend to follow sector specific standards.

The CSRD applies to a broader set of large companies following the Accounting Directive and listed small and medium-sized enterprises (SMEs), which will be required to report on sustainability (although following a different model) – approximately 50,000 companies in the EU. Through the CSRD it becomes mandatory for companies to have an audit of the sustainability information that they report. However, with the February 2025 Omnibus (see below) 80% of these companies will be removed.

Companies that fall under the scope of the CSRD must report in their annual reports to what extent their activities are covered by the **EU Taxonomy** (Taxonomy-eligibility) and comply with the criteria set in the Taxonomy delegated acts (Taxonomy-alignment). Other companies that do not fall under the scope of CSRD can decide to disclose this information voluntarily, e.g. to get access to sustainable financing. These new rules will ensure that investors and other stakeholders have access to the information they need to assess investment risks arising from climate change and other environmental issues, including biodiversity loss.

With the February 2025 Omnibus the implementation was postponed and requirements loosened. Before the Omnibus large companies (e.g. more than 500 employees) would have to apply the new rules in the 2024 financial year for their reports to be published in 2025. And from 2025, large listed and unlisted companies with, e.g. more than 250 employees were expected to be covered, and later the listed SMEs (except micro-companies). From 2028, non-EU country companies would be enrolled. However, see the section on the EU Omnibus below for more information on these changes.

More information here.

Sustainable Finance Disclosure Regulation (SFDR)

The aim is to improve transparency and accountability in investments, thereby contributing to direct investments towards more sustainable economic activities. Knowledge of the environment and the company's plans to reduce such impacts in the future will feed into the disclosure requirements under the Sustainable Finance Disclosure Regulation. By introducing the ESRS standards, investors increasingly will be able to receive a reliable overview of sustainability-related risks to which companies are exposed and, thereby the choice to make more environmentally friendly investments. The ESRS contains data points that correspond to specific information that financial administrators and institutions need

for reporting under the SFDR. If a company concludes that a datapoint deriving from the SFDR is not material i.e. with no impact or risk for the environment, it will have to explicitly state that the data point in question is "not material" rather than just reporting no information. Thus, SFDR includes reporting on biodiversity-specific indicators (EU 2019) and requires companies to publish written policies on the integration of sustainability risks and impacts. A critical review of the SFDR has been undertaken by Eurosif (2022) e.g. proposing several adjustments on labelling and products (under articles 8 and 9), relating to the disclosure of specific information.

More information here.

Directive on corporate sustainability due diligence

In 2022, the European Commission adopted a proposal for the Corporate Sustainability Due Diligence Directive. In short, requiring companies to monitor and act on compliance by identifying, addressing, preventing and mitigating adverse human rights and environmental impacts in their operations or third-party business relations. An essential aspect is to foster sustainable and responsible corporate behaviour throughout global supply and value chains and to cover all relevant sectors.

The due diligence process was expected to cover the six steps defined by the OECD Due Diligence Guidance for Responsible Business Conduct. These include due diligence measures for companies to identify and address adverse human rights and environmental impacts: (1) Integrating due diligence into policies and management systems, (2) identifying and assessing adverse human rights and environmental impacts, (3) preventing, ceasing or minimising actual and potential adverse human rights, and environmental impacts, (4) assessing the effectiveness of measures, (5) communicating, (6) providing remediation.

Thus, companies would integrate due diligence into corporate policies and in line with the relevant international framework, and monitor the effectiveness of the measures taken. To ensure clarity for companies, in particular the steps of preventing and mitigating potential adverse impacts and of bringing them to an end, or when this is not possible, minimising actual adverse impacts there will be periodic assessments of their operations, and those of their subsidiaries.

Implementation of the directive implies the development of a due diligence policy, which should contain a description of the company's approach, including in the long term, to due diligence, a code of conduct describing the rules and principles to be followed by the company's employees and subsidiaries; a description of the processes put in place to implement due diligence, including the measures taken to verify compliance with the code of conduct and to extend its application to established business relationships. Companies will have to update their due diligence policy annually.

The proposed directive aligns with other environmental pieces of EU policy and legislation including e.g. the CSRD and SFDR in terms of reporting. However, the February 2025 Omnibus is affecting these pieces of legislation as well as the CSDDD directive hence changes must be foreseen. Companies were also encouraged to obtain contractual assurances from a partner that it will ensure compliance with the code of conduct or a prevention action plan, including by seeking corresponding contractual assurances from its partners in the value chain. The contractual assurances are supposed to be accompanied by appropriate measures to verify compliance.

These proposed due diligence rules were expected to apply to the following companies: Group 1: All EU limited liability companies of substantial size and economic power (with 500+ employees and EUR 150 million+ in net turnover worldwide). Group 2: Other limited liability companies operating in defined high-impact sectors, which do not meet both Group 1 thresholds, but have more than 250 employees and a net turnover of EUR 40 million worldwide and more. For these companies, rules will start to apply 2 years later than for group 1. Non-EU companies active in the EU with turnover threshold aligned with Group 1 and 2, generated in the EU. Small and medium enterprises (SMEs) are not directly in the scope of this proposal. However, with the February 2025 Omnibus these requirements have changed (see section below).

The CSDDD directive was adopted on 24 May 2024 and provided for all EU member states to lay down the rules on sanctions applicable to infringements of national provisions adopted under this Directive. And to take measures to ensure that they are implemented. National administrative authorities appointed by Member States will be responsible for supervising these new rules and may eventually impose fines in case of non-compliance.

More information here.

The February 2025 EU Omnibus package

The 2025 Competitiveness Compass for the EU has a strong focus on simplification and includes an Omnibus package on sustainability, which will cover a far-reaching simplification in the fields of sustainable finance reporting, sustainability due diligence and taxonomy. On 26 February 2025, the European Commission published an omnibus package bringing together proposals that will amend three pieces of sustainable finance legislation the CSRD including the ESRS, the CSDDD and proposed changes to the EU Taxonomy.

The proposal related to the CSRD included two proposals one on 'stop the clock' to postpone 'wave 2' and 'wave 3' reporting by two years and another on the primary areas of proposed changes, including the scope of the CSRD, value chain requirements, assurance requirements, and updates to the ESRS standards.

The proposed changes related to the CSRD reporting requirements depend on whether the company has more than 1000 employees and a turnover of more than 50 million Euro. The demand for ESRS reporting and required request to value chain partners will be limited significantly to companies included in the reporting obligations i.e. above 1000 employees. For companies in the value chain with less than a 1000 employees reporting is voluntary. Moreover, the requirement to issue and follow ESRS sector specific guidance is removed and furthermore the ESRS will be updated to reduce the number of mandatory datapoints, prioritise quantitative datapoints and improve consistency with other EU legislation.

The implementation of the CSRD will be postponed for companies below 1000 employees and wave 2 companies and wave 3 companies will have their reporting postponed two years starting on 1 January 2027 and 1 January 2028 respectively.

The stepwise implementation of the CSDDD will be postponed with a year and start in 2028 for the first wave of companies (more than 5000 employees and a turnover of 1500 million Euro) and Member States will also have another year to implement the requirements in their national legislation i.e. in 2027.

For the EU Taxonomy requirements large companies above 1000 employees and 450 million Euro are still included in this regulation and companies with less than 450 million euro are included but following adjusted rules.

1.2. Global agreements, and policies

1.2.1. UN Agenda, Goals and Conventions for Sustainable Development

UN 2030 Agenda for Sustainable Development

The 2030 Agenda for Sustainable Development, adopted by all members of the United Nations, provides a shared vision for how to achieve sustainable development within the three dimensions - economical, social and environmental. The 2030 Agenda was announced at the UN Sustainable Development Summit in New York in 2015, and the aim is to reach full implementation of the Agenda by 2030. At the core of the 2030 Agenda are the 17 Sustainable Development Goals (SDGs) that build on the Millennium Development Goals agreed upon almost 15 years earlier.

The 2030 Agenda and the 17 SDGs come with 231 unique indicators to measure progress towards achievement of the goals in 2030: SDG Indicators — SDG Indicators (un.org).

The 17 SDGs seek to end poverty, improve health and education, reduce inequality, and enhance economic growth while mitigating climate change and preserving oceans and forests. The goals recognize that social, economic, and ecological development are closely linked and require global action. A new way of viewing the economic, social, and ecological aspects of the SDGs implies that economies and societies are seen as embedded parts of the biosphere and Goals 6, 13, 14 and 15 on clean water, climate and biodiversity can be viewed as a foundation for achieving the other SDGs.

The SDGs should be seen as a package and Goals are interlinked. Achieving the SDGs therefore requires collective action across governments, civil society, the private sector, individuals and communities. Moreover, private business, investments, and innovation are recognised as major drivers for enhancing productivity, fostering inclusive economic development, and generating employment opportunities and are essential for the implementation of the 2030 Agenda.

More information here.

Convention on Biological Diversity (CBD)

The CBD entered into force in December 1993 after being finally negotiated in 1992 with the two other “RIO conventions” on desertification and climate change. The need to engage with the private sector and businesses in general to achieve the objectives of the convention is recognised by CBD and has materialised in a Business Engagement Program. From this program decisions to facilitate private-sector engagement include to:

- Strengthen biodiversity consideration in business operations and promote behavioural change through “mainstreaming’’.
- Encourage enterprises to align investments, management, and procurement policies with the conservation and sustainable use of biodiversity and ecosystem services.
- Encourage businesses & support the establishment of the Global Partnership for Business and Biodiversity and other public/private partnerships to provide a platform to facilitate tool starting, dialogue, and capacity building.
- Support the measurement and reporting of business impacts and dependencies to biodiversity by formalising biodiversity impact reporting in their annual reports.
- Further, encourages businesses to take into account individual supply chain activity, national priorities, and conditions when conducting biodiversity assessments.
- Promote business involvement in the development, revision, and implementation of national and international biodiversity strategies and action plans.

Activities of the convention include the organisation of the Business and Biodiversity Forums and the development of a Global Partnership for Biodiversity sharing tools mechanisms and case studies as well as the distribution of a CBD Business Newsletter. Many global initiatives among private businesses and financial institutions have emerged in recent years to become sustainable and to develop towards “nature-positive” by involving companies from almost all industries and with a collected turnover of trillions of USD. The focus on addressing business and financial sector activities in the CBD resolutions has increased in recent years. At the COP15 in Montreal, the largest turn-up of businesses and financial institutions was seen and side events were dedicated to the Business and Biodiversity Forum and a Finance and Biodiversity Day. The trend of large-scale and increased business interest in the biodiversity agenda was continued at COP16 in Cali, Colombia. More information at Welcome to the Business Engagement Programme.

More information here.

Kunming-Montreal Global Biodiversity Framework

The Global Biodiversity Framework includes four goals and 23 targets and sets the scene for reversing biodiversity loss and related deterioration of many ecosystem services towards 2030. Targets 1-8 address the direct drivers of biodiversity loss including e.g. concrete targets on reducing excess nutrients lost to the environment by at least half and similarly reducing the overall risk from pesticides and highly hazardous chemicals by at least half and making sure that 30% of degraded ecosystems are under effective restoration. Moreover, the target to effectively conserve and manage 30% of marine, freshwater and land areas for biodiversity conservation is included here as well as reducing the introduction and establishment of invasive alien species by 50% among.

Targets 9-12 are about meeting peoples' needs through sustainable use of biodiversity and ecosystem services and targets 14-23 cover tools and solutions on mainstreaming biodiversity in production and consumption and across policies and sectors, including quantitative targets for mobilising resources. More specifically target 14-16 focus on mainstreaming biodiversity across production and consumption, policies and sectors, and target 18-20 focus on harmful subsidies, resource mobilisation and capacity building.

Target 14 is of special relevance for the financial sector to ensure full integration of biodiversity and its multiple values into policies and regulations across all sectors and to align all relevant public and *private activities*, and *fiscal and financial flows* with the goals and targets of the Global Biodiversity Framework itself. Target 15 is of high relevance to both the financial and the business sectors, to encourage and enable all companies to monitor, assess and disclose their risk, dependencies and impacts on biodiversity and large transnational companies and financial institutions should be *required* to do so. Target 16 focuses on sustainable consumption and requests parties by 2030 to reduce the global footprint of consumption equitably, reduce overconsumption and waste including food waste and Target 18 states that subsidies harmful to biodiversity should be identified, reformed, eliminated, and reduced by at least 500 billion USD per year by 2030, while simultaneously scaling up positive incentives for conservation and sustainable use of biodiversity (CBD 2022).

The CBD COP15 and COP16 had an unprecedented representation from the private and financial sectors, demonstrating a marked shift towards recognition of the importance of biodiversity from these sectors. Before COP15 a total of 330 business and finance institutions called for mandatory requirements to assess and disclose their impacts and dependencies on biodiversity by 2030 (Business for Nature 2022).

The GBF comes with an enhanced reporting system compared to the preceding Aichi biodiversity targets which were set for 2020. This monitoring framework and associated indicators will consist of mandatory so-called headline and binary indicators as well as voluntary indicators and use the existing national reporting tool to the CBD at the national level i.e. NBSAPs. This monitoring framework including a full set of indicators was agreed upon in a follow-up meeting to the COP16 in Rome in 2025. Moreover, commitments from actors other than national governments can be included in a review including from the private sector and planned at COP17. IPBES (2024b) estimated that *negative financial flows* from the private sector to five Nexus elements amounts 5.7 trillion USD and that further 10-25 trillion USD with a negative effect on biodiversity is not accounted for in economic and financial decisions (IPBES 2024b).

The national reports to the CBD will have to be submitted by parties in 2026 and 2029 and related progress towards the 2030 targets will be evaluated at the CBD COP17 in 2026 and CBD COP19 in 2030. Also, a second Global Assessment of IPBES is planned to be launched at the end of 2028 to provide a global status on biodiversity and related ecosystem services.

More information here.

UN Framework Convention on Climate Change (UNFCCC)

Has set the agenda in the fight to combat climate change since its formal adoption as one of the three Rio Conventions in 1992. The current target agreed to by the 196 parties in Paris in 2015 was to limit global warming to less than 2 °C and to pursue limiting the increase to 1.5 °C. The realism in reaching at least the latter is now significantly challenged in recent IPPC reports and most probably also the 2 °C target. Climate change is also one of the key drivers of biodiversity loss (IPBES 2019), and the driver which is expected to increase the most in terms of importance within the coming decades (IPBES 2018b). Nature-based solutions (see e.g. IUCN 2020, UNEP 2022) involving climate measures (mitigation and adaptation) to contribute to solving both crises will be expected to increasingly involve private businesses. And also contribute to enhancing the effectiveness and ambitions of targets set in the nationally determined contributions of the UNFCCC. Increasing assessment, reporting and disclosure demands

on climate and biodiversity at global and regional levels is expected to result in an increased sustainable interventions from companies and the financial sector and supported by research. Activities may often benefit both mitigation of climate change solutions and biodiversity. Not to mention that contributions to reducing climate change globally will be an important contribution to decreasing the pressure on biodiversity at many levels. Still, comprehensive research and innovation are needed within this field and in different ecosystems and in operationalising and scaling up nature-based solutions.

Several challenges in terms of the drivers of both climate change and biodiversity loss are the same see e.g. the comprehensive IPCC (2019) report on land use and on IPCC below.

More information here.

Other Multilateral Environmental Agreements

Several other multi-lateral environmental agreements include many renowned conventions of which three are mentioned below. The agreements come with valuable policy frameworks and targets agreed to by the vast majority of the world's countries at regular global meetings. It will be expected that the private and financial sectors will be increasingly recognised and involved in the work of these conventions.

UN Convention to Combat Desertification (UNCCD)

As one of the three Rio conventions the CCD is acknowledging the huge importance of the private sector in a sustainably managed world. Several business initiatives and events have been held under the auspices of this convention e.g. building your business and seizing opportunities or webinars on land-based jobs for youth. Launched at UNCCD COP15 in Abidjan, Côte d'Ivoire, the Business for Land Initiative aimed at bringing visibility to the commitments made by participating companies towards land degradation neutrality, both in supply chains and CSR activities. The Changwon Initiative Business Action Program on Land aims to act as a platform to bring together business partners from around the world with an interest in supporting and implementing land degradation neutrality measures.

More information here.

Ramsar Convention on Wetlands

Most countries' partners to the CBD are also partners to the Ramsar Convention. The main theme is the "wise use" of all the world's wetlands equal to the term "sustainable use". Under the "three pillars" of the Convention, countries commit to work towards the wise use of all their wetlands; designate suitable wetlands as Wetlands of International Importance "Ramsar sites" and ensure their effective management. Moreover, to cooperate internationally on transboundary wetlands, shared wetland systems and shared species. The designation of area-based Ramsar sites comprises about 2,500 sites covering 2,570,000 km2 in 172 countries and is the largest network of protected areas in the world. The approach applied by the convention seeks to promote the use of wetland products and services if this use can be documented to be sustainable. The private business of Danone – a multi-local food and beverage company – is an example of a long-term collaboration between a private company and this MEA lasting for more than 20 years and with a focus on raising awareness, adopting best practices and facilitating scientific knowledge dissemination.

More information here.

Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)

CITES intends to regulate trade with wild plants and animals and is a global regulatory framework for trade in globally threatened species between countries. It includes more than 40,000 species of flora and fauna both alive and species-derived products threatened by international trade. The private sector is crucial in stopping wildlife trafficking, one of the major drivers of biodiversity loss (IPBES 2019, 2024b), including in the shipping, tech, airline, and e-commerce sectors. And to contribute to meeting the CITES obligations at all levels is an opportunity for companies to add meaningful social and environmental value.

