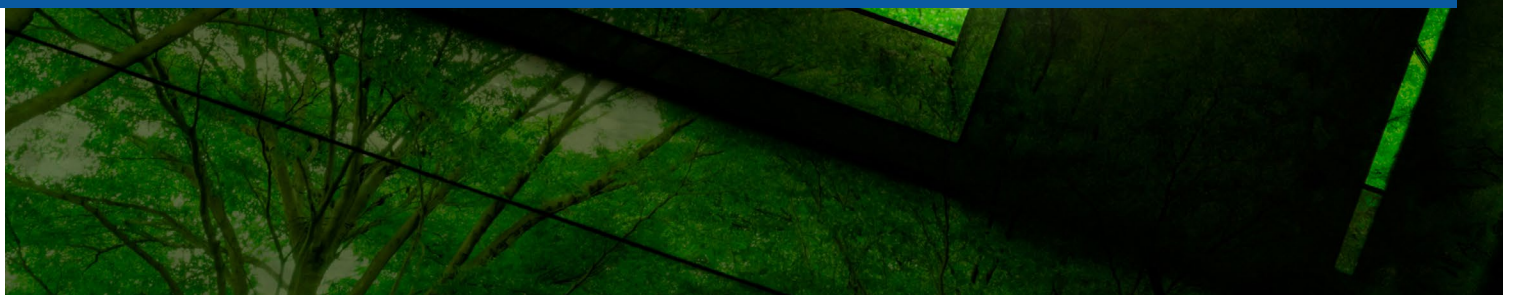




Biodiversity and finance: Managing the double materiality

November 2022



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Published by

The Federal Republic of Germany,
represented by The Federal Agency for Nature Conservation (Bundesamt für Naturschutz, BfN)

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This publication was commissioned by the Federal Agency for Nature Conservation as part of the Project "Sustainable Finance and Biodiversity with funds from the German Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection" (BMUV) (FKZ: 3520 81 0300).

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Acknowledgements

The authors are grateful to all reviewers from the institutions participating in the project. Especially, Ingmar Jürgens and David Rusnok (Climate & Company) Anna Gomes, Karsten Löffler and Carola Menzel-Hausherr (Frankfurt School), Matthias Kopp (WWF), and Dr Frauke Fischer (Agentur auf!).

Scientific supervision at BfN

Beyhan Ekinci, Division I 2.1 „Legal and Economic Issues in Nature Conservation“

Layout

KAORA, Kasinostraße 22, 65929 Frankfurt

Print

WAGNER CROSSMEDIA, Kasinostraße 22, 65929, Frankfurt

Printed on 100 % recycled paper

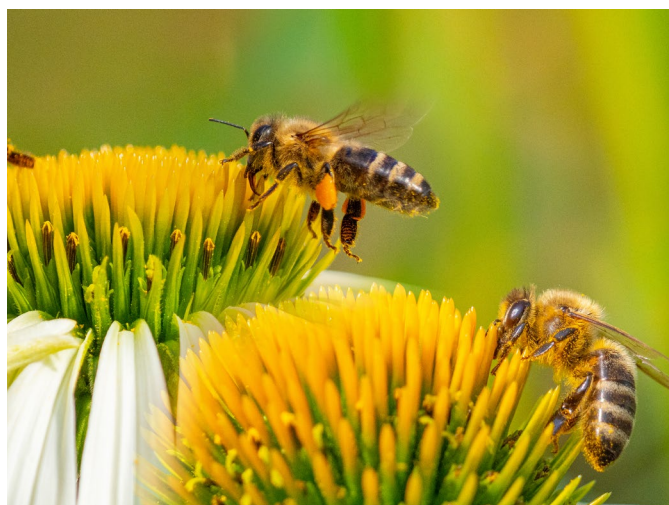
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Executive Summary











Economic activities are fundamentally both dependent on biodiversity and responsible for its significant loss. The massive degradation of ecosystems not only challenges planetary resilience and, ultimately, human survival, but it also very directly represents a significant threat to the profitability and stability of financial systems and a wide range of economic activities. In 2018, the United Nations Environment Programme Finance Initiative (UNEP-FI) found that 13 of the 18 sectors represented in the FTSE 100 with USD 1.6 trillion in market capitalisation are associated with production processes that have a high or very high material dependence on nature (UNEP FI, 2018). This illustrates the fact that the global economy, and therefore also financial portfolios, are embedded in natural processes affecting their performance (Dasgupta, 2021). At the same time, economic activities and associated financial services drive biodiversity loss and ecosystem degradation (i.e. environmental impacts). **The double-materiality principle** (European Commission, 2019b) enshrined in emerging EU sustainable finance legislation, such as the Corporate Sustainability Reporting Directive (CSRD), incorporates both of these perspectives: the impact on nature as well as the risk to the economy (or corporates in particular).

Biodiversity-related risks¹ are physical risks in that they can cause disruptions in the value chain (via “upstream” dependencies on ecosystem services), and are also transition risks as governments develop stricter regulations to achieve national and international targets (for example, affecting future compliance costs or market access for harmful economic activities). Risks also stem from increased market and public awareness of the link between biodiversity and economic activities (reputational risks), and the possible resultant drop in demand. Therefore, **understanding and managing biodiversity-related risks will enable financial institutions to avoid losses and reputational damage, and to identify new business opportunities.**

For financial institutions, **compliance with existing and upcoming EU regulations on environmental issues is unavoidable.** Even though regulatory instruments, such as the EU Taxonomy Regulation or CSRD, are slowly but surely moving beyond “just climate” to also address biodiversity and ecosystems, the timelines for implementation and political compromises will produce a compliance regime that falls short of the shift required to tackle the current rate of biodiversity loss and its consequences. In other words, moving beyond mere compliance is essential if financial institutions are to avoid reputational risks and play a role in effectively restoring and protecting biodiversity and ecosystems. Consequently, after exploring the relevant regulatory requirements, this paper will present a series of recommendations for financial institutions to **“go beyond regulation” and transform the way in which they think about and act on biodiversity – based on scientific evidence and reflecting the 2030 and 2050 biodiversity objectives agreed by elected decision makers around the world.**

¹ Unlike nature-related risks, which cover a wide range of natural phenomena beyond biodiversity such as climate, biodiversity-related risks refer exclusively to biodiversity loss. References cited throughout this paper consider both terms.

In this vein, financial institutions should:

		
Assess		1) Understand the context, the framing, and the logic behind risk exposure analysis and the targets, based on scientific evidence.
		2) Assess the status quo of the corresponding regulatory framework and the double materiality of financial portfolios, including a specific analysis of impacts and dependencies.
		3) Conduct a gap analysis to understand what is required for compliance and the corresponding gap between committing and acting in line with a science-based approach, and the corresponding EU and UN 2030 and 2050 targets.
Plan		4) Develop a strategy to focus actions, allocate resources, track performance, and set science-based targets.
Act		5) Implement the strategy by applying the target-setting framework across all organizational processes. These include, among others, risk management, product development, governance and remuneration schemes, client dialogue, data management, data procurement, staff training, and capacity building. Furthermore, it is essential to establish a logic of continuous improvement to keep pace with the latest developments.
		6) Report on progress internally and externally using credible frameworks, context, and process-specific metrics.
		7) Advocate and join forces to exchange knowledge and strive for improved regulation.

Financial institutions can follow all these steps or select those relevant or complementary to their current strategy. The proposed recommendations will

prepare institutions to counter the biodiversity crisis at the institutional level (manage risks and impacts), while contributing to a nature-positive economy.

Introduction

The impacts and dependencies of human activities on biodiversity are increasingly present in public discourse. This is evidenced in the Global Biodiversity Framework (GBF), prepared within the framework of the Convention on Biological Diversity (CBD). The GBF aims to **transform social and financial models to stabilise biodiversity loss by 2030 (2030 Mission), and allow for the recovery of natural ecosystems by 2050** (CBD, 2021).² These goals demand transformative changes through long-term commitments and actions by all economic actors. Otherwise, the unprecedented decline of biodiversity will continue (WWF, 2020). In turn, this will exacerbate the systemic challenges posed to the global economy and the stability of food, health, and safety systems. The recent World Economic Forum (WEF) Global Risk Report 2022 identifies **‘biodiversity loss’ as the third most severe risk in the coming 5 to 10 years, right after climate action failure and extreme weather events** (WEF, 2022). Furthermore, human-induced changes to the climate and rates of biodiversity loss are interconnected, meaning that neither crisis can be solved independently from the other (Pörtner, Hans-Otto et al., 2021).