More information here.

1.2.2. Intergovernmental science-policy platforms

IPBES – Intergovernmental Science-Policy Platform on biodiversity and ecosystem services

More than 150 countries have signed into the IPBES science-policy collaboration including the EU member states. One of the core activities of IPBES is the development of global and regional assessments either thematic or methodological. So far, 13 assessments have been developed bridging the gap between scientific knowledge and decision-makers and policy makers as well as the wider public.

In 2022 the scope of the new IPBES assessment on business and biodiversity was agreed upon by governments to be launched at IPBES-12 scheduled for February 2026. It aims at improved understanding and awareness of the dependencies and impacts of businesses on biodiversity including concepts and methodologies, tools for measuring and communicating such dependencies and impacts, that are important for enabling businesses to understand the risks (physical, transitional and systemic) and opportunities, and to assess and monitor their performance.

More specifically, the report will include an assessment of the impacts and dependencies of business on biodiversity from all relevant business and financial sectors (formal and informal). It will also assess criteria and indicators for measuring such dependencies and impacts and assess options for action by businesses and by others, including governments, the financial sector and civil society, which interact with business. The focus will be on (but not limited to) forestry, agriculture and food systems, marine and freshwater fisheries and other uses of wild species, water resources, recreation and tourism, pharmaceuticals, energy, infrastructure and mining (IPBES 2022). The assessment is a unique contribution from science to the private sector to address biodiversity impacts and dependencies and reduce the large-scale negative financial flows from the sector on biodiversity (IPBES 2024b).

More information here.

IPCC - Intergovernmental Panel on Climate Change

The IPCC was created to provide policymakers with regular scientific assessments on climate change, its implications and potential future risks, as well as to put forward adaptation and mitigation options. The panel develops specific assessment reports on the state of scientific, technical and socio-economic knowledge, its impacts and future risks, and options for reducing the rate at which climate change is taking place. IPCC also produces reports on topics agreed to by its member governments and methodology reports that provide guidelines for the preparation of national greenhouse gas inventories.

An IPCC Special Report on climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems (IPCC 2019) addressed the interconnections between land use, climate change, and biodiversity. This was followed by an IPCC-IPBES workshop report on climate change and biodiversity (Pörtner et al. 2021).

Tedeschini et al. (2024) mapped the financing landscape on Nature-based Solutions (NbS) including climate change mitigation and avoiding biodiversity loss and the potential for enhancing private sector involvement including investors and Nature-based Enterprises. Tedeschini et al. (2024) identifies a significant opportunity for private sector investment in NbS, particularly through blended finance mechanisms. However, now the market is still dominated by public funding, highlighting the need for a supportive environment to attract private capital and ensure the financial viability of NbS projects. Barriers included challenges in accessing information, lack of clear revenue sources, knowledge gaps, high transaction costs, and limited valuation methodologies and with key opportunities in e.g. agriculture/food, water, forestry, and urban environments.

The Special Report of IPCC on the impacts of global warming of 1.5°C pointed out that some impacts may be long-lasting or irreversible and the sixth IPCC Assessment Report states that restoring ecosystems will be fundamental in reducing risks to food security for example. At the same time, unsustainable agriculture drives almost 90 % of global deforestation, with more than half of forest loss being due to conversion of forest into cropland.

More information here.

2. Examples of key EU and international institutions, organisations, initiatives, and approaches working on nature and economy

2. Examples of key EU and international institutions, organisations, initiatives, and approaches working on nature and economy

There is now a move towards the acknowledgement of the crucial role that the economy plays for the conservation and sustainable use of nature (IPBES 2024b). At the same time, the vital fundament of nature as an essential platform for business is increasingly being acknowledged (e.g. WEF 2022). As noted by e.g. Schaltegger (2022) private businesses and financial institutions have started to create initiatives to become more sustainable and develop towards "nature-positive" within recent years.

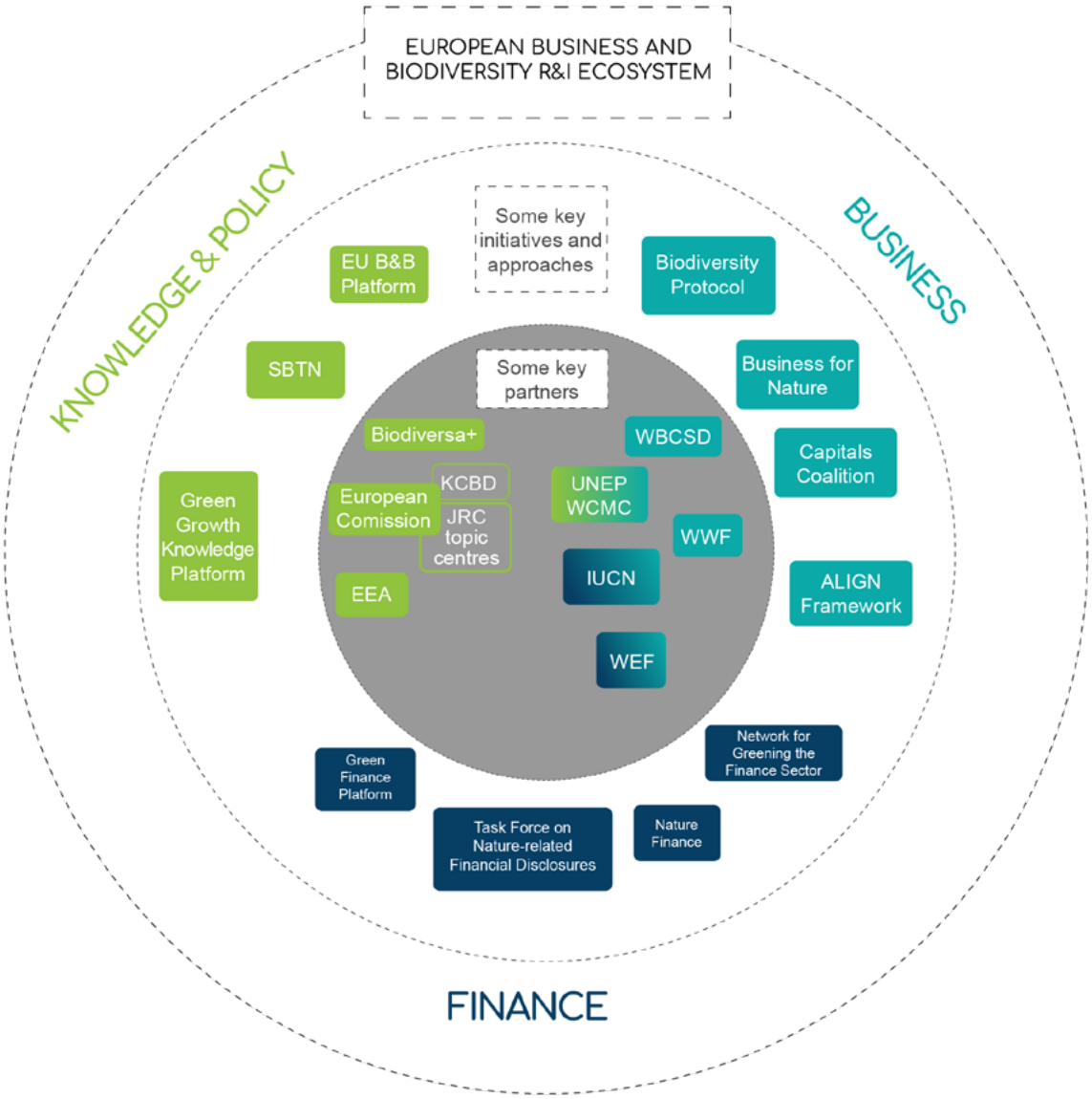


Figure 6: Key EU and international institutions, organisations, initiatives, and approaches working on nature and economy

To mention all partners is not possible and beyond the scope of this report but in the following chapter, a selection of relevant partners and stakeholders is highlighted. Partners have been categorised as whether they are 1) Overarching policy or knowledge institutions, 2) business or financial partners, or 3) relevant environmental institutions or NGOs. Both European and global partners are listed with particular attention to partners relevant from an European perspective. As presented in Figure 6 several key institutions and organisations working on business and biodiversity (inner circle of the figure) are further described in section 5.1, while examples of relevant initiatives, platforms and approaches (outer circle in the figure) are presented in section 5.2.

2.1. Key partners

2.1.1. Overarching policy or knowledge institutions

The European Commission (EC)

The EC is instrumental in driving the green transition in Europe and on the global scene. The very large number of policies and legal frameworks from the EC about nature and economy including businesses is an indication of a commitment towards biodiversity. On one hand, the impact on biodiversity is acknowledged; on the other the protection of biodiversity is also seen by the Commission as a huge business opportunity (see also Tedeschini et al. (2024). Among many examples, the Natura 2000 network is estimated by the EC to support 104,000 direct jobs and 70,000 more indirect jobs with an expectation that the network could generate up to 500,000 more jobs (European Union 2020). Moreover, the benefits from the Natura 2000 network are estimated to be of a value of EUR 200-300 billion a year. Another example is the huge budget for climate action, approximately 25% is envisaged towards nature-based solutions with securing and restoring biodiversity as a fundamental outcome.

The EC also invests in a number of LIFE projects relevant to nature and economy. Some examples include: Pennine Peat: Innovative Payment for Ecosystem Services methods, NaturEtrade: Creating a marketplace for ecosystem, 2DII: Aligning financial markets with climate and biodiversity goals and Transparent: Transformation of business accounting standards and practices.

Another example brought forward by the EC related to nature and economy is the conservation of marine species stocks e.g. in terms of protected areas could increase annual profit for the sector by almost EUR 50 billion. Wetland protection could save the insurance sector EUR 50 billion annually and three of the main business sectors in the EU: Construction, Agriculture and Food & Drink highly dependent on nature and generate EUR 7 trillion annually. These arguments were part of the promotion of the Green Deal in 2020 and the so-called "*Business Case for Biodiversity*" promoted by the EC.

Horizon Europe is the European Commission's flagship instrument for funding research, development and innovation in Europe and to contribute to boost the EU's competitiveness and growth. It runs from 2021 to 2027 and comes with a budget of EUR 95.5 billion. The programme facilitates collaboration and strengthens the impact of research and innovation in developing, supporting and implementing EU policies to contribute to tackling global challenges. The programme supports five EU Missions, a wide range of European Partnerships, including the Biodiversity Partnership (Biodiversa+), as well as hundreds of other environmental-related research and innovation projects. Here a few examples of current research and innovation projects to mainstream biodiversity in economic and finance activities:

- **NetworkNature** Work Package 4 focuses on enhancing the attractiveness of NbS for investors and entrepreneurs, and Task Force 3 aims to support and accelerate private sector uptake, and stimulate private investment.
- **NAIAD** worked on the assurance value of ecosystems and developed a number of outputs including on financial instruments and novel business models.
- **Invest4Nature** contributes to the conceptual framework and creation of a market for nature, by evaluating benefits and economic performance.
- **NATURANCE** works on assessing feasibility and performance of solutions built on disaster risk financing and NbS investment.
- **BIOFIN** and **BIO-CAPITAL** work on unlocking financial flows towards reversing biodiversity loss.
- **GoNaturePositive** will build knowledge on the nature-positive economy and its scale-up.
- **Nature-3B** works on understanding macro-financial risks associated with biodiversity loss.

The four Green Deal projects MERLIN, REST-COAST, SUPERB, and WaterLANDS are developing innovative financing instruments to support public-private partnerships and facilitate large-scale financing of nature restoration (Hart et al. 2025).

Moreover, EU-funded projects such as **CLEVER**, **BAMBOO** and **SUSTAIN** work to inform on transformative change for biodiversity and nature and economy. More information on these and other project (European Commission 2025) can be found here: https://data.europa.eu/doi/10.2777/1772923

More information on the EC.

The European Environment Agency (EEA)

The EEA, an agency of the EU, is tasked with providing sound, independent information on the environment. It aims to support sustainable development by helping to achieve significant and measurable improvement in Europe's environment, through the provision of "timely, targeted, relevant and reliable information" to policymaking agents and the public.

The European Environment Information and Observation Network is a partnership network of the EEA and its member and cooperating countries. Through Eionet, the EEA gathers environmental information from EU countries. EEA is a key collaborator in terms of for example nature reporting under EU directives including the Habitat, Bird, Water and Marine Strategy directives. The business community and other parts of civil society are important users. Information is made widely available through the EEA website and forms the basis of both thematic and integrated environmental assessments at the EU member state as well as the EU level.

European Topic Centres (ETCs) are consortia of organisations in the EEA member countries with expertise in specific environmental areas, contracted by the EEA to support the implementation of the EEA work programmes. As of 1 January 2023, seven European Topic Centres were working with EEA and the national Eionet partners including the European Topic Centres (ETC) on biodiversity and ecosystems.

Some of the reports and analysis pertinent to the private sector include inter alia topics on the biodiversity impact from production of textiles, road and transport, production and consumption, agriculture and food systems. These reports and analysis serve as providing overall important information on impact and dependencies as well as priorities for research and innovation and targeted campaigns.

More information here.

The EC's Joint Research Centre (JRC)

The JRC is the science and knowledge service of the EC to carry out research and provide independent scientific advice and support to EU policy. JRC works on 25 scientific portfolios, which can be seen here: https://joint-research-centre.ec.europa.eu/scientific-portfolios_en The ones engaging in the topic of this report include 'Zero Pollution and Biodiversity portfolio' and the 'Anticipation, Risks, and Resilience' portfolio.

The JRC is an active player in the global arena, involved in strategic international cooperation gathering partners, and working on a diverse range of scientific fields. Agreements, which are mostly bilateral with public and private research organisations, universities and national and international bodies, allow the sharing of infrastructure, laboratory equipment, and data materials and the transferring of knowledge.

The JRC supports the Danube Strategy, which seeks to improve the economic development across the region and boost growth and jobs through better policymaking and funding which also involves non-EU Member States (e.g. Moldova, countries in the Western Balkans, and part of Ukraine). International research projects focus on key priority countries (USA, Brazil, China, India, Japan), international organisations (e.g. UN, OECD, WHO, World Bank) and regional entities (e.g. African Union Commission) where sharing of knowledge bring benefits to the JRC and the global scientific community.

A specific example is the dissemination of the "Smart Specialisation" concept, which can act as a driver of place-based economic transformation agendas. JRC processes open up avenues for collaboration, and new business and investment opportunities. The concept allows to tailor research and innovation policies to national, regional and local contexts as a contribution to achieving the SDGs.

More information here.

The European Biodiversity Partnership

The European Biodiversity Partnership (Biodiversa+) includes more than 80 partners and more than 40 countries and supports research on biodiversity with an impact on society and policy. It is supported by the EC and its many partners and includes a series of annual international biodiversity research and innovation calls. The partnership implements a large number of work packages where WP3 is a contribution to high-end knowledge for deploying Nature-based Solutions and valuation of biodiversity in the private sector. The present report is one of the deliverables under WP3 of the partnership. Other deliverables include workshops, webinars and a White Paper as well as presenting business–biodiversity case stories.

More information here.

Case study – Air safety and bird migration, Netherlands

The GloBAM project integrates advanced weather radar data to monitor bird and bat migrations globally, providing valuable insights into migration patterns and their environmental correlations. This novel approach enhances conservation efforts and impacts sectors such as energy infrastructure and aviation. By incorporating weather radar data into biodiversity monitoring, GloBAM represents a significant shift in conservation strategies. Predicting bird migration timing, location, and scale has substantial implications for energy infrastructure operations, such as wind power curtailment policies and site selection. It also plays a crucial role in aviation planning by identifying high-risk collision areas and timeframes, thus improving safety.

Aviation sector assistance: The project has a longstanding collaboration with the Dutch Air Force, focusing on developing predictive models to mitigate bird strike risks, particularly for single-engine airforce flights operating at lower altitudes. Bird strikes are a significant risk for all aircraft, but those flying closer to the ground face increased danger due to the higher presence of birds. The predictive models developed by GloBAM analyze nine years of migration data from weather radars across the Netherlands, correlating environmental conditions with migratory behavior to assist the Air Force in planning safer flight operations. Before military aviation relied on older radar systems and models based on shorter, three-year data series. The introduction of weather radar data provided a longer time series, allowing for more accurate predictions of migration patterns, which can vary significantly year-to-year. This longer dataset enhances the military's ability to plan flight operations and reduces the risk of bird strikes.

Project challenges: A major challenge has been achieving prediction accuracy and determining the precise information needed by aviation sector partners. Biological phenomena come with inherent uncertainties, and while predictions are valuable, they are not perfect. It is crucial to discern actionable and relevant information amidst these imperfections. Collaboration with stakeholders has facilitated mutual understanding of goals and constraints, aiding in addressing these challenges.

Wind energy sector collaboration: In the wind energy sector, significant effort has been invested in identifying environmental variables predictive of bird density to forecast bird movements and inform stakeholders. Developing reliable predictive models requires access to diverse and timely data sources. However, integrating real-time information into these models poses difficulties, as not all variables are consistently available. Different sectors have varying requirements for forecast lead times. While aviation might manage with shorter lead times, the energy sector requires longer-term forecasts to ensure grid stability when wind turbines are curtailed to protect migratory birds. GloBAM's predictive capabilities must accommodate these differing needs to effectively support both sectors.

Data access and collaboration: Obtaining high-quality weather radar data is a persistent challenge. Collaboration with meteorologists is essential, as their infrastructure and radars are critical for the project. Budgetary constraints often prioritize meteorological over ecological needs, highlighting the importance of interdisciplinary cooperation and funding support. At the European level, enhancing collaboration and data sharing across borders could provide valuable insights into bird migration patterns and improve prediction accuracy.

Implementation in the Netherlands: GloBAM's predictive models have led to achievements, such as the shutdown of offshore wind turbines to allow safe passage for migratory birds, a first-of-its-kind measure implemented in 2023. The ongoing research and collaboration with the wind energy sector and government aim to refine these measures, ensuring effective and efficient conservation strategies alongside energy production.

2.1.2. Business or financial associations and partners

World Business Council for Sustainable Development (WBCSD)

WBCSD is a global, CEO-led community of over 230 global businesses to collectively accelerate the system transformations needed for a net zero, nature-positive, and more equitable future. The approach is to engage with executives and leaders from businesses to share practical insights on the obstacles and opportunities in tackling the integrated climate, nature and inequality sustainability challenge. Activities include co-developing "how-to" CEO guides, providing science-based target guidance including standards and protocols; and developing tools and platforms to help leading businesses drive integrated actions to tackle climate, nature and inequality challenges across sectors and geographical regions. WBCSD members are companies from business sectors and major economies. The global network of WBSCD includes 70 national businesses. WBCSD has since 1995 worked with member companies along and across value chains to pursue delivering business solutions to sustainability issues with a focus on delivering on the SDGs. WBCSD are active at the global level in the conventions on biodiversity, climate desertification and for example aims at driving implementation and investment of credible National and Business Action Plans under the CBD and increasingly working with governments to drive implementation and investment. WBCSD is also active on many other fronts including for instance hosting of webinars and driving analysis and reporting.

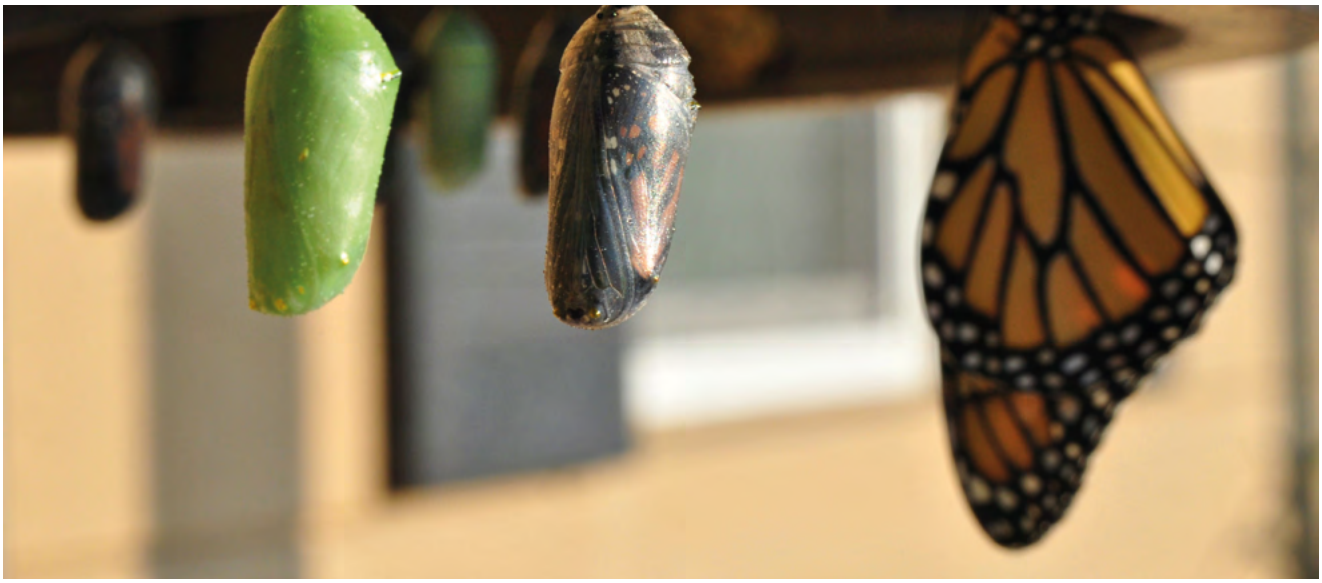
More information here.

World Economic Forum (WEF)

The WEF aims to engage the foremost political, business, cultural and other leaders of society to shape global, regional and industrial agendas. WEF was established in 1971 as a not-for-profit foundation and is headquartered in Geneva, Switzerland. The Forum strives to demonstrate entrepreneurship in the global public interest while upholding standards of governance. Of importance in the context of this report is its hosting of the annual global meetings in the city of Davos, Switzerland and the production of annual Global Risk Reports. The 2023 Risk Report lists biodiversity loss and ecosystem collapse as one of the fastest deteriorating global risks over the next decade. Hence, biodiversity is now at the core of WEF and high on the agenda of the Davos meetings and acknowledged by WEF as fundamental for securing continued human development. The forum blends and balances many kinds of organisations, from both the public and private sectors, international organisations and academic institutions.

WEF has supported the development of many sector guidance documents on business and biodiversity in collaboration with Business for Nature and reporting on Transforming Cities' Relationship with Nature. One of its ten so-called centres is on Nature and Climate and produces a 2025 briefing on the state of nature and climate by assessing the planetary boundaries (Richardson et al. 2023, annex 1).

More information here.



The European Investment Bank (EIB)

The EIB is a bank of the European Union and one of the world's main financiers of climate action and environmental sustainability. The EIB aims at being a partner in the transition towards a new growth strategy and plays a committed role in the implementation of the Sustainable Development Goals. Moreover, EIB is also committed to align their operations to support the goals of the Global Biodiversity Framework. Some examples include:

InvestEU brings together a number of EU financial instruments including the European Fund for Strategic Investments and aims at contributing to the climate and environmental goals of the EU. At least 30% of the investment under the programme has been dedicated to the objectives of the European Green Deal.

Green Assist is an advisory initiative under InvestEU. It aims at helping public and private investors to trigger investments in green projects with a high impact and comes with a budget of up to EUR 30 million. It includes a Green Advisory Service for Sustainable Investments Support and it does also invite for expert involvement: Green Assist: the Green Advisory Service for Sustainable Investments Support - European Commission

Moreover, the EIB developed sustainable development standards and projects will e.g. have to meet Environmental and Social Standards. These standards also relate to biodiversity and ecosystems and emphasise the need to identify the risks and impacts on biodiversity and ecosystems associated with project implementation. As well as to follow an evidence-based process of impact assessment and to incorporate effective mitigation and management measures in their management systems, plans and procedures.

EIB launched a report on sustainable forestry in conjunction with the CBD COP15 meeting and established a land degradation neutrality fund investing in ecosystem restoration projects especially in Latin America. The EIB's Blue Sustainable Ocean Strategy aims to improve the health of oceans, build stronger coastal environments and boost sustainable activities.

More information here.

European Central Bank (ECB)

The European Central Bank was established as an EU institution as part of the introduction of the new common currency the euro. ECB finances also research and innovation reports including rewarding so-called occasional papers of which several are relevant for biodiversity.

A report by Ceglar et al. (2023) analyzed the impact of the euro area economy and banks on nature, finding that euro area firms are responsible for environmental damage equivalent to the loss of 582 million hectares of pristine habitats worldwide. This is comparable to 60% of Europe's total land area, including an impact equivalent to the loss of 398 million hectares of pristine nature within Europe itself.

Another analysis of nature-related risks for investors by assessing the relationship between nature, our economy and euro area banks (Boldrini et al. 2023). In this study the authors looked at the degree of dependency on nature of the more than 4.2 million individual non-financial corporations accounting for over €4.3 trillion in corporate loans in the euro area. They found that in the euro area, approximately 72% of non-financial corporations (corresponding to around 3 million individual non-financial corporations) are highly dependent on at least one ecosystem service. Degradation of the relevant ecosystem would translate into critical economic problems for such non-financial corporations and conclude that euro area banks are vulnerable to future biodiversity losses. Moreover, looking into both biodiversity and climate change recognising they are highly interlinked, euro area banks' losses could be on average almost three times higher than under a Paris-aligned future scenario.

More information European Central Bank

Global Reporting Initiative (GRI)

GRI was founded in 1997 in the US. It is an 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. The secretariat is in Amsterdam and comprises a network of seven regional offices. GRI Standards remain the most widely used sustainability reporting standards at the global level. Three sets of standards are provided in many languages: The GRI Universal Standards, which apply to all organisations; the GRI Sector Standards, applicable to specific sectors; and the GRI Topic Standards, each listing disclosures relevant to a particular topic. The GRI 101 on biodiversity (GRI Biodiversity 2024) sets out reporting requirements on the topic of biodiversity and will from 2026 replace the standards on biodiversity from 2016. The standards are available for organisations that want to report on their impacts.

More information here

2.1.3. Environmental institutions or NGOs

The UN Environment Programme World Conservation Monitoring Centre (UNEP-WCMC)

Based in Cambridge, the UNEP-WCMC is engaged in knowledge support on a wide range of environmental issues and is working on nature and economy and with businesses and financial institutions to address the crisis of biodiversity loss. Their focus is to enable and empower leaders across all business sectors to take action to measure and account for their impacts and dependencies on biodiversity and thereby build capacity of financial institutions and governments with relevant knowledge and tools. Taking an economic approach, WCMC works to ensure biodiversity is represented in economic reform agendas including blue economy, green economy and circular economy approaches, as well as to move beyond GDP and develop new wealth economies.

WCMC is directly involved in the development of several methods and tools to facilitate business better monitoring their potential and impact including e.g. IBAT, Align and ENCORE. Moreover, the WCMC is a TNFD Knowledge Partner and has been heavily involved in the work of the SBTN.

UNEP-WCMC was among the founders of the trade, development and environmental hub and supports the reformation of policies as well as legal, planning and accountability frameworks to align financial flows and to create incentives aiming at nature-positive and carbon-neutral outcomes.

More information here.

International Union for the Conservation of Nature (IUCN)

The IUCN has been a leading authority in global biodiversity conservation and sustainable use for more than 70 years and is extensively supported by governments and private funds. It has spearheaded a large number of initiatives including the global Red List on Threatened Species and many other policy-directed initiatives. IUCN has been one of the front-runners on nature and economy including business and biodiversity for years and with the production of a number of guidance documents.

Such recent guidance has e.g. been provided within the sectors of tourism, agriculture, fisheries and aquaculture, extractive energy and infrastructure. The commitment of IUCN to the business and biodiversity agenda is set in their introductory paragraph: “Human wellbeing depends on nature and economic development can no longer come at nature’s expense. IUCN works to help countries mainstream nature into economic decisions, including making the private sector part of the solution for people and nature”. Steering the current work of IUCN is its Nature 2030 program.

Moreover, IUCN is involved in the development of guidance on methods and tools to facilitate businesses monitoring their potential and impact including e.g. IBAT and bringing in the Red List to this work. Moreover, IUCN is a TNFD Knowledge Partner and is involved in the work of the SBTN.

More information here.

World Wide Fund for Nature (WWF)

The whole foundation of the establishment of WWF was based on linking biodiversity conservation to business and financing organisations. WWF is today one of the largest conservation NGOs and is active in 100+ countries. Its relationship with the private sector has developed over time and WWF has now teamed up with many of the largest global companies in addressing the biodiversity crisis including e.g.

Coca-Cola and Warner Bros. WWF develops guidance documents on nature and economy including business and biodiversity often in partnership with private companies. As an example, best practices in Setting Science-based Targets in the Seafood sector were launched in November 2022 with the Ocean Stewardship Coalition. WWF is active at the policy level as well and is steadily launching new initiatives including e.g. eight reasons for businesses to engage and care about biodiversity and the WWF Risk Filters on Water and Biodiversity. The biodiversity guide for business was launched in 2022.

At the European level, WWF has started coordinating annual European Business and Biodiversity Forums bringing together businesses and policymakers. The first was held in Paris in 2023 and the next in Brussels in 2024.

More information here.

2.2. Key nature and economy initiatives including business and biodiversity approaches

As biodiversity rises on the agenda of private and financial sectors, many new initiatives and alliances have emerged within recent years to address questions, targets and aspirations towards sustainability and conservation of biodiversity. The initiatives vary but in general, the commitment from the more ambitious segment of private companies and financial institutions has been high, and there are quite a number of examples where leading alliances now have moved ahead of governments in the level of ambitions, clarity and transparency and in the use of the precautionary principle when planning development projects and undertaking impact assessments on biodiversity impact. Some of the key initiatives are listed in Tab. 1 below and treated further in the text.

Selected initiative	Link to resource
Knowledge Platforms and Support	
The European Business and Biodiversity Platform	Business and Biodiversity (europa.eu)
Initiatives and approaches for business	
Business for Nature	Business For Nature
Science Based Targets Network	Science Based Targets Network
Align	Align
The Biodiversity Protocol	The Biodiversity Protocol
Capitals Coalition	Capitals Coalition
The World Benchmark Alliance	The world Benchmark Alliance
Network Nature	NetworkNature | NetworkNature
Initiatives mainly for the financial sector	
Finance for Biodiversity Foundation	Finance for Biodiversity
The Task Force on Nature-related Financial Disclosures	The Task Force on Nature-related Financial Disclosures
Green Finance Platform	Green Finance Platform
Nature Finance	Nature Finance
Network for Greening the Financial Sector	Network for Greening the Financial Sector
UNEP FI	United Nations Environment – Finance Initiative – Partnership between United Nations Environment and the global financial sector to promote sustainable finance

Table 1: Overview of selected initiatives treated in the text

2.2.1. Knowledge Platforms and support

The European Business and Biodiversity Platform

The European Business and Biodiversity Platform has been key in providing business support and provides a forum for dialogue and policy interface to discuss the links between business and biodiversity at the EU level. The platform intends to be able to support all businesses towards the four keywords of Assess, Commit, Transform and Disclose their relationship with nature. This is undertaken through training and awareness raising, guidance and by presenting good practices.

The platform was initiated and is supported by the EC and supports businesses and other stakeholders to integrate natural capital and biodiversity considerations into business practices. The mission of the platform is: "Every business impacts on, and depends on, nature to some degree, and as a result will experience risks and/or opportunities. These impacts and dependencies create costs and benefits not only for the business but also for society. The members of the platform agree that there is much to gain both for nature and for businesses from a better understanding of the link between business activities and nature".

It comes with the two main specific objectives of:

- Supporting the development of methods, criteria and standards that enable to account for the value of biodiversity and the services derived from nature in business decisions including for example natural capital accounting;
- Foster the integration of biodiversity and natural capital into the decision-making process of a critical mass of businesses and financial institutions who take action to do "no harm" to biodiversity and improve their resilience.

The Platform aims to strengthen the business biodiversity link in especially six priority sectors: Agriculture, Food supply, Forestry, Non-energy extractive industry, Finance and Tourism. Concrete activities include best practices publication; workshops on the EU 2020 Biodiversity Strategy and its implementation; webinars e.g. on the GBF implications to business and biodiversity, benchmarking workshops; roundtable meetings and an award scheme. An overview of initiatives for financial institutions and biodiversity was launched by the European Business and Biodiversity Platform (2023) in collaboration with Finance for Biodiversity, UNEP and PRI.

In 2022, a practical guide for SMEs in the Agri-Food Sector was launched to inspire SMEs on their nature journey, to take action and start managing impacts on biodiversity. In May 2024 a thematic report on Biodiversity Disclosure Initiatives to highlight selected biodiversity disclosure frameworks was launched, with an analysis of alignments and differences. The platform organises the European Business & Nature Summits which have been held since 2019 as an example of their dedication to mobilise the business community.

More information Business and Biodiversity - European Commission

2.2.2. Initiatives and Approaches for Business

Business for Nature

Business for Nature is a global coalition of more than 100 partners and what they label as "forward-thinking companies" with an ambition to achieve a "nature-positive economy" in 2030. Business for Nature is pursuing credible business actions and high policy ambitions to support achieving this aim. Business for Nature aims at demonstrating and amplifying a credible business voice for nature and also pushing governments to adopt policies to reverse nature loss. The coalition is supported by the European Commission, Gordon and Betty Moore Foundation (via the World Economic Forum's Nature Action Agenda), MAVA and hosted by Rockefeller Philanthropy Advisors.

Business for Nature acknowledges that nature underpins society, well-being and economy. The coalition encompasses the growing community of businesses and financial institutions who recognise they cannot sustainably grow their business, or achieve their climate goals, without protecting and restoring nature. One major campaign launched by Business for Nature is 'It's Now for Nature' campaign, which aims to bring together all businesses to act and contribute towards a nature-positive world by 2030.

One approach is to encourage companies in the coalition to draft nature strategies with a roadmap to reduce the negative impact on nature, increase resilience and restore and regenerate ecosystems. The rationale is that a net-zero, nature-positive and equitable future is possible and that businesses should contribute by developing credible nature strategies. A Nature Strategy Handbook has been launched to guide companies, and the first company strategies have appeared and are publicly available.

Another initiative is the development of sector-specific guidance produced for all together 12 business sectors with reports including summary reports including the following: Agri-Food, Built Environment, Chemicals, Cement and Concrete, Energy, Fashion and Apparel, Financial Services, Forest Products, Household and Personal Care Products, Travel and Tourism, Waste Management and Water Utilities and Services. The guides provide an overview of key sector impacts, dependencies, and priority actions to support companies in identifying actions with positive impact on nature. They have been produced in collaboration with the World Business Council for Sustainable Development and the World Economic Forum and where the reports may lack specific detailed guidance they contain case studies on transformative actions.