Direct, indirect, and systemic biodiversity dependencies and risks

An analysis by PwC and WEF (2020) estimated that 15 % of global gross domestic product is highly dependent and 37 % moderately dependent on nature (WEF & PwC, 2020), with some economic sectors and activity being fully dependent. One example of **direct dependency** is crop production, whose productivity depends on pollination services. But there are also **indirect dependencies** via the supply chain: downstream industries, such as food processing or textile manufacturing, are indirectly dependent on biodiversity since they rely on the supply of food, fibre materials, and other raw natural resources from upstream sectors. Disruption in the upstream sector, such as poor harvests, can lead to raw material price volatility, negatively affecting downstream industries (CISL, 2021).

Use of the term biodiversity

Biodiversity (the variety of life on earth within species, between species, and of ecosystems) (CBD, 2009), ecosystems (interactions of biodiversity with the non-living environment as a functional unit) (CBD, 1992; IPBES, 2019), and ecosystems services (the benefits people obtain from ecosystems) (Alcamo et al., 2003) are closely related scientific concepts. There is overall consensus around these definitions, whereas nature is a term constructed differently by various scientific and alternative knowledge systems. IPBES (2021) recognises the concept's broadness and emphasises biodiversity as the core component (Brondizio et al., 2019). Thus, biodiversity is the single denominator of this paper, while the other concepts are also utilised as they stem from relevant existing discourses and initiatives.



² Some actors call for even more ambitious goals and propose a zero Net Loss of Nature from 2020, Net Positive by 2030, and Full Recovery by 2050 (Locke et al., 2021).

Biodiversity-related physical risks thus exist because companies depend on functioning ecosystem services across sectors and geographies. **As biodiversity underpins global economic activities, its current and potentially worse future degradation translates into biodiversity-related financial risks.** The aggregation of risks could potentially produce **systemic risks** that may arise in several ways, whereby a natural system breaks down either mid- to long term, in some cases even irreversibly. This could lead to system-wide financial instability up to the global scale, leading to impacts across all industries (Goldin & Mariathan, 2014).

The risks resulting from declining ecosystem services have been analysed, for example, by the Dutch central bank (DNB & PBL, 2020), the French central bank (Svartzman et al., 2021), and the World Bank (Calice et al., 2021). These institutions conclude that a considerable share of the respective financial sectors' portfolios depend substantially on biodiversity and functioning ecosystem services (e.g. 36 % of the Dutch

financial system is highly or very highly dependent on the functioning of core elements in ecosystem services (DNB & PBL, 2020)). Biodiversity-related physical risks and other subcategories that are material to all types of financial institutions (FIs) (i.e. outside-in perspective) are summarised in Table 1 below.

Regulation as the driving force to turn inside-out into outside-in matters

The **double materiality** framework can facilitate the decision-making process at FIs since it covers the outside-in perspective (financial materiality, see table above) as well as the inside-out perspective (environmental materiality). The former addresses how environmental issues impact financial portfolios -- for example, declining ecosystem services that decrease portfolio companies' productivity -- whereas the latter captures financial portfolios' impacts on the environment (European Commission, 2019b) (e.g. financing land-use change for agriculture).



Table 1 – Biodiversity-related risk categories*

Risk category	How this risk materialises	Examples
Physical or dependency risks	This type of risk arises from material destruction — such as damage to infrastructure and disruption of operations — as well the failure to deliver goods and services due to shortages of production supplies and required ecosystem services (e.g. soil nutrients, fresh-water, pest control, etc.)	The degradation of forest landscapes threatens the availability and provision of valuable commodities on which the €200 billion global cosmetics
Regulatory and legal risks	Increased policy and regulatory intervention in response to biodiversity depletion could cause some sectors of the economy to face significant shifts in asset values or higher costs (transition risks). Some sub-sectors or activities in certain regions could even turn into stranded assets. Laws, policies, regulations, and court actions that may affect business operations include: standards/certifications, moratoria/bans/fines on access, taxes, and fees, subsidies removals, tradeable permits and resource quotas, trade directives, and changes in disclosure requirements. Mandatory disclosure regulation facilitates access to information on companies' environmental performance, reinforcing the corresponding reaction in consumer demand (see market risk below).	<ul style="list-style-type: none"> • The proposed EU Deforestation Law might make some investments illegal. • Mandatory value chain due diligence results in higher costs. • Increasing the share of protected areas (as part of the CBD or the EU Biodiversity Strategy) would turn activities in areas to be protected into stranded assets.
Market risks	Market pressures can come from competitors producing innovative products (those more likely to expand in the foreseeable future of biodiversity constraints), as well as from shifting supply and demand patterns, as consumers and the market react to biodiversity impacts associated with certain products, brands, and companies.	The demand for non-animal protein demand as consumer awareness grows and controversies around meat production emerge.
Reputational risks	All types of companies face reputational risks by being held accountable by customers, clients, and the wider public for biodiversity loss. Lawsuits and litigations can tarnish companies' reputations, resulting in lower brand value, loss of customer base and profits, and/or further increases in insurance premiums.	The public increasingly acknowledges business responsibility for the state of biodiversity. Specially, NGOs scrutinise firms and design campaigns against companies, which in turn leads towards lost sales.

*Our own elaboration based on Svartzman et al., 2021; WEF & PwC, 2020; WWF, 2019

With changing consumer preferences, more environmentally conscious investors, and increased regulatory efforts, among others, what counts as environmentally material also increasingly becomes a financial materiality through the form of **transition risks**. Additionally, these changes can help redirect funds by making it more profitable to stop financing destructive activities (e.g. via negative lists), and instead finance progressive business models that are likely to thrive in the foreseeable future of biodiversity loss and ecological resource constraints.

However, FIs are currently not sufficiently prepared, and a strategic and comprehensive approach to biodiversity barely exists (Responsible Investor & Credit Suisse, 2021). For example, a WWF Germany study on the sustainability performance of the 15 largest German banks showed that not one single bank integrates comprehensive biodiversity criteria into its strategy, processes, and products.” (WWF

Germany, 2021). However, the lack of preparedness might change, since a number of voluntary initiatives have been set up by financial market actors and other stakeholders to address the lack of attention paid to biodiversity (a subject that will also be addressed here).

These efforts are also necessary since the regulatory agenda at the EU level is packed with ambitious attempts to either increase transparency (such as via the Sustainable Finance Disclosure Regulations, SFDR) **or by restricting corporate practices**, for example via the current proposed EU ‘supply chain law’ which defines companies’ obligations regarding the adverse impacts on the environment and human rights which stem from their own operations across the value chain. Many regulatory files are still at a proposal stage, and it remains to be seen whether they adequately address the environmental challenges.



This is also something that financial market actors are demanding more and more. For example, 78 FIs sent a statement ahead of the 2021-22 CDB COP 15 asking governments to establish and strengthen the regulatory environment that enables FIs to address biodiversity-related risks and opportunities (Financial Institution Statement ahead of the Convention on Biological Diversity COP15, 2021).

This paper equips FIs with the essential insights to understand and manage the relationship between biodiversity and finance, acknowledge relevant regulation, drive organisational transformation, and eventually yield positive outcomes for biodiversity.

Chapter 1 introduces the EU's legal framework on sustainable finance and the environment, and explains the links to biodiversity, their relevance for FIs, as well as their (potential) flaws and loopholes.

Chapter 2 outlines steps and recommendations that will allow FIs to mainstream biodiversity from scratch while motivating bold action beyond current and future legislation. It will also list activities that can potentially contribute to nature protection and sustainable use in some priority sectors. Finally, the annex provides a brief **glossary** of some of the most important concepts utilised in the guideline.