Business for Nature is also actively advocating for ambitious and transparent targets with the Convention on Biological Diversity. For example, the campaign from Business for Nature at the COP15 conference in Montreal was to agree on ambitious and mandatory targets (target 15) through a "make it mandatory" campaign and under the motto "business as usual is over".

At COP16 the coalition highlighted three key priorities: 1) The operationalisation of the monitoring framework including indicators for each of the 23 targets; 2) mobilisation of the financial resources needed for successful implementation, including a focus on target 18 on the reform of environmentally harmful subsidies and target 19 that commits governments to mobilise 200 billion USD per year, by 2030. And 3) to finalise the multilateral mechanism on fair and equitable Access and Benefit Sharing (ABS) from the use of digital sequence information on genetic resources.

Included in their guiding principles are actions to Assess, Commit, Transform and Disclose nature-related activities and actions for their companies to commit to (see Figure 7). Business for Nature also links up to several other frameworks such as the SBTN, Capital Coalition etc.

More information here.

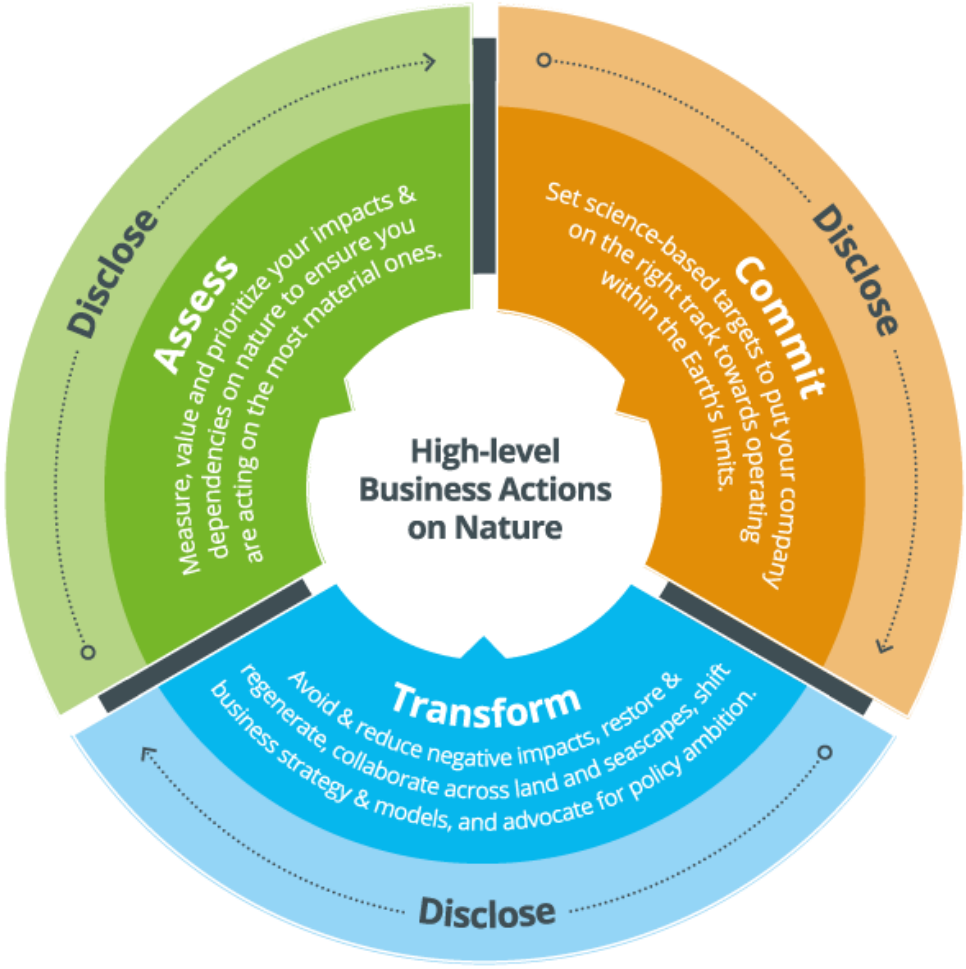


Figure 7: Steps to integrate biodiversity into businesses proposed by Business for Nature. Build on existing action frameworks and guidance, including the Natural Capital Protocol, the Science Based Targets for Nature Initial Guidance for Business, World Business Council for Sustainable Development (WBCSD) building blocks "what nature positive means to business', BfN Steps to becoming nature position, Taskforce on Nature-Related Financial Disclosures (TNFD).

Science Based Targets Network (SBTN)

A collaboration of global environmental agencies and organisations including e.g. WWF, WCMC, Capitals Coalition, World Resources Institute and Conservation International as well as mission-driven businesses – the Global Commons Alliance - to transform economic systems and protect the global commons including biodiversity in all ecosystems. The SBTN aligns itself with the goals and targets of the global Rio conventions i.e. the CBD, UNFCCC and UNCCD and with an overall objective to stay within Earth's limits and at the same time meet societal needs. One key element is the work to develop and adopt science-based targets within capital markets. The guidance provided by the network is based on these "measurable, actionable, and time-bound" objectives. The SBTN initial guidance defines five distinct steps in the process of setting nature science-based targets; these are Assess, Measure, Prioritise, Act, and Track (see fig. 8). There is guidance for companies for freshwater and land for the first three and the remaining two on Act and Track are expected to be developed for release in 2025.

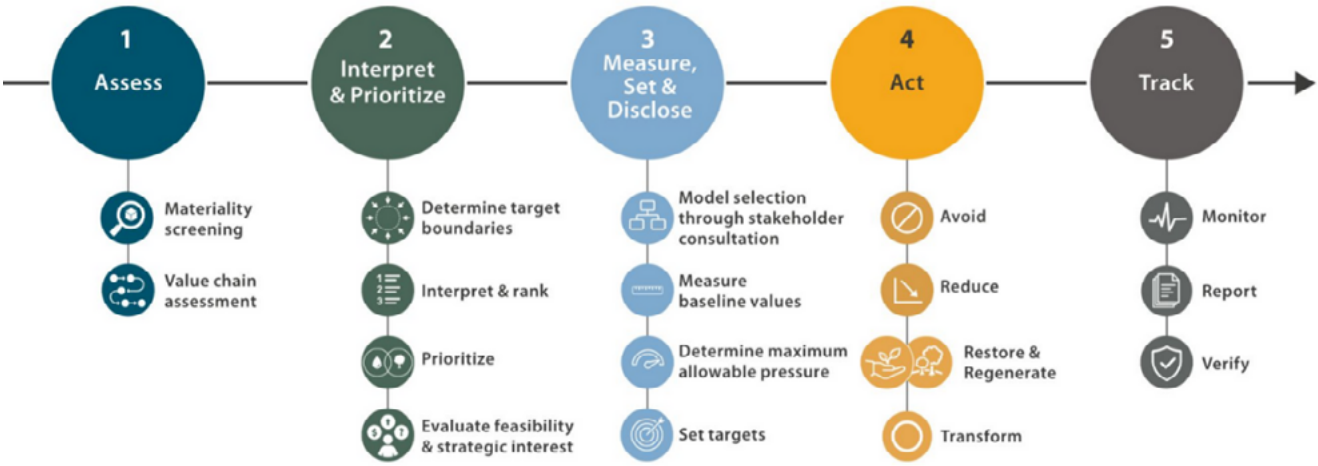


Figure 8: The five steps proposed by Science-Based Targets Network and with guidance for the three first steps available.

The network contains a collection of leading scientists and sustainability experts, and was originally built for climate action, but has been expanded to include targets for biodiversity. Setting targets through the Science Based Targets Network means a company should be confident of doing enough to help restore balance to the global commons and harness the opportunities this presents. The methods and targets are being built on existing tools, approaches, and platforms. To be a member of the Corporate Engagement Program of the network costs a one-time fee and a business commitment to initiate the setting up of science-based targets.

More information here.

Align

The framework was released at CBD COP15 in Montreal in December 2022 during its biodiversity and business summit. It is led by the UNEP-WCMC, the Capitals Coalition, Arcadis, ICF and WCMC Europe and aims to create a standard on corporate biodiversity measurement and valuation and is funded by the European Commission. To measure business impacts on biodiversity the framework recommends 1) Identifying and measuring impact drivers and pathways, 2) implementing methodologies to measure business impacts based on four characteristics: A) spatial precision, B) accuracy of measurement, C) responsiveness to mitigation, and D) feasibility to apply at scale, 3) identification of ecosystem service dependencies, and 4) valuation of impacts and dependencies. The framework is intended to be applicable at the global scale and for all sectors.

Align has supported many initiatives to maximise synergies with the broader sustainability measurement and disclosure efforts. One of its strengths is the benefits provided by intensive business engagement. Align has also worked to develop sector-specific guidance with recommendations for businesses. The future of this project, incorporating an accounting format to track performance against targets over time, is expected to be developed in a subsequent project. This associated project will develop standardised natural capital accounting and valuation principles for business (Capitals Coalition 2023).

Technical criteria on how to measure biodiversity are provided with a gradient ranging from good to best practices. Thus, Align does operate with technical criteria on "good" and "best" practices (UNEP-WCMC 2022). By providing a gradient of technical criteria, the Align framework gives businesses an achievable way to start their assessments and improve over time. However, it is important to note that legally imposed minimum standards may exceed lower tiers of the Align technical criteria. While this framework includes guidance on selecting indicators, determining impact pathways, completing measurements, identifying dependencies, and completing the valuation process, it is still a high-level framework. Hence, businesses will still need to select the appropriate tools and methodologies. The Align framework uses "materiality" as a concept to prioritise efforts and attention of companies to focus on those activities and associated biodiversity impacts and dependencies that are most relevant or "material".

More information here.

The Biodiversity Protocol

The Biodiversity Protocol was developed to improve decision-making by providing companies with an accounting and reporting framework to support and consolidate their biodiversity impact data across value chains and jurisdictions. It is the National Biodiversity and Business Network of South Africa and the Endangered Wildlife Trust that initiated the protocol in 2018. The framework supports companies to develop their biodiversity impact inventory and associated Statements of Biodiversity Position and Performance. It comes with guidance on scoping i.e. defining the appropriate organisational and value chain boundary; developing biodiversity impact inventory; determining biodiversity impacts, accounting for net changes in biodiversity; applying a Biodiversity Accounting Framework to build Statements of Biodiversity Position and Performance and account for biodiversity gains and losses over time and on disclosure.

The guidance promotes three main steps: 1) Biodiversity impact inventory development, 2) biodiversity measurement and accounting, and 3) validation, verification, reporting and disclosure (Endangered Wildlife Trust 2020). The largest difference between the Biodiversity Protocol and the Align Project is the lack of inclusion of dependence measurement and valuation implications. The protocol supported by the European Business and Biodiversity Platform was meant to be applied at a global scale and to all sectors (Endangered Wildlife Trust 2020). The Biodiversity protocol was one of the initial biodiversity impact measurement and accounting frameworks. This framework supports the recording and consolidation of net biodiversity impact data over time, which is useful for businesses as it allows biodiversity targets and performance assessed over a specified period. Moreover, the protocol details the development of an impact inventory from a business perspective, including organisational and value chain issues. As with the Align framework, the Biodiversity protocol does not provide one specific methodology to follow but rather recommends certain approaches for impact measurement and valuation. It is up to businesses to identify and select the specific and appropriate indicators, methodologies, and their values.

More information here.

Capitals Coalition – Natural Capital Protocol and the Food System Transformation

The Capitals Coalition is a global collaboration of more than 400 initiatives and organisations working together to redefine value and transform decision-making. The ambition of the Coalition is "that by 2030 the majority of businesses, financial institutions and governments will include the value of natural capital, social capital and human capital in their decision-making and that this will deliver a fairer, just and more sustainable world".

The Capital Coalition primarily works with four capitals – natural, social & human and produced capital which includes finance. Natural capital is considered fundamental in supporting the other forms of capital, providing the resources to build our societies, economies, and institutions, and ultimately regulating the environmental conditions that enable human life.

One of the products from the Capitals Coalition with a direct bearing on biodiversity is the Natural Capital Protocol. It is a decision-making framework that enables organisations to identify, measure and value their direct and indirect impacts and dependencies on nature. It is designed to generate credible and actionable information to support business managers in making informed decisions: Natural Capital Protocol – Capitals Coalition. The NCP also provided one of the basis for the Taskforce for Nature-Related Disclosures (TNFD) framework.

The Capitals Coalition offers two free online business training courses on the Coursera platform. The Valuing Nature and People to Inform Business decision-making course provides a comprehensive introduction to the capital's approach and to undertaking a capital assessment and focuses on Natural Capital in the last two modules. The material comprises a blend of videos, discussions, interviews and written material in four modules: Module 1: The Role of Businesses in Addressing the Great Challenges of Nature Loss, Climate Change and Inequality. Module 2: Better managing risks and opportunities by adopting a capital approach. Module 3: Getting started with a natural capital assessment: Defining the objective and determining the appropriate scope. Module 4: Measuring and valuing impacts and dependencies to integrate natural capital in decision-making. The course aims to introduce business employees to the capital approach and help them get started with integrating natural, social and human capital into business decision-making. The course was supported by We Value Nature, a Horizon 2020 funded project that counted with ICAEW (Institute of Chartered Accountants in England and Wales), WBCSD, IUCN & Oppla, and the support of Nature^Squared. Valuing-Nature-Curriculum-Final.pdf (capitalscoalition.org).

Another focus in the Coalition is on the agri-food sector, based on the fact that the agricultural sector and related land use are the largest drivers of biodiversity loss (IPBES 2019). The TEEBAgriFood for Business project developed guidance to facilitate the adoption of a capital approach within the sector. This will help in building resilience, integrate best practices, protect biodiversity and contribute to a more sustainable food system. Food System Transformation - Capitals Coalition.

The project was supported by the EU, the Capitals Coalition and UNEP with the overall goal of building resilience, mainstreaming best practices, protecting biodiversity and contributing to a more sustainable agriculture and food sector in seven pilot partner countries involving: Brazil, China, India, Indonesia, Malaysia, Mexico and Thailand.

Current nature-related EU projects Capitals Coalition either leads or contributes to include SUSTAIN, SELINA and A-TRACK projects which bring together multi-disciplinary teams to provide businesses, financial institutions, and regulatory bodies with the further develop and expand existing knowledge and resources to better understand, assess, and monitor the dependencies and impacts on nature from activities across different sectors of the economy. Other relevant EU projects include Transparent and Align.

More information here.

The World Benchmarking Alliance (WBA)

The World Benchmarking Alliance was launched in 2018 and in 2021 the scope of their circular transition work was expanded to cover nature and biodiversity. The alliance works for changing the way business impact is measured to stimulate action for improved sustainability and understanding, transparency, and accountability of business impact on the environment.

The work of WBA is a response to the SDGs and transformations that need to take place to put society and the worldwide economy on a more sustainable path to achieve the SDGs. Their work includes a series of benchmarks, assessing 2.000 of the world's most influential companies, ranking and measuring them on their contributions to the SDGs. Thus, the intention of the "nature transformation" of the WBA is to examine the impacts of business contribution to stable and resilient ecosystems with a focus on the planetary boundaries (see annex 1) and to undertake benchmark assessments to measure and track corporate performance with a focus on how companies reduce their impact and contribute to restore ecosystems.

The WBA covers benchmarking of seven fields including Social, Food and Agriculture, Climate and Energy, Digital Inclusion, Financial System and Urban as well as Nature. The guidance for benchmarking is publicly available and for Nature, 25 nature indicators are included partly inspired by IPBES (2019) in addition to 18 core social indicators. The results of benchmarking are communicated in easily understandable and pedagogy graphics available on the WBA website.

The 2023 Nature Benchmark results of WBA showed that "although some companies are taking significant steps to transition to sustainable production, the overwhelming majority do not yet really understand how they affect and rely on nature. There are worrying gaps in key areas such as water use, ecosystem conversion and respecting local communities' rights. This has serious consequences for both the planet and people, particularly in developing countries, where many of the world's biodiversity hotspots are located, and where issues such as water scarcity and biodiversity loss are often felt most acutely".

The 2023 benchmark result on Nature finds that – according to their criteria - only 2% of the biggest 350 companies within Food and Agriculture in the world currently disclose their environmental impacts.

More information here.

NetworkNature

NetworkNature is a resource for the Nature-based Solutions (NbS) community, creating opportunities for local, regional and international cooperation to maximise the impact and spread of Nature-based Solutions. The work of the Network Nature Task Force 3 and the NBS projects community in general to support a nature positive economy.

Thus, one of the themes of the network is finance and business. These are seen as key to scaling up the use of Nature-based Solutions for addressing multiple societal, environmental and economic challenges and for ensuring a transition to a nature-positive economy.

More information here.

2.2.3. Initiatives mainly for the financial sector

To address biodiversity in the financial sector is of paramount importance and for good reasons the sector is included in parallel with the business sector in the global frameworks such as the GBF and IPBES. As for the business sector, the development of tools and methodologies has been rapid and testing and implementation will continuously be needed as an assessment of the payoff on the ground. Still, research and innovations in various fields are lacking and the World Economic Forum concluded for example in 2022, that there is little guidance on how biodiversity could be quantified and best integrated into investment decision-making (WEF 2022). An overview of some key financing institutions and initiatives was released in 2023 by the European Biodiversity Platform (European Business and Biodiversity Platform 2023).

The EU platform on Sustainable Finance

The Platform on Sustainable Finance plays a key role in enabling cooperation bringing together expertise on sustainability from the corporate and public sector, from industry as well as academia, civil society and the financial industry. The Platform is an advisory body that has been established under the Taxonomy Regulation.