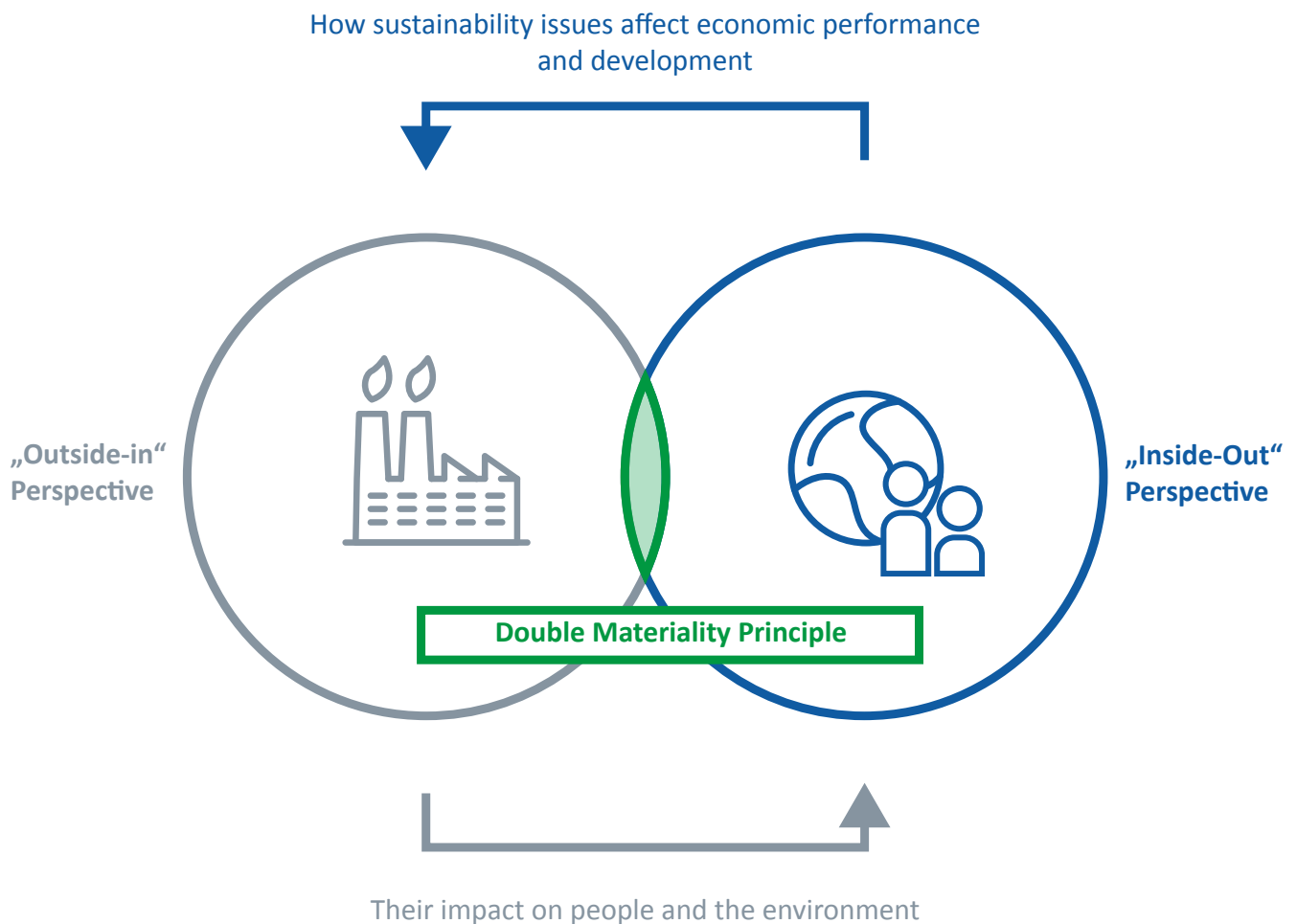


Figure 1 The double materiality principle

1 - EU regulation on biodiversity relevant to the financial sector



The EU's key regulatory files and how they are linked to biodiversity and ecosystem services. Contrary to (voluntary) commitments and pledges, regulations are mandatory and therefore the perhaps most promising tool to increase transparency, price in externalities, and restrict environmentally harmful operations. This section focuses on the EU's biodiversity-related regulatory files relevant to FIs that strive to increase accountability, transparency, and biodiversity-aligned capital flows. In particular, the EU Green Deal has been a driving force behind biodiversity regulation, such as the Soil Health Law, the

Deforestation Law, or the recently proposed Nature Restoration Law.³ For the EU Green Deal objectives to be reached, the financial sector must also contribute to its targets via a systematic integration of the double materiality concept. This has also been acknowledged by the EU's Sustainable Finance Strategy (Strategy for Financing the Transition to a Sustainable Economy, 2021) with several references to the EU Green Deal.⁴ Table 2 below provides a non-exhaustive overview of biodiversity-related EU regulations relevant for FIs.⁵

³ On 22 June 2022, the European Commission introduced the proposal for the Restoration Law. It does not place any direct obligations on private actors but only on Member States. Nevertheless, it demands that Member States formulate National Restoration Plans, which should indicate the estimated financing needs for implementation of the restoration measures, as well as means of intended financing, public or private. In this vein, the proposal also states: "To ensure the achievement of the targets and obligations set out in this Regulation, it is of utmost importance that adequate private and public investments are made in restoration" (European Commission, 2022b).

⁴ Interrelations between regulatory files and the EU Green Deal are likely to continue to grow. Current examples are the EU Soil Health Law that will be passed by 2023, setting strict rules on using soil, possibly at the level of current water and air quality directives (European Commission, 2021b). This will impact most European territory, as 70 % of soils are not in good condition (European Commission, 2021c). Another example is the EU Deforestation law which will require mandatory due diligence rules to allow only deforestation-free and legal products into the EU market (European Commission, 2021d).

⁵ Regulations that directly limit corporate business activities (e.g nature-protection measures in the construction sector) are beyond the scope of this report.

Table 2 - Regulatory files at EU level (sustainable finance)

Name of EU File	Relevancy for FIs	Link to biodiversity
EU Taxonomy for sustainable activities	Clear implications for disclosure obligations in other regulatory files (CSRD, SFDR). Will increase transparency.	The EU Taxonomy defines criteria for economic activities that 'substantially contribute' to environmental objective 6, i.e. the "protection of biodiversity and ecosystems." See text box 1 below for a comprehensive overview of such activities
Corporate Sustainability Reporting Directive (CSRD) and the corresponding ESRS (European Sustainability Reporting Standard)	The CSRD will oblige a large share of financial and non-financial entities to disclose sustainability information, which increases transparency, in particular when combined with ESAP (see below).	Subject to the reporting standards currently being developed by EFRAG. One set of standards will focus on biodiversity and ecosystems. A draft standard (EFRAG, 2021a) has already been proposed, covering strategy and business models; governance and organisation; impacts, risks and opportunities; policies; performance measurements; and disclosure against the EU Taxonomy.
European Single Access Point (ESAP)	The ESAP will be a centralised platform that improves public access to non-financial and financial data (also CSRD disclosure).	
Corporate Sustainability Due Diligence Directive (CSDDD, 'Supply Chain Law')	FIs may raise requirements in due diligence procedures for clients to minimise risks arising from the provision of financial and non-financial procedures.	Increases litigation and reputational risks for firms benefiting from the destruction of natural assets such as rain forests. However, it remains to be seen if environmental concerns are appropriately addressed.
EU Deforestation-free products regulation	Indirect relevance. Entails restrictions on investments and lending for some sectors. The proposal aims to ban products linked to deforestation from EU markets (cattle, cocoa, coffee, oil palm, soya, and wood) and will therefore restrict certain sectors.	The focus on deforestation is clearly linked to biodiversity.
Sustainable Finance Disclosure Regulation (SFDR)	The SFDR imposes disclosure obligations on FIs at entity and product levels.	Enhanced disclosure obligations for thematic financial products (including those adversely impacting nature and biodiversity).
European Green Bond Standard (EU GBS)	FIs support placing green bonds on the market, thereby helping firms to find investors for their project proposals.	Firms can issue green bonds for the use of proceeds to support projects that protect and restore biodiversity.
MiFID II / IDD	FIs should consider clients' sustainability-related objectives and provide granular information on sustainability aspects in order to allow client-product compatibility.	FIs should be in the position to address clients' interest in the biodiversity-related performance and impacts of investments. Sustainability information should therefore be enhanced to include details on biodiversity.

The EU Taxonomy

What is the EU Taxonomy? The EU Taxonomy for sustainable activities is at the heart of the EU's sustainable finance agenda. It is a catalogue of economic activities that make (i) a substantial contribution on six environmental objectives,⁶ (ii) Do Not Significantly Harm (DNSH) the other five objectives, and (iii) meet minimum and explicitly listed social safeguards. It also provides technical screening criteria for transition activities, such as GHG intensity thresholds for manufacturing e.g. cement, iron, and steel. Since the EU Taxonomy is linked to disclosure regulations that oblige entities to disclose sustainability information, it is expected and intended to massively increase transparency for investors (Financial Stability, Financial Services and Capital Markets Union, 2021).