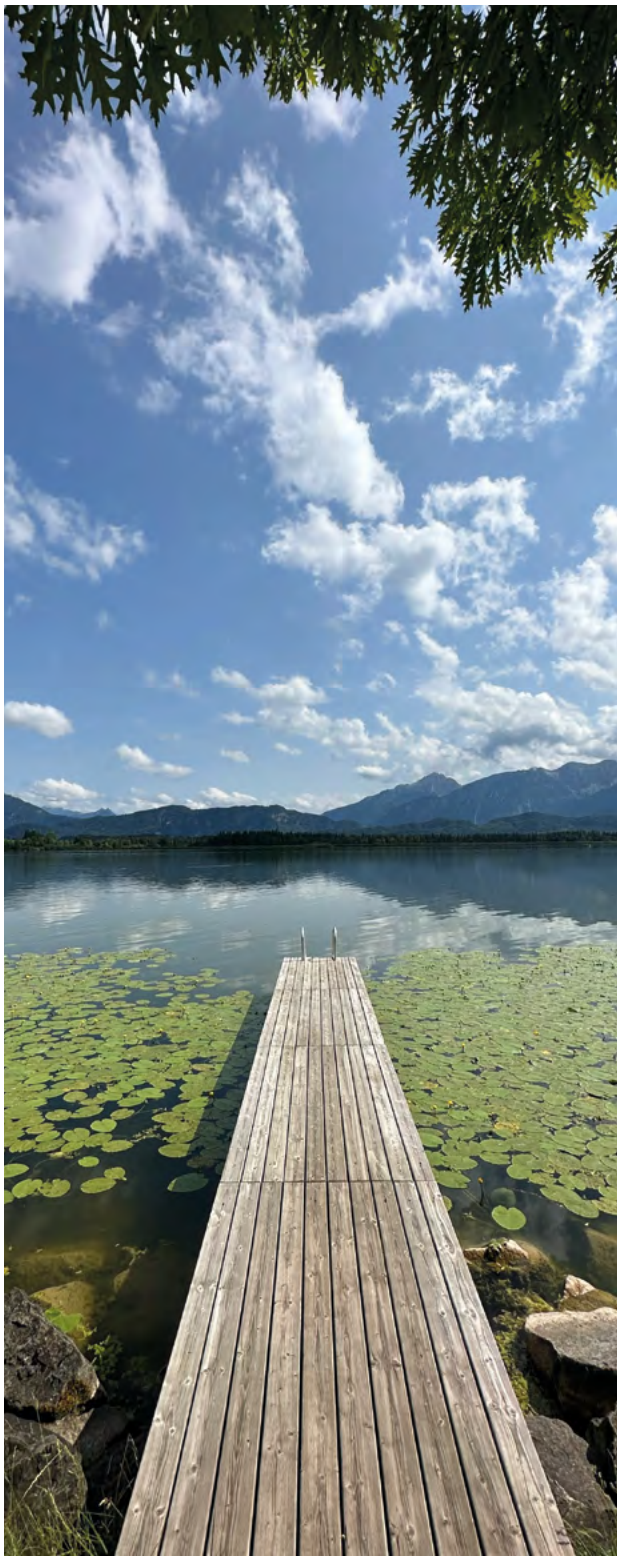
The Platform will operate with the development of technical screening criteria under the EU Taxonomy. Its main purpose will be to advise the European Commission on the implementation and usability of the EU taxonomy and the sustainable finance framework more broadly. The Platform will also work on the development and possible revisions of Taxonomy criteria and on monitoring of capital flows.

The Platform was first established in October 2020, for a two-year mandate that ended in October 2022. A call for applications for the selection of members for the new mandate of the Platform was launched in October 2022 and the new composition of the Platform was announced in 2023. In December 2024, the Platform's mandate was extended by three months until the end of March 2025.

Members of the platform will work on three main tasks:

- advising on the usability of the EU taxonomy and wider sustainable finance framework
- advising on the technical screening criteria for the EU taxonomy
- monitoring capital flows into sustainable investments

More information here.



The Task Force on Nature-related Financial Disclosures (TNFD)

The TNFD has developed since it was launched in 2021 to be one of the largest initiatives in the field of finance and biodiversity. It is a global, market-led, science-based and government-supported initiative. Its mission is stated as ”Society, business and finance depend on nature’s assets and the services they provide. The acceleration of nature loss globally is eroding the ability of nature to provide these vital services. Taking action to conserve and restore nature is now a critical global priority. Doing so will reduce risks to business and finance. Mobilising business innovation and private finance to halt and reverse nature loss and contribute to nature-positive outcomes will be a major source of new commercial opportunity and competitive advantage”.

A row of guidance documents has been developed for Institutions and organisations to report and act on. This comes with a focus on evolving the assessment of nature-related risks, to support a shift in global financial flows away from nature-negative and toward nature-positive outcomes. TNFD comprises institutions and groups that make up the TNFD Alliance. The TNFD framework has been championed by various NGOs and identified as one of the dominant standards and tools for corporate biodiversity efforts for the future (see e.g. Global Canopy and Vivid Economics 2020). The work is funded by governments and foundations and financial contributions from private sector organisations and the major financial contributors and its original founding organisations are represented on the TNFD Stewardship Council.

The final recommendations and framework guidance of the TFNFD came in September 2023 (TNFD 2023a). In 2022, the first beta version of the framework was released for an 18-month process of market consultation (TNFD 2022). The framework is created for global corporate and financial institutions and includes a disclosure framework and a risk and opportunity assessment approach (LEAP) for organisations to report and act on (TNFD 2023b). The disclosure framework guides all sectors concerning governance, strategy, risk management, metrics and targets based on an assessment of nature-related dependencies and impacts (TNFD 2022). The LEAP approach was developed to incorporate nature considerations into enterprise and portfolio risk management and comprehensive guidance has been developed (2023b). The proposed approach involves different steps such as a) identifying the interface with nature, b) evaluating dependencies and impacts, c) assessing risks and opportunities, d) preparing to respond to nature-related risks and opportunities, and e) reporting to investors (TNFD 2023b). A cohort of TFND early adopters was launched in 2024.

Sector guidance has been provided for 14 sectors from the oil and gas industry to food and agriculture, fishing to metals and mining etc. Also, guidance on different biomes (wetland, forest sea etc.), target setting, value chains and scenarios have been developed and are publicly available upon registration.

More information here.

The Finance for Biodiversity Foundation

The main aim of the finance alliance is to contribute to reversing natural loss before 2030. The foundation is active in the media and closely follows environmental policy initiatives. A biodiversity pledge has been established comprising 140 financial institutions from 23 countries as signatories. On the EU Nature Restoration Regulation, the alliance was supporting a strong law and legally binding restoration targets.

In a proposal by the Norwegian government to open up an area the size of Germany to deep-sea mining - ratified by the Parliament - Norway would become the first country to extract metals from its sea floor. The Norwegian bank “Storebrand” and others in the alliance were actively going against this proposal. Although the bank and the alliance acknowledged that minerals were needed to combat climate change and for the transition to a green economy, the position was that a sustainable energy transition should not be built at the cost of nature. The argument was that at present, no robust, precautionary approach exists to safeguard the ocean against potential ecological impacts of deep-sea mining. The bank specifically would therefore not invest in companies involved in deep-sea mining until scientific knowledge was available on the full assessment of the impacts and that no alternative solutions existed. This example illustrates the movement of certain companies and financial institutions ahead of their governments. The Norwegian government later redrew their plans.

The Finance for Biodiversity Pledge of the Alliance is a commitment of financial institutions to protect and restore biodiversity through their finance activities and investments. The pledge consists of five steps financial institutions commit to take: 1) Collaborating and sharing knowledge, 2) engaging with companies, 3) assessing impact, 4) setting targets and 5) reporting publicly before 2025 (see also United Nations Environment Programme 2023). The pledge has 177+ signatories (July 2024, Finance for Biodiversity Pledge 2024).

More information here.

Principles for Responsible Investment (PRI)

The UN-supported Principles for Responsible Investment (PRI) is a network of over 5,000 institutional investors who are committed to responsible investment to achieve a sustainable global financial system. Signatories of the PRI (asset owners, asset managers and service providers) incorporate ESG factors into their long-term investment decision-making processes. Nature is one of the key priority ESG issues of focus for PRI activities. PRI builds the capacity of its signatories through a Nature Reference Group and publishes relevant guidance and resources. Spring is PRI's stewardship initiative on nature, convening investors to address nature loss and commodity-driven deforestation.

More information here.

Green Finance Platform

This knowledge partnership is a global community of policy, business, and finance professionals and organisations committed to collaboratively generating, managing and sharing knowledge on the transition to an inclusive green economy. The alliance comprises three knowledge platforms - the Green Policy Platform, Green Industry Platform, and Green Finance Platform – and offer access to research, case studies, guidance, and tools aimed to empower policymakers and advisors, SMEs, banks, insurance, and investment firms to make decisions about how to green their operations. The Green Forum includes discussions on global topics and the ability for users to create dedicated groups focused on specific themes, initiatives, and projects. The Platform hosts the initiative on "Valuing nature and people to inform business decision-making". Several guidance documents and other publications are available with the major focus on climate.

More information here.

Nature Finance (formerly Finance for Nature)

The Finance for Biodiversity Initiative (F4B) was established in 2019 with support from the MAVA Foundation and there were about 130 signatories (January 2023). Its vision is to align global finance with nature-positive and equitable outcomes. Nature Finance works with policy advocacy, market engagement and innovation and to scale up nature-positive activities.

More information here.

The Partnership for Biodiversity Accounting Financials (PBAF)

PBAF has been initiated and is run by financial institutions. Through discussions, the exchange of experiences and practical case studies, the partners cooperate in the development of guidance and a set of globally harmonised principles (requirements and recommendations) underlying biodiversity impact and dependency assessment in the financial sector: the 'PBAF Standard' (PBAF 2023).

More information here.

Network for Greening the Financial System (NGFS)

NGFS is a group of central banks, which on a voluntary basis, share best practices and contribute to the development of environment and climate risk management in the financial sector. The NGFS brings together more than hundred central banks and supervisors. A Conceptual Framework for the nature-related financial risks was launched in September 2023 to guide action by central banks and financial supervisors. The Framework is intended to help central banks and financial supervisors navigate the complexities and challenges associated with assessing and addressing nature-related risks and to contribute to defining nature-related risks and a better understanding. Moreover, NGFS works on identifying and assessing nature-related financial risks, and outlining next steps including the alignment with policies on environmental sustainability. A second report was launched in July 2024 on "Nature-related litigation: emerging trends and lessons learned from climate-related litigation".

More information here.

Biodiversity Finance Initiative (BIOFIN)

BIOFIN was initiated at the CBD COP 11 in India in 2012, by UNDP and the European Commission, in response to the urgent global need to divert more finance from all possible sources towards global and national biodiversity goals. Present in more than 130 countries, BIOFIN is working with governments, civil society, vulnerable communities, and the private sector to catalyse investments in nature. Investments that not only protect biodiversity, but let it flourish. Investments that create jobs and opportunities for communities reeling from the impacts of COVID-19. Investments that secure a sustainable future for people and the planet. By the initiative UNDP countries support the development and implementation of evidence-based Biodiversity Finance Plans. The implementation of selected biodiversity finance solutions enables the countries to reduce needs by greening sectoral budgets, increasing resources and identifying areas where available resources can be used more effectively.

More information here.

3. Selected tools and methodological initiatives

3. Selected tools and methodological initiatives

This section gathers and presents different tools and methods related to business impact and dependencies on biodiversity, usually related to or developed by institutions and initiatives presented in other sections of this report. These tools and methods are non-exclusive, and organised in two broad categories, tools and methods for managing biodiversity in business and tools and methods for managing biodiversity in the finance sector. In addition, to facilitate the navigation of this directory of tools and methods, these have been tagged against a set of keywords:

- **Measuring impacts** from business on biodiversity
- **Assessing dependencies** of business on biodiversity
- **Natural Capital Accounting** for integrating biodiversity into business
- **Framing actions** for business and biodiversity

An understanding of what reporting information is required is key when selecting tools. While the reviewed frameworks provide overall guidance, they do not recommend the use of specific tools or methods. This places a large responsibility on business and financial institutions to identify and select appropriate tools and methods in each case.

The level at which the business conducts the assessment (on a portion versus the entire supply chain, a specific sector, a specific activity or product, etc.) will dictate which tools are used, as some tools are more suited to the supply chain versus a financial portfolio or specific site and so on.

Overall, the tools mapped in this study had similar approaches depending on the intent for either a biodiversity footprint/impact assessment or a natural capital valuation output. The main difference between the two processes is that natural capital also considers dependencies and takes the impact assessment a step further to quantify the risks and opportunities for business. For businesses and financial institutions in selecting a tool or framework, it is essential to define the objectives to make the appropriate choices. Many frameworks and partners described in this report support such a process.

3.1. Tools for managing biodiversity

Biodiversity Measurement Navigation Wheel for Business

Tags: Measuring impacts; Framing actions

The Biodiversity Measurement Navigation Wheel for Business includes a decision-making framework to assist companies in the selection of the appropriate tools and methods involving seven selection criteria: 1) Business context, 2) biodiversity pressures, 3) biodiversity ambition, 4) biodiversity scope, 5) metrics, 6) level of efforts and 7) relevant sector. The last version also includes a biodiversity scoring system and measurement approaches for ecosystem services.

The report provides an overview of 29 measurement approaches including 24 with a focus on biodiversity per see and five on related ecosystem services. The approach works by eliminating the approaches that do not fit with the preferred selection criteria (see Figure 9).

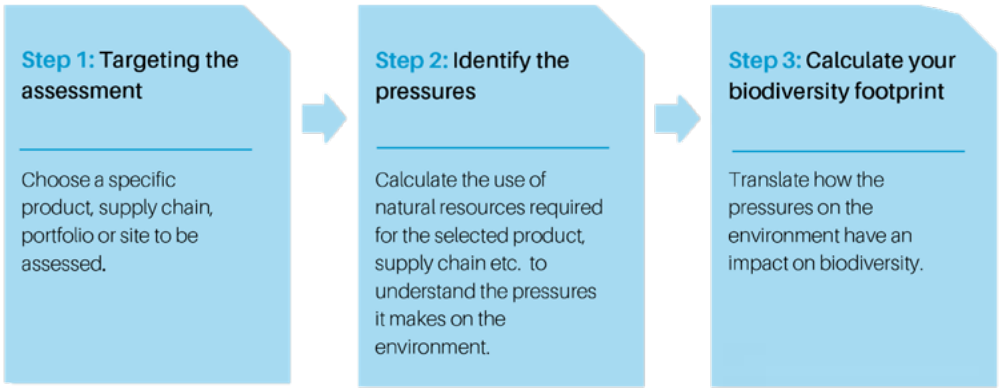


Figure 9: **Steps in the process of biodiversity footprinting (Goedicke et al. 2020)**

Tags: Measuring impacts; Framing actions

The guide "A Compass for Navigating the World of Foot Printing Tools: An Introduction for Companies and Policy Makers" (Goedicke et al. 2020) was published in 2020 by IUCN Netherlands with a focus on biodiversity footprint (see Figure 10) and a listing of 17 tools available for business to help measuring impact and frame actions. Much has already happened since the guide was published but it may help to provide insight from earlier best practices and the early development of tools.

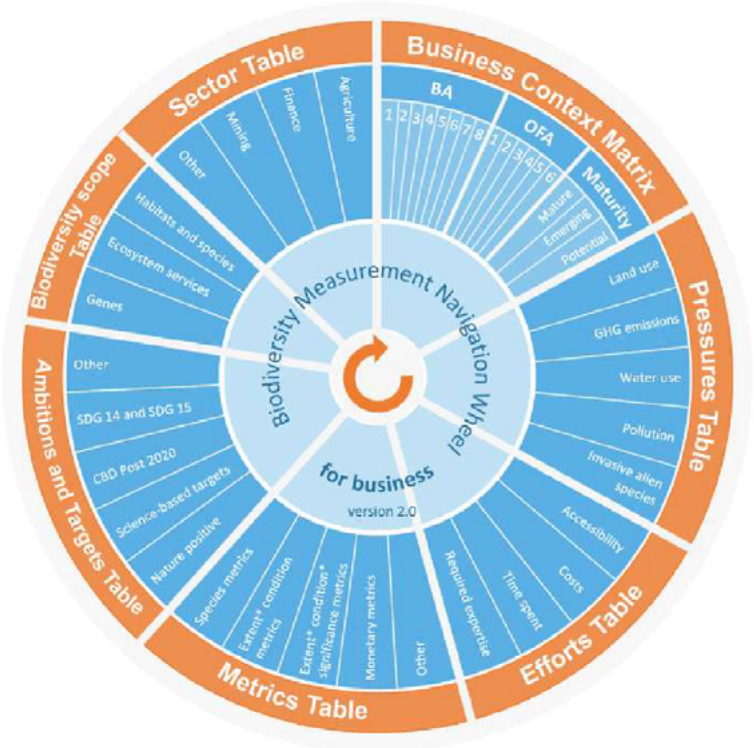


Figure 10: **Compass for Navigating the World of Footprinting Tools**

TRANSPARENT Project

Tags: Measuring impacts; Framing action

TRANSPARENT was an EU LIFE-funded project that developed standardised natural capital accounting and valuation principles for business in line with the ambition of the European Green Deal. TRANSPARENT is led by the Value Balancing Alliance – consisting of international companies and supported by pro bono consultants from four large consultancy firms (Deloitte, EY, KPMG & PwC) in consortium with the Capitals Coalition. The TRANSPARENT methodology aims to build on internationally accepted and harmonised principles and frameworks such as the Natural Capital Protocol, but also other approaches used by international companies, such as those highlighted by the e.g. Value Balancing Alliance. The project was kicked off in 2020 and ran until 2023. The primary output aims to include the world's first standardised methodology providing practical application guidance for corporate accountants in charge of establishing a natural capital accounting system.

More information here.

Mapping and Assessment for Integrated Ecosystem Accounting (KIP-INCA/MAIA)

Tags: National Natural Capital Accounting

MAIA aimed to promote and mainstream natural capital accounting in EU Member States and Norway. MAIA was using the System of Environmental Economic Accounting – Ecosystem Accounting as the methodological basis for natural capital accounting and was implemented in 11 countries, with 20 partners. Natural capital included both minerals and oil and gas (non-renewables) and renewable resources derived from ecosystems. Whereas methods to account for non-renewable resources were more advanced, the development and application of accounting systems for ecosystems and services are more recent. The MAIA project was completed in 2023 but resources are still available. Inspiration to companies could be how to link to the UN System of Economic and Environmental Accounts (SEEA, UN et al. 2021) and to look into examples of the research and development agenda for monetary valuation for ecosystem accounting. This collection of examples includes papers that cover different topics, including the elucidation of the purpose and principles of monetary valuation for ecosystem accounting. It should be noted however, that it is now widely accepted that it is not possible to put a monetary value on many aspects of biodiversity (IPBES 2022) and that for example the negative impact on biodiversity across five nexus elements that are not accounted for in economic and financial decisions amount to 10-25 trillion USD (IPBES 2024b).

More information here.

WeValueNature

Tags: Corporate Natural Capital Accounting

We Value Nature was an EU Horizon 2020-funded three-year campaign (Nov 2018 – Oct 2021) supporting businesses and the natural capital community to make valuing nature the new normal for businesses across Europe. This included supporting the natural capital community and sharing research, resources and best practices, helping businesses improve their risk management, communicating with investors, stakeholder engagement and anticipation of future legislation and aiming at making a difference by targeting business barriers. For example business training material and insightful webinars bringing dialogues on how we value nature and the transition to nature positive in business can be found at their website.

More information here.

IBAT and STAR - Species Threat Abatement and Restoration Metric

Tags: Measuring impacts; Framing action

IBAT aims to create a geographical biodiversity risk assessment tool and incorporate biodiversity into projects and planning. IBAT is a tool to assess potential biodiversity impact based on data from the IUCN Red List of Threatened Species, World Database on Protected Areas and World Database on Key Biodiversity Areas. The IBAT Alliance comprises BirdLife International, UNEP-WCMC, IUCN and CI. They provide IBAT as an online tool and with differentiated fees depending on the level of access to various GIS layers. The tool does provide an interesting assessment, however, does certainly not preclude the need for a specific on-the-ground assessment especially not if the initial assessment indicates a potential for negative impacts. Screening of biodiversity risks by the IBAT tool varies from listing a summary of protected areas, key biodiversity areas, and IUCN Red list species, including freshwater species upstream and downstream of a potential project development site or a specified location (IBAT 2021).

The STAR metric provides access to IBAT users and is specifically developed to quantify mitigating threats and restoring habitats (Mair et al. 2021). STAR provides an opportunity to reach science-based targets and requires information on extinction risks, threats and potential restoration areas of habitats. This metric can be used to identify threat abatement actions or restoration areas to reduce the extinction risk of amphibians, birds and mammals and contribute to global conservation goals. STAR can be used for screening, strategic and project planning, and tracking.

More information here.

Value Balancing Alliance Governance (VBAG)

Tags: Measuring impacts; Framing action

VBAG aims at enabling companies to be change-makers for a sustainable future by for example making more conscious business decisions. The rationale of VBAG is to promote companies moving away from profit maximisation to value optimisation by taking responsibility for the impact of their activities. The VBA has a paradigm change as its core and promotes developing and testing new methodologies to measure the value of corporate behaviour and business models in real life. This is to translate environmental and social impacts into comparable financial data. Today, there is a wide variety of methods to assess companies' impacts on society, people, and nature. The VBA goal is to create methodologies to ensure greater sustainability, transparency, and comparability in business. In 2024 they released the Impact Valuation Sprint Report (VBA et al. 2024).

More information here.

Act4Nature

Tags: Framing action

Act4nature international is the continuation of act4nature 2018 for French businesses with international activities. It is led by EpE (Entreprises pour l'Environnement) under a multi-stakeholder steering committee. Though aimed at global actors, it is a French collective initiative run by French partners.

It aims to be a pragmatic alliance initiated to accelerate concrete business action in favour of nature and born by businesses and stakeholders, including NGOs, academic bodies, and public institutions. Committed businesses have signed at CEO-level 10 common commitments and SMART individual commitments (Specific, Measurable, Attainable, Relevant and Time-bound). A steering group composed of the partner stakeholders and businesses confirms these individual commitments before involvement. Since 2018, several hundred CEOs have signed the SMART biodiversity business commitments.

More information here.

Trase

Tags: Measuring impacts; Assessing dependencies; Framing action

Trase aims to be at the forefront of a data-driven revolution in supply chain sustainability. It draws on the production of trade and customs data, identifying the flows of globally traded commodities at scales that are relevant to decision-making. Supply chain mapping is at the core of Trase balancing scale and data resolution. It builds on an enhanced form of material flow analysis called Spatially Explicit Information on Production to Consumption Systems (SEI-PCS) originally developed by Godar et al. (2015). It aims at systematically linking individual supply chain actors to specific, subnational production regions, and the sustainability risks and investment opportunities associated with those regions. Moreover, it identifies the individual companies that export, ship, and import a given traded commodity. The aim is to cover all exports of a given commodity from a given country of production.

The starting point for applying the SEI-PCS approach to a specific country and commodity is national-level export data, linking countries of production to downstream traders and countries of import. This analysis explores material flows and associated sustainability impacts, risks, and performance measures at the national level, as well as providing an entry point for more detailed work on poorly studied geographies and sectors. Moreover, the approach is applied in mapping subnational trade flows, discriminating production regions to the lowest level of government administrative unit that data and complexity of the supply chain allow. Whilst it may be possible in some contexts to link supply chains to individual farms or production areas, the core focus of Trase is on mapping to subnational regions of production. The support of Trase towards monitoring within the framework of e.g. the Regulation on deforestation-free products is under scrutiny.

More information here.

SPOTT

Tags: Measuring impacts; Assessing dependencies

Developed by ZSL, an international conservation charity, SPOTT scores annually palm oil, tropical forestry, and natural rubber companies against over 100 sector-specific ESG indicators to benchmark their progress over time. By tracking transparency, SPOTT incentivises the implementation of corporate best practices. Investors, buyers and other key influencers can use SPOTT assessments to inform stakeholder engagement, manage ESG risk, and increase transparency across multiple industries. SPOTT assessments follow three frameworks of best practice indicators for palm oil, timber and pulp, and natural rubber companies. Each framework consists of detailed scoring criteria for more than 100 indicators divided across 10 categories. Some extractive resources sectors have created business-specific tools, e.g. FrieslandCampina Biodiversity Monitor within the dairy industry and Rio Tinto's Net Positive Impact strategy within the mining sector, due to their direct high dependency on biodiversity. Tools range widely in terms of data input requirements, from detailed information about the operation phases to the general use of preloaded databases (Goedicke et al. 2020). Every tool has complementary data from datasets, sometimes the same data source is used by different tools but it varies. Moreover, methods for linking pressures with impacts are different depending on the tool used, for example between life cycle assessments versus scoring indexes (Goedicke et al. 2020).

Certain tools have been created for specific sectors for example within the agricultural sector the FrieslandCampina Biodiversity Monitor or the Cool Farm Tool have been created to measure biodiversity impacts (Goedicke et al. 2020; WWF & Bain 2022) or the biodiversity benchmark guides developed for the textile industry (Textile Exchange 2022).

More information here.

3.2. Tools and methods for managing biodiversity in the finance sector

EU study on potential financial risks associated with biodiversity loss and ecosystem degradation

Tags: Assessing dependencies, Framing action

The study aims to enhance the European financial sector's preparedness by providing a methodological framework, drawing on existing climate and nature risk approaches. Financial institutions are encouraged to follow the proposed roadmap and implement the developed risk assessment framework, which consists of a short-term exploratory and planning phase, a medium-term deepening phase building strong capability, and a long-term mainstreaming phase integrating nature in their frameworks, considering the relevance of climate models.

The roadmap aims to be adaptable to the needs and capacities of financial institutions as they integrate biodiversity into their risk assessments but also flexible, allowing integration into existing and new emerging frameworks. In a nutshell, this study encourages financial institutions to embark on a journey towards progressively integrating nature-related risks into their sustainability frameworks and decision-making processes.

At the practical level the study covers the key definitions and steps in determining risk drivers, types, transmission channels, and exposure assessments. The assessment of the EU's sectoral exposure reveals that agriculture, real estate and construction, and healthcare sectors as most susceptible and highlights the importance of nature's location specificity. The developed framework supports financial institutions in assessing and managing biodiversity and nature-related risks, offering practical considerations for risk identification, forward-looking scenarios, and mitigation actions.

The study has been published by the EC, DG ENV and DG FISMA.

Read more Study for a methodological framework and assessment of potential financial risks associated with biodiversity loss and ecosystem degradation

Guide on biodiversity measurement approaches

Tags: Framing action; Measuring impacts

An important piece of guidance is the guide on biodiversity measurement approaches by Finance for Biodiversity et al. (2024) developed specifically for the financial sector. The focus of the guide is to support the implementation of the commitments that the financial institutions have signed by joining the Finance for Biodiversity Pledge to reverse the loss of nature. It provides an assessment of seven measurement approaches and builds partly on the Navigation Wheel (Lammerant 2021) described earlier. There is an overview of each of the seven metrics including assessments of main strengths and limitations.

ENCORE

Tags: Measuring impact; Assessing dependencies

ENCORE was developed by the Natural Capital Finance Alliance in partnership with UNEP-WCMC and financed by the Swiss State Secretariat for Economic Affairs (SECO) and the MAVA Foundation. The aim was to assist financial institutions to understand, assess trade risks and dependency on nature. In addition to the information behind ENCORE, the project looked at how financial institutions can apply this information to screen their portfolios on nature risks and integrate the insights into their existing risk management processes. Initially, these pilot studies have been carried out with banks in Colombia, Peru, and South Africa and the Natural Capital Finance Alliance is working on broadening this approach to other parts of the world and types of financial institutions. A current phase of work is funded by the Swiss Federal Office for the Environment (FOEN) and aims to further develop ENCORE to help financial institutions answer the following questions: "Am I influencing biodiversity through my investment or lending portfolio? Am I harming or building the resilience of biodiversity with my investments? Is my portfolio in alignment with global/regional biodiversity targets and how much so?" ENCORE is underpinned by a database on business dependencies on nature based on literature and expert opinion. The NCFA is a finance sector-led initiative that provides expertise, information, and tools on material aspects of natural capital for financial institutions. It works to support institutions integrating natural capital considerations into risk management processes. The NCFA secretariat is run jointly by the UNEP Finance Initiative and Global Canopy.

More information here.

4. Small and Medium Enterprises (SMEs)

4. Small and Medium Enterprises (SMEs)

Small and medium enterprises are a huge segment of the private sector that are challenged by the transition into biodiversity-friendly activities. In 2022, the EU had 32.3 million enterprises and 99% were micro and small enterprises employing up to 49 people. The 240,000 medium-sized enterprises (50-249 people employed) represented 0.8% of all enterprises accounting for 15% of the employment and 18% of the turnover. Almost half of the turnover was generated by SMEs.

The new EU regulations integrating biodiversity into practices will have an essential impact on SMEs as they form a crucial part of the value chain. As stated earlier in this report, SMEs have limited capacity to deal with issues compared to larger and international companies. This leads to different needs and demands for networking, support, and guidance.

Many of the alliances and initiatives address large multinational companies, and they are, beyond doubt, essential in addressing the biodiversity crisis. However, it is perhaps a bit more unclear to what extent the research and innovation requirements of the SMEs are sufficiently met. One important difference is that SMEs have limited capacity to invest in capacity building or employ external expertise to address institutional awareness and EU reporting obligations and demands from other companies.

Some support tools and guidance are emerging specifically for SMEs. One example is the Practical Guide on Biodiversity for SMEs in the Agri-Food Sector (European Business and Biodiversity Platform 2022). The objective of the guide is to break these barriers and inspire SMEs to act and start managing their impacts on biodiversity.

Voluntary standards for SMEs have been developed by EFRAG (The European Financial Reporting Advisory Group) and include biodiversity elements. The voluntary ESRS for non-listed SMEs were in consultation in the first half of 2024: VSME ED January 2024.pdf (efrag.org)

Another example is the Association of Chartered Certified Accountants (ACCA) based in 178 countries. They have a focus on SMEs and have developed some guidance: How SMEs can create a more sustainable world A playbook for accountants in practice and finance teams in small and medium-sized organisations: ACCA CAANZ Playbook-ART.pdf (accaglobal.com)

This report details the benefits that sustainable actions can have for both business success and the environment. It sets out practical steps for embedding sustainable practices within organisations, case studies from across the world, and links to a variety of tools and resources that can support SMEs and SMPs (Small and Medium-sized Practices) in their sustainability journey.

A regional example is the Nordic Green Bank (Nefco), which, as a green financier, considers the long-term risks related to biodiversity and natural capital. Nefco's Biodiversity Pilot Programme was created in 2022 to test and develop concrete biodiversity solutions co-created with SMEs. The programme is funded by the Nordic Environmental Development Fund (NMF), which currently receives contributions from the Nordic Council of Ministers. Nefco intends to scale up green Nordic solutions and some of the envisaged actions of SMEs working with biodiversity include 1) Action plans and roadmaps to guide practical work, 2) Biodiversity-related indicators and how to take biodiversity into account in future investments, 3) Better resourcing of sustainability-related work, including biodiversity, 4) Identifying, assessing and managing the impacts on nature in the supply chain, 5) Identifying, collecting and using biodiversity-related data, 6) Building nature-positive networks, 7) Developing the biodiversity aspect of companies' processes and 8) Active communication of biodiversity work to stakeholders and customers.

SMEs play a significant role in the green transition by identifying new market opportunities and adapting to emerging reporting requirements. They can act as suppliers of supporting products, information, and expertise, particularly in the implementation of Nature-based Solutions. The European Commission report titled "The Vital Role of NbS in a Nature-Positive Economy" (European Commission, Directorate-General for Research and Innovation 2022) emphasises the critical importance of NbS in fostering a nature-positive economy. The report also highlights the growing role of Nature-Based Enterprises (NBEs) in delivering these solutions. It addresses key challenges faced by stakeholders and provides recommendations on achieving a nature-positive economy with NbS and NBEs at the forefront.

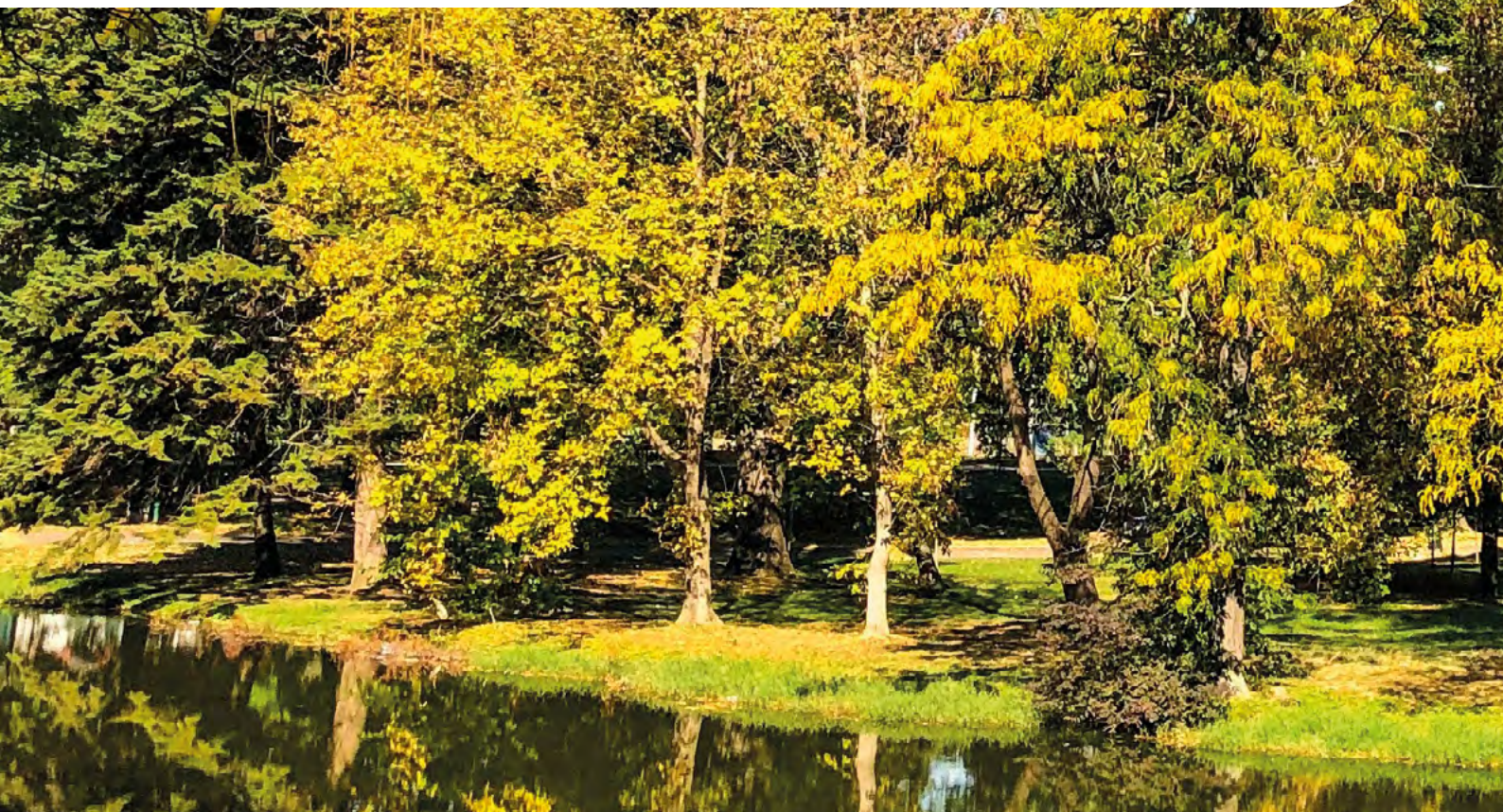
NBEs are private or third-sector organisations that place nature at the core of their business. Driven by environmental and societal goals, the success of such enterprises is of importance to realise the potential of NbS and contribute to addressing the twin climate change and biodiversity crises. Urgent action is needed to support the start-up and scaling of NBEs to increase their environmental and societal impact, in parallel with a significant increase in investment in NbS. This report is aimed specifically at economic policymakers but is of high relevance for

policymakers across multiple domains, public sector institutions and agencies, researchers, civil society and NGO representatives, investors and financial institutions, industry and NBE delivering NbS.