How is the EU Taxonomy linked to disclosure obligations? The EU Taxonomy is linked to the EU's two core pieces of sustainability disclosure – the Corporate Sustainability Reporting Directive⁷ (CSRD) and the Sustainable Finance Disclosure Regulation (SFDR) – and provides the definition of sustainability. Article 8 of the EU Taxonomy regulation requires entities covered by the Non-Financial Reporting Directive to disclose to what extent their activities qualify as environmentally sustainable according to EU Taxonomy criteria (Commission Delegated Regulation (EU), 2021). Under this article, entities shall disclose the percentage of their turnover, as well as their proportion of capital expenditure and operating expenditure aligned with EU Taxonomy criteria. The CSRD (as proposed) significantly enhances the

universe of firms that need to report (from ~11k companies to ~50k companies (European Commission, 2021h)) and the SFDR imposes specific disclosure obligations on FIs. Both files are described in more detail below.

The proposed EU Taxonomy criteria on “the protection of biodiversity and ecosystems”. The EU Taxonomy shall only cover economic activities judged to be able to “make a substantial contribution”⁸ in fulfilling environmental objective 6, while being “based on available scientific evidence” (EU Taxonomy regulation, paragraph 40). The official draft of the criteria proposed by the EU Platform on Sustainable Finance (PSF) in March 2022 addresses eight economic activities including animal production, crop production, fishery, and food and beverage product manufacture (Platform on Sustainable Finance, 2022b) (see text box below for a complete overview). Furthermore, the March report indicated ongoing work on relevant economic activities such as forestry, bioenergy (and their technical screening criteria with regard to biodiversity and ecosystems), as well as enabling activities. For other economic activities, development has been postponed, as the evidence is lacking, or the approach to delivering a substantial contribution is not yet clear (for example land-based mining (Platform on Sustainable Finance, 2022a)).

⁶ 1) Climate change mitigation, 2) Climate change adaptation, 3) Water, 4) Circular economy, 5) Pollution prevention and control, 6) Protection of biodiversity and ecosystems. For 1 and 2, the first batch of criteria is already published in the form of a delegated act (Commission Delegated Regulation (EU), 2021). For the “non-climate” environmental objectives 3-6, draft criteria are already published and were part of a public consultation (Financial Stability, Financial Services and Capital Markets Union, 2021).

⁷ Large public interest entities, defined as those with more than 500 employees, a balance sheet total of EUR 20 million, and/or net turnover of EUR 40 million.

⁸ The term “substantial contribution” links to the EU Taxonomy’s “headline ambition level” per environmental objective. For climate change mitigation this is relatively straightforward (‘carbon neutrality by 2050’). However, this is not the case for biodiversity due to its many layers and different ecosystems. The headline ambition level for biodiversity was linked to the GBF/CBD and the challenge was to break this into sectoral sub targets.



However, there is no guarantee that the criteria proposed by the PSF will also be adopted into law by the European Commission. The debate surrounding the Delegated Act (European Commission, 2020a) as well as the Complementary Delegated Act (European Commission, 2022a) on gas and nuclear covering environmental objective 1 (climate change mitigation) demonstrated that political priorities interfere with the initial objective of implementing science-based criteria. Involved civil society organisations have highlighted severe flaws in the criteria related to economic activities concerning bioenergy and forestry. Forestry activities, for example, describe “business as usual” practices instead of identifying innovative solutions and thus allow industrial logging to be labelled as “sustainable” (Multiple, 2021; WWF, 2021b). Furthermore, the criteria for electricity generation from bioenergy are seriously flawed and even include forest biomass, which may be burned as feedstock. This contradicts even the Commission’s own assessment on bioenergy (European Commission, 2016). As for the proposed bio

diversity criteria from March 2022, the criteria for agriculture, forestry, and fishing in particular should be closely watched. Establishing thresholds, precise definitions, and scopes has been challenging due to the inherent complexity of biodiversity issues across sectors, locations, and ecosystems. Furthermore, the agricultural sector is dominated by SMEs which do not fall into the reporting scope and will thus require special incentives in the short term to access finance. Table 3 provides more details.

Table 3 – Zooming into the EU Taxonomy’s Environmental Objective 6: the protection and restoration of biodiversity and ecosystems – What criteria might be adopted? (based on the report from March 2022)

Sector	Activity & Description of Screening Criteria (Summary) Description Screening Criteria (Summary)
NACE A ⁹	Crop production: Three options have been identified in which the activity of crop production can make a substantial contribution (plus a list of additional requirements ranging from “minimising habitat loss” to “no direct harm to wildlife,” etc). Option A: Large areas of the farm holding have high-biodiversity landscape features or are otherwise biodiversity rich; Option B: Abstains from the use of synthetic plant protection products and copper that harm biodiversity and ecosystems; Option C: Ensuring a sustainable farm-gate nitrogen balance (Option C will be part of a supplement to the March report).
NACE A	Animal production: Three options have been identified in which the activity of animal production can make a substantial contribution (plus a list of additional requirements linked to “minimising habitat loss,” grazing methods or “no direct harm to wildlife,” etc.). Option A: improving biodiversity via extensive grazing in landscapes where grazing is beneficial for biodiversity; Option B: Farming of rare breeds; Option C: Ensuring a sustainable farm-gate nitrogen balance (Option C will be part of a supplement to the March report).
NACE A	Forestry logging: Work still ongoing (planned to be published as a supplement to the March report).
NACE A	Fishing: Various criteria linked to catch limits following an ecosystem-based approach, avoiding by-catch and reducing mortality rates, establishing no take zones, minimising litter, and transparent reporting, among others. All criteria must be met.
NACE C	Manufacture of food products & beverages: Substantial contributions can be achieved with three options. Option A: Selection of ingredients for which primary production practices improve biodiversity (95 % of source ingredients must comply with criteria in 1.1 and 1.2); Option B: Selection of protein-rich ingredients that reduce pressure on biodiversity (e.g. ingredients with a combined direct and indirect land use of less than 10m ² per 100g of product protein, calculation method provided); Option C: Selection of ingredients that contribute to conservation and genetic diversity.
NACE D	Environmental refurbishment of electricity generation facilities (hydropower): Only certain refurbishments are eligible, for example, to ensure fish migration or to restore rivers’ natural habitat functions, etc. An EIA must have been conducted. Further criteria linked to an impact assessment must be met, for example, improved status of waterbody.
NACE D	Electricity generation from bioenergy: Work still ongoing (planned to be published as a supplement to the March report).
Other	Restoration and remediation activities are also included: <ul style="list-style-type: none"> • Conservation of habitats and ecosystems; • Restoration of ecosystems; • Remediation activities.

⁹ NACE, Nomenclature of Economic Activities (or in French; classification des activités économiques), designates the integrated classification system for products and economic activities in Europe.



Corporate Sustainability Reporting Directive (CSRD)

The first proposal of the CSRD contains some positive elements. First, it turns voluntary (as per NFRD) into mandatory reporting, which is a game changer since voluntary reporting can lead to “cheap talk and cherry picking.” (Bingler et al., 2021). Furthermore, it suggests extending the reporting scope to all companies defined as “large” by the European Accounting Directive (up to 50,000 companies) plus all listed companies; it provides a clear definition of the double materiality perspective; and enhances reliability via assurance requirements. The European Financial Reporting Advisory Group (EFRAG) is currently developing the corresponding European Sustainability Reporting Standard (ESRS), which defines the details of the reporting directive (“what do companies have to report on?”). Although FIs also have to report against the disclosures required by ESRS, the CSRD’s transformative power stems from the vast number of targeted non-financial entities. While all environmental standards under development have some relevance for biodiversity, the ESRS on Water and Marine, Pollu-

tion, and Biodiversity and Ecosystems are particularly relevant. At the time of writing, the CSRD has not yet been passed into law. On 21 June 2022, the Council and the European Parliament reached a provisional political agreement (Council of the EU, 2022). On 8 August 2022, the public consultation on the draft reporting standards closes (EFRAG, 2022).

European Single Access Point (ESAP)

The disclosed sustainability data will be uploaded into the ESAP – a centralised platform that improves public access to non-financial and financial data – to ensure that it is accessible and comparable. FIs will be able to utilise this information to integrate sustainability-related information into their decision-making.¹⁰ It will simplify the selection of green stocks (environmental materiality) and the assessment of ESG risks (financial materiality) – subject to the indicators of the ESRS, currently developed by EFRAG.

¹⁰ Examples can include tying loans to sustainability performance, reducing the impact on water of an entire investment portfolio, or not providing finance to firms with a biodiversity-footprint that is larger than that of a group of comparable peer companies (“sustainability-linked loans”).

It is expected that the EU Member States will adopt the Directive into law by the end of this year, which means that companies would have to apply the standards for the first time in reports issued in 2024 (covering the fiscal year 2023) (European Commission, 2021e).

Despite many positive elements, the proposed CSRD also falls short in a few areas:

- **Scope:** even though the scope has been massively extended compared to the NFRD, it is not broad enough for the most material biodiversity sectors. In the agriculture and construction sector – both with a major impact on biodiversity – only ~30 % and ~13 % respectively are covered by the CSRD (Bossut et al., 2021).
- **Human rights and supply chain:** The CSRD proposal also fails to give a clear direction on issues around supply chain and human rights disclosure. However, both aspects will be addressed by the EU's Corporate Sustainability Due Diligence Directive (see below).

Corporate Sustainability Due Diligence Directive (CSDDD, "Supply Chain Law"). In February 2022, the Commission published its much-anticipated proposal on the EU's Corporate Sustainability Due Diligence Directive (European Commission, 2020b). This is the EU's "supply chain law," which had continuously been postponed (initially scheduled for 30 June 2021, then 27 October 2021, then 8 December 2021) (Mayer Brown, 2021). The supply chain law goes beyond disclosure and defines obligations for companies regarding adverse impacts on environment and human rights, stemming from their own operations, their subsidiaries, and operations across the value chain. The scope includes EU companies with more than 500 employees and a global net turnover of less than €150 million, smaller companies (less than 250 employees and EUR 40 million turnover) if they operate in a high-impact sector (i.e. textiles, agri-food, and extractives), and non-EU companies active in the EU with a turnover generated in the EU aligned with the first two groups of companies. SMEs, while not

directly included, could be impacted as contractors or subcontractors to companies within the scope. The proposal also contains measures to support all companies that might be indirectly impacted, such as the development of information platforms and potential financial support. For nature conservation, the consideration of environmental aspects is of enormous importance since for some EU sectors most of the environmental impacts stem from the supply chain.

The first proposal is an ambitious attempt to hold big companies accountable for their supply chains. Companies would need to (1) integrate due diligence into their policies (Art. 5); (2) identify actual or potential adverse human rights and environmental impacts (Art. 6); (3) prevent or mitigate potential impact (Art. 7); (4) end or minimise actual impact (Art. 8); (5) establish and maintain complaints procedure (Art. 9); (6) monitor the effectiveness of their due diligence policy and measures (Art. 10); and (7) publicly communicate on their due diligence (Art. 11). However, the CSDDD has still to be approved by the European Parliament and the Council, and must then be transposed into national law. The timeline for further developments of this proposal is still relatively unclear. The proposal is currently awaiting the vote from the responsible JURI Committee of the European Parliament. The Trilogue process (EU Commission, EU Council, EU Parliament) will start once the Committee on Legal Affairs amendments are voted in Plenary at the European Parliament (early 2023). Once adopted, Member States have two years to transpose the Directive into national law. Therefore, the new regulations could come into force in 2025/26.

EU Deforestation-free products regulation (DfPR). On top of the EU's proposed 'supply chain law' (CSDDD), the deforestation-free products regulation attempts to reduce the import and export of commodities and products associated with deforestation (cattle, cocoa, coffee, oil palm, soya, and wood), thereby minimising the impact of EU consumption on the world's forests. It shall ensure that only deforestation-free products are sold in the EU market and operators shall be required to collect the geographic coordinates of where the products were produced (Council of the EU, 2022).



The proposal has received a lot of attention and the public consultation gathered 1.2 million responses (European Commission, 2021g) – the second most commented in EU history (WWF, 2021d). The regulatory file is still subject to changes that can occur during the negotiations. On 28 June 2022, the Council adopted its negotiation position on the proposal, which expanded a loophole that allows companies to source from “low risk countries,” and reduced controls for products from standard and high-risk countries (Council of the EU, 2022). On 12 July 2022, the responsible Committee on the Environment, Public Health and Food Safety adopted the Parliament’s position (which, for example, suggests a broader scope of products including pig meat, sheep and goats, poultry, maize and rubber, as well as charcoal and printed paper products; furthermore, FIs are also subject to additional requirements) (European Parliament, 2022).

The plenary is expected to adopt the Parliament's position in September, after which the Trilogue negotiations can begin. To ensure environmental ambition, the following potential loopholes should be monitored:

- **Other ecosystems are not yet protected:** since other natural ecosystems (grasslands, savannahs, peatlands, wetlands) are being lost at an alarming rate due to land conversion for the above-mentioned commodities,¹¹ they should be included from the start (a review is currently foreseen after two years). As it is written, the law may shift conversion and degradation pressure from forests to other ecosystems with high carbon stocks and high biodiversity value if they are not protected and tracked.

¹¹ Example study in Thailand: Land-Use Changes and the Effects of Oil Palm Expansion on a Peatland in Southern Thailand (Srisunthon & Chawchai, 2020)



- **“Low-risk countries” are currently excluded,** which produces a major gap since high-risk products from low-risk countries will still be allowed to enter the European market; the differentiation of low-risk and high-risk countries will allow Member States’ authorities to vary their due diligence duty (with simplified due diligence duties for low-risk countries). The playing field should be levelled to prevent any loopholes.

Not all high-risk products are covered: The definition of ‘relevant commodities’ is not scientifically robust and excludes other commodities that are also linked to deforestation, such as pig and poultry products, rubber, and maize. The inclusion of commodities and processed products (e.g. paper but also books) should follow scientific principles.

Sustainable Finance Disclosure Regulation (SFDR).

The SFDR directly targets FIs and mandates disclosure at the entity and product level. Level 1 disclosures have already been in place since March 2021 and, most notably, require FIs to classify their EU-domiciled funds as ‘dark green’ (Article 9), i.e. products with sustainability as their objective; ‘light green’ (Article 8), i.e. products promoting environmental or sustainable characteristics; or products not marketed as ‘green’ (Article 6). The second part of the SFDR, the more detailed Level 2 disclosures, will introduce regulatory technical standards (RTS). The final draft RTS was published by the European Supervisory Authorities (ESAs)¹² in October 2021 (ESAs, 2021) and adopted by the Commission on 6 April 2022 (European Commission, 2022c). Subject to scrutiny by the Council and EU Parliament, the RTS will be adopted from January 2023.

¹² European Banking Authority (EBA), European Securities and Markets Authority (ESMA), European Insurance and Occupational Pensions Authority (EIOPA)

In a nutshell, the RTS consists of the RTS text and five separate appendices, which contain standardized disclosure templates. The main RTS text addresses general disclosure rules (Chapter I), principal adverse impact reporting at the level of FIs (Chapter II), as well as pre-contractual, website, and periodic disclosures for Art. 8 and Art. 9 products (Chapter III, IV, V). Thus, broadly speaking, the Level 2 disclosures can be split into two parts: a) the disclosure linked to negative sustainability impacts of investee companies; and b) the disclosure obligations with respect to Article 8 and Article 9 products (Herbert Smith Freehills, 2022).

Disclosure linked to biodiversity: FIs within the scope shall publish a “statement on principal adverse impacts of investment decisions on sustainability factors” (Article 4) in the format of the template set out in Table 1 of Annex 1, which defines a list of climate and other environment-related disclosures. For biodiversity, the adverse sustainability indicator is: “Activities negatively affecting biodiversity-sensitive areas.”¹³

Other green investment standards

European Green Bond Standard (EU GBS). As part of the Commission’s 2018 sustainable finance action plan and the EU’s Green Deal, the EU GBS is a voluntary standard that increases the environmental ambitions of the (green) bond market. The framework proposes that the Standard should be EU Taxonomy-aligned, transparent (through reporting requirements), and checked by external reviewers supervised by ESMA, the European Securities Markets Authority (European Commission, 2019a). In general, EU green bonds are a well-suited instrument to support the green transition to fund long-term (and Taxonomy-aligned) projects (European

Commission, 2021f). Since the process is still ongoing, it is unclear how ambitious the standard will be. It will be crucial that the proposed ‘core elements’ are not watered down in Parliament, and that the EU GBS clearly excels current green bond market practice (e.g. by excluding gas and nuclear).