Another example could be the inclusion of startup approaches as seen for e.g. climate on protection of investors from greenwashing. Inspiration could possibly be taken from Green Watch where greenwashing detection research is offered in the form of a tool to detect greenwashing of companies useful for investors. The goal is to protect investors and to encourage companies to fulfil their sustainability by holding them accountable https://greenwatch.ai/

Finally, it is important that SME's get started on their biodiversity journey and that a process, which does not solve all issues from the beginning can be acceptable and for that reason to prioritize initiatives and ask the necessary questions (see Annex 2 for simple practical support).

5. Identification of existing knowledge and knowledge gaps, and capacity-building needs



5. Identification of existing knowledge and knowledge gaps, and capacity-building needs

This report's effort to map the nature and economy related business-biodiversity landscape highlights a wide range of policy initiatives, key actors, and strategies, many of which have emerged in the past five to ten years. The Global Biodiversity Framework for 2030 marked a significant milestone for business sector engagement in addressing biodiversity loss. In the 30-year history of the CBD, the business and financial sectors have never before engaged with the biodiversity agenda at such a scale. More so, an actor like the World Economic Forum now flags the fundamental importance of biodiversity considerations for future economic activities. While monitoring and reporting efforts to achieve targets and adhere to policy frameworks or reporting obligations are crucial, implementing the needed changes in activities and approaches will be paramount. Reversing the trend of biodiversity loss is a significant challenge that will require engagement from all stakeholders, as well as a rapid increase in understanding of the problems, which must be accompanied by capacity building and awareness raising to enable the transformative change needed (IPBES 2024a) according to IPBES.

Research and innovation play a crucial role in addressing these challenges, especially in the identification of effective actions and strategies. A key milestone is the upcoming IPBES methodological assessment on the impact and dependencies of business on biodiversity, set to be tabled in February 2026. This assessment must be expected to strengthen the knowledge base to support business efforts towards achieving the GBF. Economic flows from private sector activities harmful to biodiversity comprise the vast majority (IPBES 2024b), and research and innovation as well as full-scale collaboration among different stakeholders and institutions, will be essential.

This section aims to identify key gaps in knowledge, innovation and capacity. Several insights are drawn from the Biodiversa+ workshop in June 2023 in Paris, focusing on identifying barriers and opportunities for research and innovation in the business and biodiversity landscape (Danner 2023) and inspiration from a Biodiversa+ workshop on business and dataflow in Barcelona in 2025.

5.1. Current knowledge on biodiversity

Our knowledge of biodiversity has increased considerably since the term was coined in 1986. It has moved high on the political agenda with the subsequent establishment of the Convention on Biological Diversity in 1992, and the information level has been leveraged by the consensus reports on biodiversity by IPBES established in 2012. However, there are still numerous questions which are left uninformed due to the complex biological systems. Biodiversity is working at various scales from the genetic and population levels to species, habitats and ecosystems. Biodiversity is geographically unique and the loss of biodiversity in one geographical location cannot necessarily be compensated in another place. Moreover, the loss of biodiversity (including genes, species or habitats), is irreversible. We do not expect to get species back when they once have gone extinct.

The general information level on biodiversity has increased tremendously with new technological developments such as DNA-techniques, camera traps, telemetrics, acoustic devices and accelerating availability of field guides and now AI software on mobile phones for assisting in identifications just to mention a few examples. Also the academic literature on biodiversity is growing fast (Legagneux et al. 2018) and Intergovernmental environmental initiatives, such as IPBES, have been established in order to bridge the communication gap between the scientific community and stakeholders.

Also the Global Biodiversity Information Facility (GBIF) - an international network and data infrastructure funded by governments - is rapidly growing. It aims at providing public access to data and at its core is species data including location, DNA, and photos of all-together hundreds of millions of specimens collected from all over the world. Three of the main activities in the GBIF work programme are to support nature-positive outcomes from decisions in the business, financial and productive sectors as well as science and research and supporting the implementation of the GBF. Another standard is Darwin Core. It intends to facilitate the sharing of information on biodiversity by providing identifiers, labels and definitions.

The Knowledge Centre for Biodiversity aims to support policy making by developing tools that support the implementation of the EU Biodiversity Strategy, including bringing together researchers, policy-makers, NGOs, industry and citizens. As mandated in the EU Biodiversity Strategy for 2030, the Commission established in 2020 the KCBD in close

cooperation with the EEA with an aim to 1) Track and assess progress by the EU and its partners, including the implementation of biodiversity-related international instruments, 2) to foster cooperation and partnership, including between climate and biodiversity scientists; and 3) underpin policy development.

Generally speaking, there is a wealth of information on biodiversity for private companies or financial institutions to get started while we at the same time improve our knowledge base. Hence businesses can already at this point take direct actions to manage their dependencies and impacts on nature. Such actions may be taken at all levels from corporate and site to value chain and system levels.

Various methods exist to measure business impacts and dependencies. Approaches need to be selected based on the specific business contexts and decision-making levels. However, research gaps exist and filling these gaps will improve current methods and approaches and their long-term viability and may also expand into addressing business demands to meet a nature positive future.

5.2. Examples of knowledge gaps in biodiversity data and approaches

Research will assist nature and economy related businesses and financial institutions in understanding their dependencies on biodiversity and natural resources and the impacts they have on nature. For example the consensus reports from IPBES concluded that loss of biodiversity is driven by human activities (IPBES 2019). Moreover, IPBES is mapping these direct and indirect drivers of loss, but also the underlying human causes (2024a), and the options for actions we have on hand (IPBES 2022, 2024a, b). As a business, this generally prompts a need to build general capacity in terms of biodiversity knowledge (see 5.4.). However, it also poses challenges to identify concrete and relevant knowledge, both in terms of business opportunities, and for the majority identifying dependencies, risks and impacts both for the assurance for the businesses themselves, and for fulfilling reporting requirements as outlined in this and many other reports.

We are generally well aware of the main drivers of biodiversity loss (IPBES 2019, 2024a), which is crucial, but lacking information on exactly what we are losing. Thus, there are huge knowledge gaps in our knowledge of species and species interactions (IPBES 2019). We have been able to describe only a smaller fraction of the world's expected number of species. Population and species interactions at all levels, and the general functioning of ecosystems and processes in nature are still imperfectly known. Moreover, we have limited knowledge of genetic diversity, as well as how the biodiversity crisis is impacting populations and deteriorating genetic diversity and, thereby, resilience to adapt to future induced by land use, climate and other human-induced changes.

The following points provide a few examples of the more fundamental research and innovation questions:

- Genetic diversity is a key aspect of biodiversity. There is a fundamental general lack of understanding as well as information on the loss of genetic diversity at population levels (Exposito-Alonso et al. 2022, Nonić & Šijačić-Nikolić 2019). For example, how do we enhance the application of metrics and tools for measuring impacts on genetic diversity and population levels?
- There is limited fundamental knowledge on species compositions and interactions, and their various roles in functioning ecosystems, as only a minor proportion of the species on Earth have been scientifically described (perhaps 1.6 million) of an estimated 10-13 million species or more.
- A deeper understanding of various ecosystem services is lacking, and integrating these services into various impact assessments. Trade-off management and evaluations of these services are required. The IPBES nexus report (IPBES 2024b) has been an important step forward, however, more research and innovation at the local scale are required, as well as cases in different areas and habitats/landscapes.
- Studies on how biodiversity-friendly incentives will remove pervasive incentives and barriers and create markets for more sustainable products.
- Finally, the impact of applying tools, metrics and initiatives will need to be tracked and monitored to document and demonstrate results.

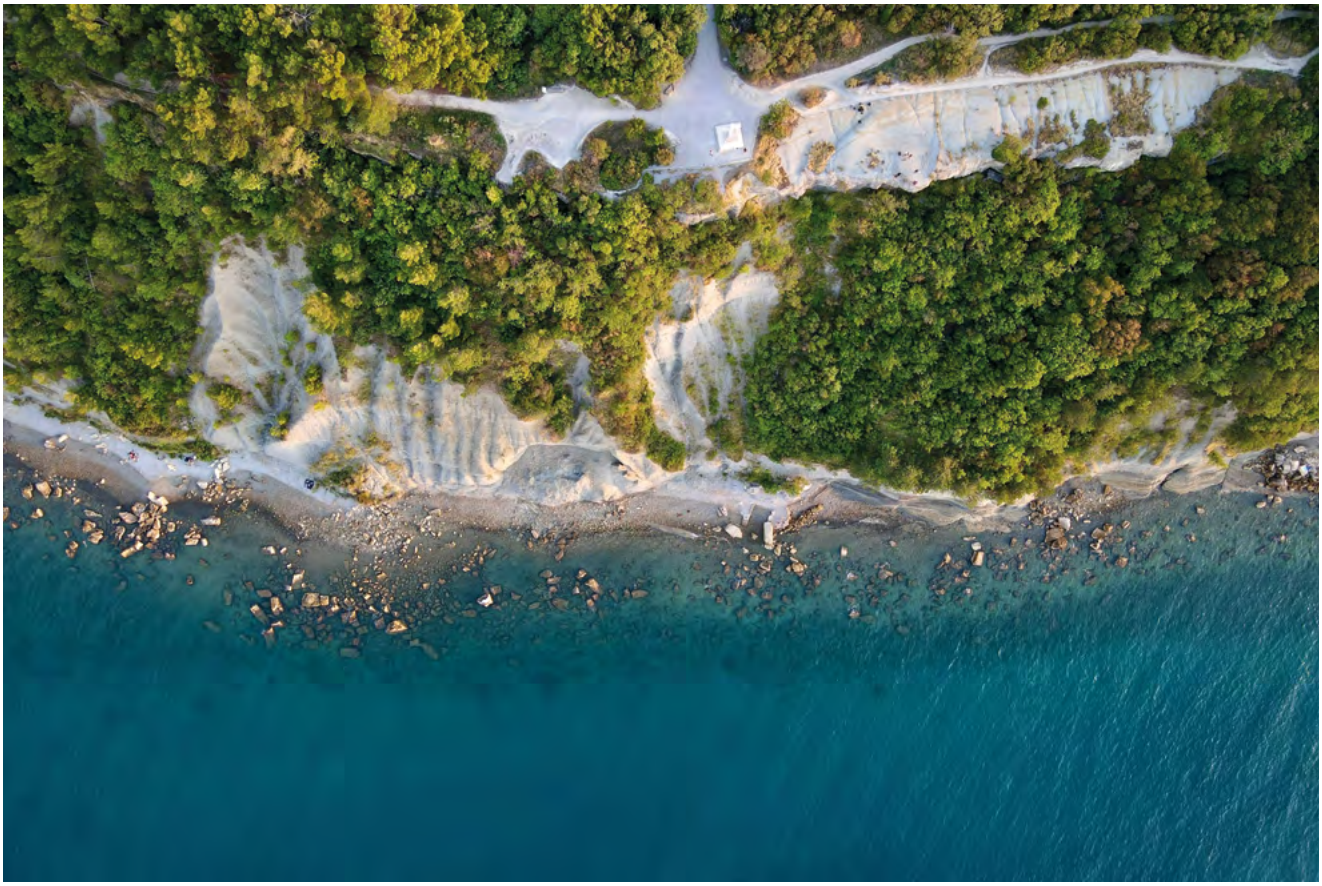
Biodiversa+ will in 2025 publish two guides for private companies, one is to promote the acceleration of the use of public biodiversity data (supported by KPMG/Naturalis) and the other to help companies share biodiversity data collected by companies (with support from University of Twente/EY). The availability and use of biodiversity data is crucial but does depend on in-house capacity among companies and transparency in data flows .

5.3. Needs of businesses and the financial sector to align with policy targets

Policy targets for the private sector at both global and regional levels are becoming increasingly defined. For example, the requirements set forth in the GBF and EU policies and regulations are specific and concrete (this report, Business for Nature 2022) although the 2025 omnibus at the EU level has requested a pause in the speed of implementation and does also request a simplification of the EU reporting obligations.

However, there may be a significant gap between what companies or financial institutions need to achieve and the overall targets (Dasgupta 2021, Eggermont et al. 2021, European Union, no date (b), European Commission & Directorate General for Environment 2021). These research and innovation gaps include:

- Look into and propose appropriate data flows and monitoring systems with clear and meaningful indicators needed for businesses to assess trends in their impact and dependencies.
- Looking into alignment of local-level business activities and approaches with the large-scale frameworks such as the GBF and planetary boundaries? Knowledge gaps remain in efficiently linking ambitions and efforts at the different geographical scales.
- Moreover, analysis of policy indicator requirements and business assessment and reporting remains a challenge.
- More work also needs to be done to be able to fully assess higher business level impacts (e.g. corporate level and upstream supply chain) as these direct and indirect impacts are harder to determine, as most focus has been at the site or project level.
- Frameworks should become more user-friendly by including more specific recommendations for tools or methods to be used within the frameworks. This will improve the consistency of use and comparison of results.
- There is a further need for knowledge about whether new regulations that are put into effect will effectively contribute to achieve the goals that have been set to safeguard and rebuild biodiversity. This includes EU policies such as the EU Taxonomy and CSRD/ESRS.
- Providing analysis and standards for auditing and investigating how auditing may make a difference with a positive impact on biodiversity including the need to involve research knowledge further.
- A wide range of research is needed on how to track products to their specific geographical localities of origin to be well prepared to implement e.g. the Regulation of deforestation-free products.



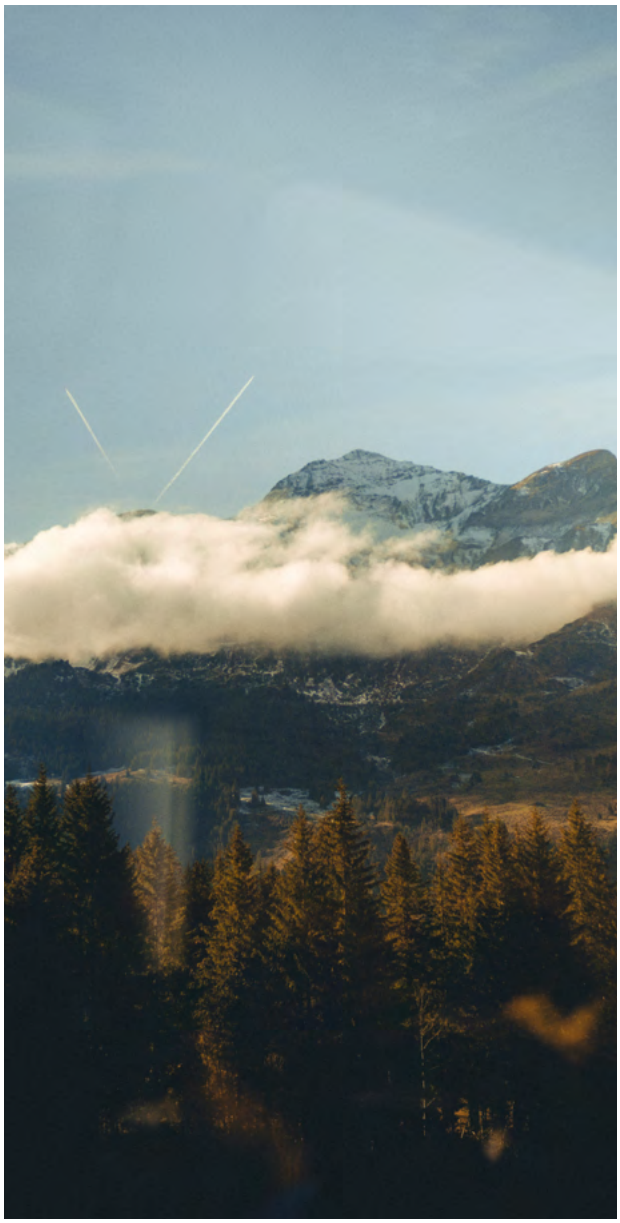
5.4. Harmonisation

The development of business and biodiversity tools and metrics is advancing rapidly, with various sets of sector-specific guidance being published by different sources. While policy requirements generally allow companies and institutions to select tools and metrics as appropriate, there is a growing need to harmonise these approaches. This is important for ensuring their effectiveness and prompting an unequivocal impact on biodiversity. However, at the same time, it is acknowledged that biodiversity is complex, unique and specific to geographical localities and with no common standard. Moreover, it is more than doubtful whether one single set of standards will makes sense and provide meaningful answers? Thus, this complexity of biodiversity at various scales from genes to ecosystems and in time and space needs to be acknowledged.