There is growing appetite by investors to finance green projects. The bond market can play a major role in mobilising enough finance for biodiversity protection and biodiversity restoration (WWF, 2021a). However, the proceeds of green bonds currently go primarily towards climate mitigation projects. Once again, one of the biggest challenges here is the lack of a common currency for measuring the value of biodiversity and ecosystem services, which makes structuring any financial product in this regard difficult.

What about retail investments?

Another strand of regulatory files targets the retail investor segment. The Commission’s sustainable finance package from April 2021 also contains Delegated Acts to incorporate sustainability preferences in investment and insurance advice, as well as sustainability considerations in fiduciary duties and product governance (European Commission, 2021i). This requires financial advisors to ask their clients about their sustainability preferences and recommend appropriate products (European Commission, 2021a) which could (but does not have to) trigger a discussion about biodiversity-related activities.¹⁴ Examples include the **MiFID II (Markets in Financial Instruments Directive II)** or the **IDD (Insurance Distribution Directive)**.

¹³ “Share of investments in investee companies with sites/operations located in or near biodiversity-sensitive areas where activities of those investee companies negatively affect those areas.”

¹⁴ The European Securities and Markets Authority (ESMA) is working on the non-financial suitability assessment guidelines to help investment advisors implement the MiFID II, i.e. to integrate sustainability preferences in client meetings. The guidelines should be ready by August 2022, when the directive must be applied. Source: ESMA. 2022 Annual Work Programme (ESMA, 2021).

2 - Going beyond regulation

The previous chapter indicated the evolution of the regulatory environment related to biodiversity within the EU. This forthcoming regulation will inevitably result in the need for FIs to establish structures, policies, and processes, as well as building up capacity internally, and will lead to increased efforts for data providers. By following a ‘compliance-only’ approach, the resulting structures and capabilities will be insufficient from the perspective of what is required from an effective and robust science-based approach. The regulatory evolution can take a long time to be enforced, reflect political compromises, and yield results, all of which hinder the achievement of biodiversity goals and threaten the continuity of economic activities. Thus, complying with regulations might not lead FIs towards successful, sustainable, resilient, and even nature-positive business models at the scope and speed required. It will also not be sufficient for establishing robust risk management structures and capacities, as the current regulation does not address financial sector risk management rules.

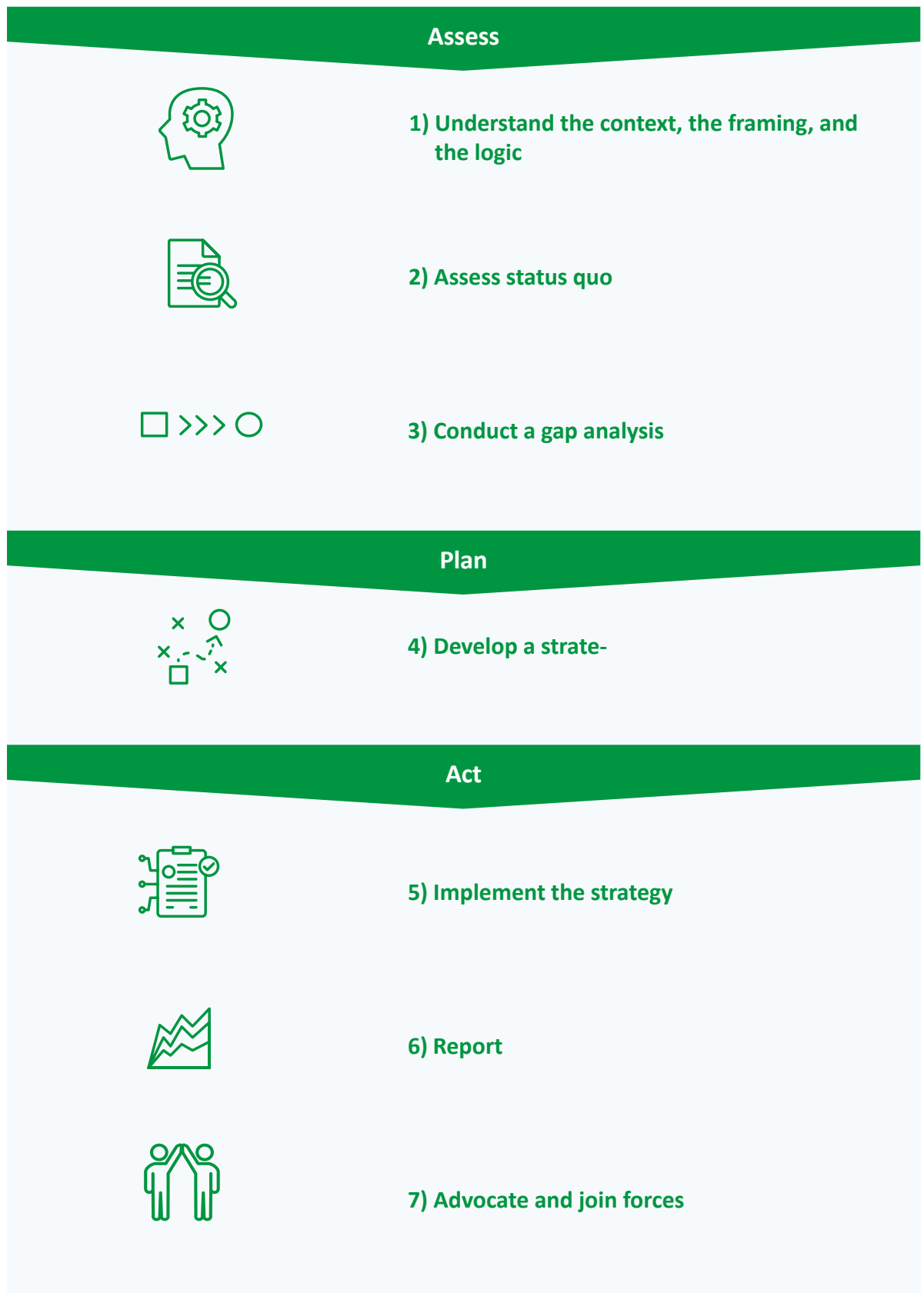
Consequently, this chapter will introduce recommendations to support FIs in going beyond regulation. These recommendations address the ambition

to comprehensively embed the double materiality of biodiversity loss within FIs and, in doing so, reducing harm as well as actively pursuing science-based targets. **The advice provided is backed by recent reports, guides, and frameworks. Nevertheless, these sources serve as examples that FIs can explore in more detail. There is no specific judgement or position regarding the content and its implications.**

The recommendations are clustered in three stages: **assess, plan, and act**, encompassing several suggested actions, which may, but do not have to, be completed in sequence.

The recommendations revolve around a systemic change in feedback loops, meaning that the proposed building blocks are interdependent and reinforce each other. Therefore, **each FI can approach the content and adapt it according to its starting point and particular needs and ambitions.** However, a comprehensive approach, involving all stages as a structured and continuous management processes, is recommended (WBCSD, 2021).





2.1 Assess



1) Understand the context, the framing, and the logic

FIs should get to grips with biodiversity and what it means for their operations. Reading the flagship reports listed at the end of this paper and participating in the current global, regional, and national discussions will help FIs familiarise themselves with the topic. It is also advisable to stay up-to-date with the information produced by authoritative institutions addressing biodiversity issues such as the IPBES, the CBD, World Business Council for Sustainable Development (WBCSD), and the International Union for the Conservation of Nature (IUCN).



2) Assess the status quo

This entails the assessment of the relevant **regulatory framework as well as the requirements and recommendations of supervisory authorities** (ECB, Deutsche Bundesbank, the Network of Central Banks and Supervisors for Greening the Financial System (NGFS), and other central banks). This includes building an understanding of the double materiality concept, and consistently applying it when assessing the actual impacts of their own financial portfolios, including an **analysis of impacts and dependencies** (UN Environment Programme et al., 2020).