An important starting point is to undertake research and innovation in relation to avoiding greenwashing. Some projects and EU policies are addressing this issue, including the EU Taxonomy described earlier and also the proposed EU Green Claims Directive, which aims to enhance the credibility of environmental claims made by businesses by setting clear standards and requesting scientific evidence to support these claims. However, more research and innovation is needed. A few examples are highlighted here:

- Establishing baselines or some other approach to assess and quantify biodiversity impacts may be critically important. Greater understanding of biologically meaningful baselines or related aspects, such as biodiversity intactness, continuity in the sense of lack of human disruptions and other methods and approaches, is needed to accurately evaluate impacts (see IPBES 2019 on the use of intactness). Developing a specific business and biodiversity protocol under the CBD could help advance these baselines and harmonised terminology across the field.
- There is a lack of consistency in terminology, particularly between terms like biodiversity footprints, natural capital, and related concepts. Clearer and better understanding of biodiversity is required to improve the uptake of meaningful biodiversity valuation practices. According to IUCN, natural capital thinking and approaches emphasise both the impacts and dependencies on biodiversity with a role for economic value assessment, whereas in biodiversity accounting, the focus is more restricted to impact (Goedicke et al. 2020). However, companies may find differences between approaches and how to interpret them unclear.
- As demonstrated by Lammerant (2021), different tools and approaches provide different answers to the same questions, making it challenging to combine them. There is a need for further insight to harmonise and integrate approaches and tools, aiming for a higher degree of consistency and priority setting. Moreover, “nature positive” outcomes are often challenging to measure.
- There is limited science that certification schemes deliver, and the measurements of biodiversity outcomes are often quite weak. This will be an important field to uncover from a scientific basis, again, harmful to biodiversity and undermining credibility.

In 2026 a report is expected from Nature Positive Forum on a review of more than 600 existing metrics across sectors to launch a final State of Nature Metrics in 2026. Thus, the result and subsequent use of this attempt to standardise many of the existing metrics is still pending.



5.5. Needs for building capacity and awareness supporting transformative change

Transformative change was identified by IPBES (2019) to be needed to halt and eventually stop loss of biodiversity. Since then, the 150 member states of IPBES have requested a clarification of the barriers and challenges as well as the opportunities and options for actions for such a change. This work was launched in December 2024 (IPBES 2024a) and outlines the identified challenges and opportunities, and it is highly relevant for researchers and businesses to tap into these insights.

To drive transformative change, the necessary capacity, knowledge and innovation will be essential. As biodiversity is quite a new issue in the private and financial sectors, building the necessary capacities to understand and deal with biodiversity at the company level is a challenge. Understanding the key messages from the IPBES (2024b) transformative change and Nexus (IPBES 2024b) assessments will facilitate the understanding of the necessary changes both on the needs of society and individual changes to address over disconnection with nature, the concentration of power and wealth and our prioritisation of short-term individual and material gains (IPBES 2024a). Likewise, the information and understanding of the interlinkage between biodiversity, water, health, food production and climate (IPBES 2024b) is important for private and financial sectors to embed in their institutions.

Therefore, capacity building is a priority, along with ensuring a steady flow of relevant information and facilitating balanced choices and decisions amid the growing number of sources and publications. A few examples are provided below.

There is a need for greater knowledge about implementing change within business and financial institutions. Current research on consumer behavioural changes is insufficient (Danner 2023). Additionally, there is a lack of comprehensive understanding regarding society's dependencies on biodiversity necessary for integrating these considerations into existing and future frameworks and approaches (see Smith et al. 2019). Complex methodologies are difficult to communicate and apply. It is important to explore how research can share information with businesses as well as how to communicate complex issues (Danner 2023). Capacity building will be crucial and will vary between businesses, such as for example between large companies and SMEs. For instance, efforts could be targeted at asset managers or engaging the financial accounting team in-house to improve data quality (as discussed below). Hence, the lack of human and financial resources to bring the necessary expertise over the long term was identified as a barrier by Danner (2023), noting that not all companies can afford it.

Moreover, the lack of trust between researchers and businesses (reluctance among researchers to engage with the business forum, while businesses often feel that researchers may not fully understand or address their concerns.) needs to be addressed (Danner 2023). One possible solution may be to set up research programs that are embedded within companies.

Additionally, there is a need for increased uptake and understanding of biodiversity and related alignments in business applications, identifying baselines and relating to planetary boundaries, need for data inputs etc. Moreover, the establishment of e.g. national or regional knowledge-sharing networks or consultations etc. may be needed including the development or revision of training materials and courses.

Pilot projects to demonstrate implementation and achievement in a complex field with different sectors and different approaches are highly needed. At this point, further development and identifying twinning projects between private sector businesses and research institutions and developing and presenting best practices is required.

Thus, an innovative project can serve to gather user input and enhance approaches and frameworks (see Smith et al. 2020). A robust pilot project has the potential to demonstrate successful implementation and outcomes in a complex landscape that involves various sectors and approaches. This can help build capacity and raise awareness while showcasing best practices and facilitating widespread dissemination.

5.6. Needs and opportunities for Small and Medium Enterprises

The vast majority of companies in Europe are SMEs with usually limited capacity and resources. The focus on both the supplies and demands of these companies will be crucial in addressing biodiversity loss. While both the GBF and EU policies have started to give environmental obligations to large businesses these requirements will also affect the SMEs (now postponed by the omnibus) through the supply chain and e.g. reporting requirements and disclosure must increasingly be expected to hit the SMEs as well. A couple of examples are highlighted below.

Further research and development of innovative science-business opportunities (nature-related opportunities) in addressing nature-positive ambitions and policy requirements are needed. The SMEs may be seen as having a special niche here.

Building capacity and awareness raising among SMEs through national and/or local coordination initiatives, such as innovative hubs, platforms and networks, may make a difference. It is important to provide and showcase innovative science-business cases and best practices involving research institutions and specialised companies that deliver biodiversity-relevant solutions. For example, efforts may focus on enhancing the resolution of biodiversity data and making tools operational for businesses. Additionally, it is important to provide meaningful insights into how the contribution of individual SMEs align with global and EU frameworks and targets.

Final remarks

The general acceptance of the dependency on biodiversity by the private and financial sectors is a major step forward for these sectors being involved in pushing for change (see examples in this report and others). Moreover, a general acceptance that human activities usually comes with a cost for biodiversity and that we with a balanced and holistic approach can pursue intelligent trade offs and synergies that benefit nature and human well beings in a much more balanced way.

Biodiversity is now high on the political agenda both within the EU and globally and the field of business and biodiversity is under rapid development. For good reasons. The financial and business sectors are essential players in addressing the crisis. Without their involvement it will not be possible to bend the curve of biodiversity loss. An overview of this theme needs regular updating. Hence, this document on the "Mapping of the Business and Biodiversity landscape for European Research & Innovation" needs to be regularly updated and adjusted in line with the ongoing developments in the field.

Moreover, an important step will be to share many more practical cases demonstrating a culture of changed practices and activities driven by innovation, research and motivation to reach common goals on biodiversity, climate and pollution taken together while at the same time pursuing a good life.

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Annex 1 : Planetary Boundaries Framework

Human impact measured based on the planetary boundaries concept is increasing. We are operating outside the safe operating space for several nine planetary boundaries including Biosphere Integrity.

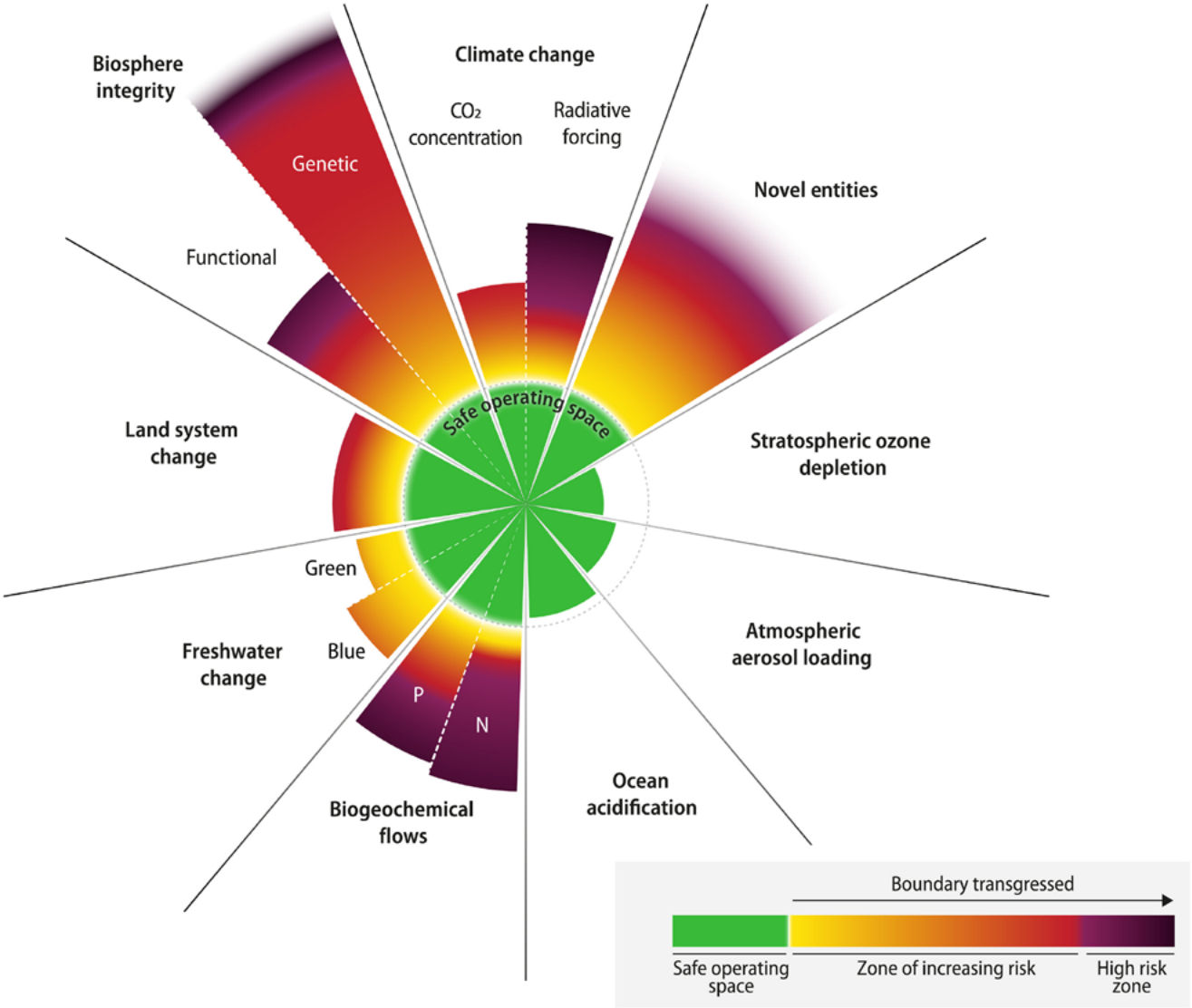

Table 1: Six of the nine boundaries are transgressed. In addition, ocean acidification is approaching its planetary boundary. The green zone is the safe operating space (below the boundary). Yellow to red represents the zone of increasing risk. Purple indicates the high-risk zone where interglacial Earth system conditions are transgressed with high confidence. Values for control variables are normalised so that the origin represents mean Holocene conditions and the planetary boundary (lower end of zone of increasing risk, dotted circle) lies at the same radius for all boundaries (except for the wedges representing green and blue water, see main text). Wedge lengths are scaled logarithmically. The upper edges of the wedges for the novel entities and the genetic diversity component of the biosphere integrity boundaries are blurred either because the upper end of the zone of increasing risk has not yet been quantitatively defined (novel entities) or because the current value is known only with great uncertainty (loss of genetic diversity). Both, however, are well outside of the safe operating space. Transgression of these boundaries reflects unprecedented human disruption of Earth's system but is associated with large scientific uncertainties (Richardson et al. 2023).

Annex 2 : The practical approach: Questions on biodiversity in business

Questions for Monday morning actions	
Board level and executive management themes	• Do we know our biodiversity footprint? • Do we know out largest biodiversity exposures (e.g. activity, supplier, investment)? • Do we have hard targets for our biodiversity impact? • Do we know what risks the biodiversity crisis poses for our industry? • Do we know what legislation will affect our industry? • Do we know how we perform on biodiversity vs competitors or comparable business? • Do we know the most important and impactful action we can take right now to reduce our biodiversity footprint in the short term? • Do we have a strategy to reduce impact and seize/develop opportunities? • Do we know how biodiversity is linked to our general ESG efforts and reporting? • Do we know who in the organization is responsible for managing biodiversity risks and opportunities?
Sustainability professionals' themes	• Do we know how to measure our biodiversity impact? • Do we know which sector-specific regulations and reporting standards will be relevant for our business? • Do we know the ecosystem impact of our production processes? • Do we know where our raw materials and other input come from, and what their biodiversity impact is? • Do we know the life cycle of our products and their biodiversity impact? • Do we have targets for biodiversity impact? • Do we know which initiatives we can implement to reduce our impact?

Table 2: Practical implementation of biodiversity impact measures in business is lacking. Here are some simple questions to consider by businesses. Answers might be more complex (WWF & Bain 2022).

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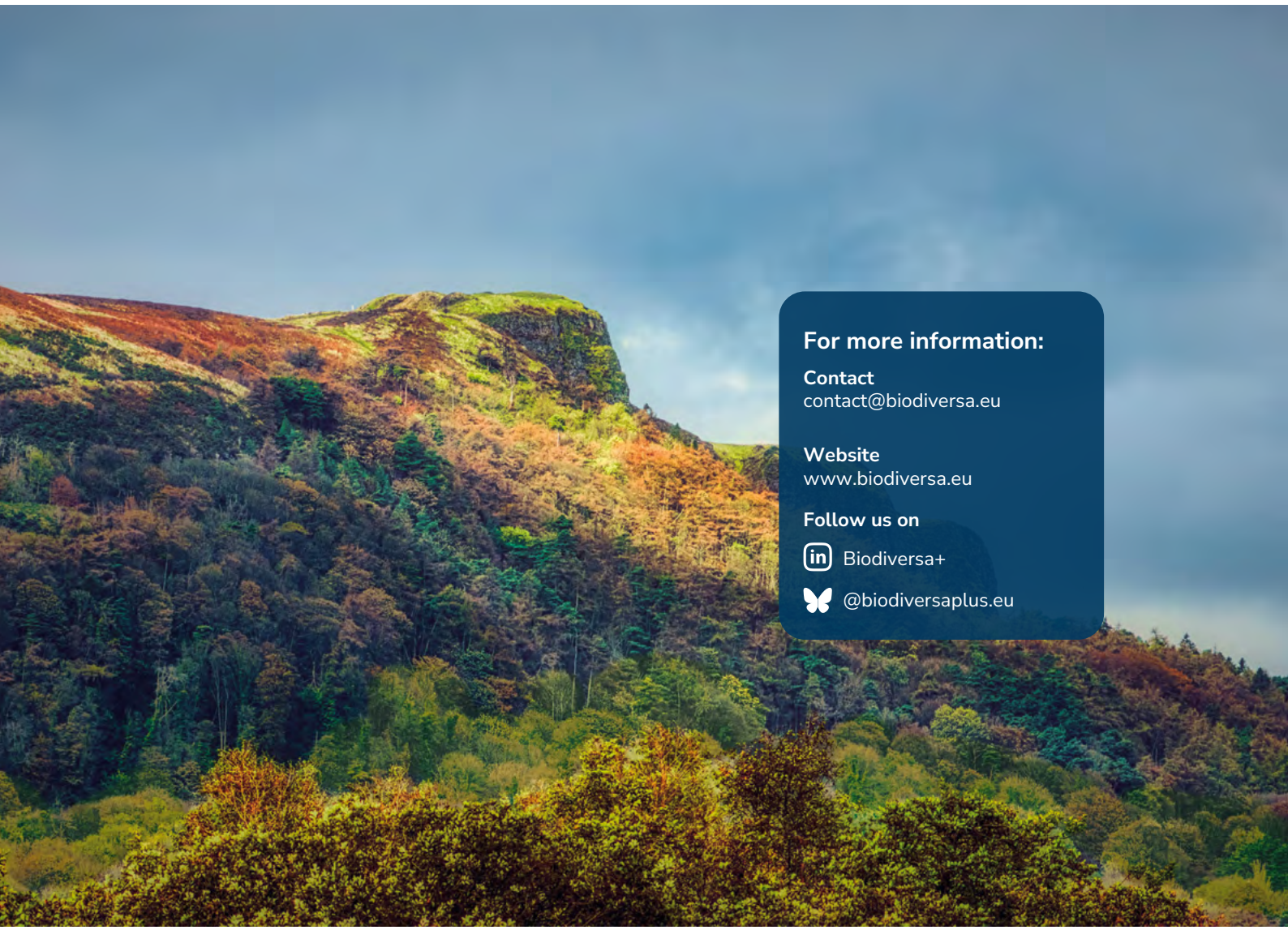

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