Assessments are essential to draft a baseline for action. Some of the key actions recommended are as follows:

- **Select and apply suitable assessment tools:** To this end, several tools and metrics are available, or are under improvement or development. They vary in the level of analysis (e.g. portfolio vs. product base), the sectors covered, the granularity, the consideration of dependencies and impacts (including across upstream and downstream sectors), user-friendliness, and free access or license-based, among others.
- **Analyse exposure to priority sub-industries** from an inside-out and outside-in perspective using one of the tools available: ENCORE, for example, allows a simple sectoral risk screening for impact and dependencies (Natural Capital Finance Alliance & UNEP-WCMC, 2022). This allows users to identify priority sectors and to what extent they contribute to the FI's portfolio. According to their financial and environmental relevance, it is suggested to focus on the most important sectors first.
- **Consider value chain impacts and dependencies:** most of the existing tools and frameworks focus on first-order impact and dependencies. However, some sectors have a significant environmental impact throughout their supply chain. As is known from climate, analyses should cover different scopes. One plausible approach encompasses four stages: from scope 1 (direct impacts), through scope 2 (impacts of acquired or consumed production inputs), scope 3 (impacts from sources not owned by the company up- and downstream), and even scope 0 (not used for climate), which refers to the spatial footprint (land use, fragmentation, encroachment) of existing facilities (ACTIAM et al., 2018). Although methodologies are still in their infancy, preliminary approaches exist.¹⁵

¹⁵ Such as TRASE (trase.earth) that focuses on deforestation in supply chains. For supply chain impacts and dependencies, researchers have mostly relied on input output models such as 'Quantifying biodiversity footprints of Dutch economic sectors: A global supply-chain analysis' (DNB & PBL, 2020) for impacts or Banque de France's approach for upstream dependencies (Svartzman et al., 2021).

Impacts and dependencies measurement tools

Several publications introduce and compare existing tools for biodiversity measurement. One of the most complete is the Assessment of biodiversity measurement approaches for businesses and financial institutions (Lammerant, 2021) by the EU Business@Biodiversity Platform (B@B). There is also a Navigation Tool¹⁶ that can assist in the selection of the right approach.

The Guide on biodiversity measurement approaches (Finance for Biodiversity Pledge & European Commission, 2021) also offers a good overview and is regularly updated.

In general, the available tools specialize in impacts (footprint) and the related metrics leverage sector average data on environmental pressures. They are relatively new and under permanent improvement. Thus, it is recommended to acknowledge the specific limitations of the tools and methodologies applied, and include complementary qualitative analysis that accounts for location and ecosystem-based information (ACTIAM et al., 2018).

- **Identify red flags (high-risk areas) and windows of opportunity:** given the location-specific dimension of biodiversity and ecosystem services, FIs should take georeferenced company data into account to screen areas in which corporates operate. Once this is overlaid with geospatial environmental data, high-risk areas can be identified. The analysis should initially focus on key sectors, regions, product lines, lending portfolios, investments, and risk limit systems vis-à-vis key companies financed.



3) Conduct a gap analysis

Having analysed the regulatory framework, thematic context, and the impacts and dependencies of the financial portfolios, FIs can proceed to evaluate what is required for compliance, and the corresponding gap between committing and acting in line with a science-based approach and the corresponding EU and UN 2030 and 2050 targets (as set in the upcoming GBF (CBD, 2022)).

FIs should develop a sound and solid basis for prioritisation based on the materiality assessments and apply these to prioritise corresponding actions. This should also allow for decisions on where to extend beyond compliance (e.g. by focusing on high impact sectors).

¹⁶ Navigation Tool of the Capitals Coalition: <https://capitalscoalition.org/tools/navigation-tool/>

2.2 Plan

Mainstreaming biodiversity should start as a strategic decision to manage biodiversity double materiality and seize new business opportunities. Based on the assessments made in the previous stage, FIs can decide how to incorporate biodiversity into the decision-making processes. In line with the precautionary principle, FIs should commit to avoid harmful activities and further positive ones. The strategy should also contain critical targets and a corresponding governance structure with adequate processes established so that FIs' staff and board members can adhere to the strategic path set and be held accountable. Hence, goals and actions should be as precise as possible to facilitate monitoring and periodic revision of the strategy, which will in turn inform the need for adjustments.

The planning process may include: the elaboration of an exclusion list of activities and sectors to stop bankrolling high negative impacts on biodiversity; the design of a robust due diligence process to manage risks and impacts; and specific targets such as net-positive or zero deforestation (UNEP FI & UNEP-WCMC, 2021).



4) Develop a strategy

When developing a strategy to address biodiversity issues, FIs should:

- **Ensure top management commitment and support** to mainstream biodiversity components and ensure that resources are made available and the entire institution is informed. The commitment of top management is a prerequisite for the successful implementation of the strategy and its communication within and outside the FI (VfU, 2011).
- **Allocate responsibilities and resources** to create ownership and make actions viable at the corresponding departments and positions. Risk managers and sustainability officers should be able to identify their new tasks, the targets they should contribute to, and access resources to develop their capacities and roll out the new strategy: trainings, measurement tools, communication materials, etc. This means that the strategy should clearly define processes and integrate them into the existing governance and organisational structure.
- If deemed necessary, FIs can create new roles or cooperate with other institutions to ensure that capacities are in place to implement the strategy. This is particularly relevant when specialised knowledge on biodiversity is unavailable in the institution or when management prefers to outsource it. The latter can be a feasible option for small FIs.
- **Identify and procure relevant data** by devising tools and clear indicators, and working together with clients to drive the disclosure required in line with the FI strategy and existing or forthcoming regulations presented in the previous section. Pursuing standardisation will enhance the usability and comparability of data. Context and location-specific data does not only come directly from clients, but also third parties providing information.
- **Develop a policy or strategy to manage biodiversity-related risks and have positive impacts on biodiversity.** To achieve impact, biodiversity should be integrated into financial governance and investment processes (including mandates, instruments). A number of options are available to FIs, including integrating biodiversity and 'nature-positive' outcomes (see the glossary) into existing sustainable finance or sustainability strategies (EY & Microsoft, 2021), expanding the climate change strategy (reflecting on potential synergies), or developing a new policy exclusively on biodiversity. The decision should reflect the level of ambition and operational implications. The option of integrating biodiversity into climate or broader sustainability strategies can facilitate its implementation, as it reduces operational complexity and avoids creating parallel structures.

Data quality and availability

Recent analysis and consultations with FIs have shown that although there is extensive data on biodiversity (e.g. UN Biodiversity Lab and ARIES¹⁷) this is not ready for use by FIs. Generally, biodiversity data cannot be combined with asset location and ownership data, hindering its utilisation for risk and valuation exercises (GDFA, 2022). Efforts should promote access to satellite-generated earth observation data linked to specific activities in global value chains. Fintech solutions have the potential to facilitate this process (FC4S, 2022).

Work is also needed to generate conditions enabling high-quality data. For instance, governments should engage with and coordinate the development of standards and tools. Government support, regulatory coherence, and incentives are crucial factors in addressing data challenges (UN Environment Programme, 2022).

Two exemplary work streams focusing on this challenge are:

- 1) Regulations on disclosure and reporting, such as ESRS, will improve the data availability from debtors and investee companies. At the same time, access points are being designed to function as part of the equation.
- 2) **The Open-source Biodiversity Data Platform Initiative** currently seeks to set up a platform and a taxonomy to gather and share asset geolocation to allow ESG data providers and FIs to use biodiversity-related data in their decision-making. It has been designed as a decentralised, open-source, pre-competitive, and digital infrastructure model to layer biodiversity data with asset geolocation and ownership data. It is currently under development and aims at integrating the TNFD framework (to be introduced in step 3) (GDFA, 2022). This framework is also convening multiple stakeholders under a Nature-related Data Catalyst to accelerate the development of, and access to, nature-related data, analytics, and tools (TNFD, 2022a).

- **Integrate biodiversity indicators into existing risk management and sustainability (ESG) procedures.** Since this work will revolve around sustainability issues, overlapping with climate change, ESG policies should be assessed to find synergies, for instance, by enhancing the ESG framework through the formulation of biodiversity KPIs (Sustainable Finance Platform, 2021). If FIs want to familiarise themselves with and facilitate EU regulation alignment, terms such as ‘significant contribution’ and ‘no harm’ can be

utilised when drafting new policies and targets. If the ambition is to become nature-positive, FIs should focus on substantially contributing to biodiversity recovery. Considering the fact that many FIs already mainstream climate change in their operations, it is crucial to evaluate how climate-related procedures can be used and complemented by integrating the biodiversity perspective.

¹⁷ unbiodiversitylab.org and aries.integratedmodelling.org

- **Set targets as part of the strategy to trigger transformation based on assessments, ambitions, and global goals** (CBD et al., 2021). Based on the impacts and dependencies assessments, and collaboration with the risk management and/or sustainability department, it is advisable to set targets for sectors with high materiality levels (e.g. those related to land use). Over time, the strategy and its targets can expand to cover other sectors by reflecting on the lessons learned during the pilot phase of implementation.
- **Set ambitious, science-based, and SMART targets:** Targets should be ambitious, science-based, and SMART (Specific, Measurable, Achievable, Relevant, and Time-Bound) (SBTN, 2020). FIs could compare global and sectoral targets with their portfolio to screen its alignment.



A framework for the climate-nature nexus

Towards an Integrated Transition Framework (Finance for Biodiversity Initiative, 2022) is a recent guide on risks and opportunities management that acknowledges the interactions between climate change and biodiversity loss, producing feedback loops and compound risks (i.e. exacerbated and overlapping risks). The integrated framework guides FIs to aggregate measures for climate and nature-related matters in order to accurately value risks and opportunities. The proposed steps include **identifying value drivers and risks, assessing risks, integrating climate-nature interactions, filtering risks for materiality, and aggregating risks into a joint climate-nature account.**

Even though FIs can decide to approach climate change and biodiversity depletion separately, it is worth evaluating possible synergies to leverage the progress on climate to make a start on biodiversity.



Targets should also be accompanied by appropriate metrics and tools already available or developed by the FIs, if this approach is easier to integrate in management processes (EY & Microsoft, 2021). Targets can be formulated to depict a progressive approach: defining milestones to have no net loss (compensate unavoidable damage) (IFC, 2012), producing net gains (additional conservation outputs), and building up a nature-positive portfolio in the short-, medium- or long-term. Targets can also be broken down by sector, region, and ecosystem to better reflect the particularities of the given context.



Setting biodiversity targets

In June 2021, the Principles for Responsible Banking (PRB) published a guidance document for banks named Biodiversity Target Setting (UNEP FI & UNEP-WCMC, 2021). Together with its technical annex, it offers a potential categorisation to align with science-based approaches, case studies, FAQs, and a sample of positive Key Performance Indicators (KPIs), including headline targets, exclusion criteria, nature-positive KPIs, and suggested tools.

This guidance has been conceived as a systematic approach to reaching biodiversity targets in line with the CDB and science-based approaches. Thus, the PRB aims to update the documents according to new developments from CBD, and complementary initiatives such as TNFD and others which will be introduced later (UNEP FI, 2021a). In its more recent version, the TNFD has also included some preliminary considerations for target-setting. The approach to targets will be up

dated in future TNFD framework releases, based on progress with the Science Based Target Network (SBTN), or other science-based target-setting methods, lessons learned from pilot testing, and the global targets agreed in the CBD post-2020 GBF (TNFD, 2022b).

FIs such as Aviva (2021), AXA (2022), Hermes Investment (2021), Rabobank (2020), and BNP Paribas (2022) have made official commitments towards biodiversity in the form of specific strategies, policies, or roadmaps. For instance, BNP Paribas Asset Manager has committed to comply with No Deforestation, No Peat and No Exploitation (NDPE) commitments by 2020 for agricultural commodities (palm oil, soy, paper, timber, beef products), and NDPE commitments by 2030 from non-agricultural sectors (mining, metals, infrastructure).” (BNP Paribas - Asset management, 2021)

2.3 Act



5) Implement the strategy

Implementing the biodiversity strategy and targets, and reporting on achievement, implies changes at different organisational levels and timeframes. To ensure successful implementation and reporting phases, FIs should build capacities, undertake concrete actions at the portfolio level, utilise the frameworks selected to report, and disclose information. The actions recommended include:

Train employees

Raising awareness on the double-materiality perspective of biodiversity is the first step towards gaining buy-in from employees and other relevant stakeholders.

The entire workforce will need training on biodiversity through the likes of low-cost webinars, targeting smaller groups of employees with offline, and on-the-job training. In particular, **risk managers will need biodiversity-specific training** to understand concepts and apply the relevant tools and indicators. Different modalities exist for training activities: some include tailored-made programmes designed by external consultants, while others are offered as paid biodiversity finance courses. There are also free-of-charge options, such as EU initiatives (community of interest or practice of the Align (B@B, 2020) and Transparent projects (Capitals Coalition, 2020)), UNEP FI, UN WCMC, and the capacity building workshops run by the International Network of Financial Centre for Sustainability (FC4S) (FC4S, 2022).

The ability of FIs to develop critical capabilities dealing with biodiversity and institutionalise the availability of science-based information is enhanced by entering into **partnerships and knowledge exchanges with academia, research centres, and NGOs**.

Restructure portfolios

By defining priority sectors and fields of action, the biodiversity strategy (or equivalent document) should set the pathway to mainstream biodiversity into the financial services offered within a determined timeframe. Recommended key actions include:

- **Reduce the portfolio share on harmful activities (divest).** This action is fundamental to managing double-materiality (Global Canopy, 2021). **Start off with a wholesale cessation of financing harmful activities** (apply exclusion lists for negative screening, e.g. arctic drilling, land use change of natural ecosystems, deep-sea mining (portfolio.earth, 2020)), and **increase funding for activities that yield biodiversity net-gains** (Global Canopy, 2021).
- **Design and run due diligence frameworks** to accurately price risk, incentivise supply chain transparency, and ensure environmental crime-free financing. In particular, the increasing momentum and attention from public and private actors towards the role of FIs in ensuring the wellbeing of biodiversity and ecosystems have made the enforcement of current laws and the development of new ones more likely. Although establishing culpability and identifying responsibilities along complex supply chains can be challenging and differ according to jurisdiction, enhancing risk frameworks is crucial, especially reputational, credit, and liability-based risk. Specific actions include repurposing Anti-Money Laundering (AML) regulations to ensure companies comply with the imposed regulation, meaning that new information should be delivered. Working with regulators to improve applicable frameworks is also one of the recommended actions (F4B, 2022), as well as the parallel move into public advocacy described in the next step (7 - Advocate and join forces).

- Due diligence procedures should account for sector specificities. To this extent, examples already exist of due diligence principles that address financed deforestation (WWF-UK, 2021).
- **Engage with client companies to drive change along their supply chains.** FIs will need to identify the best ways to engage with shareholders and clients, e.g. dialogue, surveys, and engagement through a collective platform. Engagement needs to be linked to time-bound targets for companies to show progress. Thus, it is essential to establish and communicate the benefits of alignment, non-compliance procedures, and consequences. This type of engagement is a reciprocal learning process between the FI and the client or investee. One strategy to facilitate collaboration is to design financial incentives to nudge clients in the right direction, which could be mutually agreed (Sustainable Finance Platform, 2021).
- **Develop nature-positive products** that attract new innovative clients (credit lines for entrepreneurs or new business models) or conscious investors. This includes boosting pipeline development of impactful projects and establishing longer-term investment horizons. Ultimately, the product designed should respond to the characteristics of the activity, ecosystems, and region to manage risks and foster the achievement of beneficial outcomes properly.
- **Strategically identify opportunities to address climate and biodiversity risks and other environmental impacts together** through, for example, nature-based solutions (NBS) and combining circular economy objectives (such as resource efficiencies and recycling to increase the use of secondary materials instead of virgin materials) with biodiversity objectives. Synergies can maximise positive outcomes and avoid discrepancies (EY & Microsoft, 2021).



- **Apply a sound mitigation hierarchy** to prevent new impacts and minimise any unpreventable impacts (UNEP FI & UNEP-WCMC, 2021). More specifically, the mitigation hierarchy has four levels: (1) Avoid impacts in the first place via alignment with planetary boundaries (Steffen et al., 2015); (2) Reduce impacts; (3) Restore; (4) Compensate and offset. These precautionary principles should guide decisions and in the event that damages cannot be avoided, corporates should off-set them with sound and science-based projects and cannot be counted as EU Taxonomy aligned. Since the planet is approaching tipping points, all negative impacts should be strenuously avoided. Moreover, biodiversity offsetting is a subject of rigorous debate in scientific research (Hache, 2019).


Biodiversity Finance Opportunities

Although a favourable policy and regulatory environment are central elements in furthering the development of biodiversity-focused financial products and expanding the portfolio share of biodiversity finance, FIs can lead specific actions beyond advocating for improved enabling conditions.

Finance for the sustainable blue economy includes investment, insurance, banking, and supporting intermediary activities in, or in support of, the development of a sustainable blue economy (the sustainable use of ocean resources for economic growth, improved livelihoods and jobs, and marine ecosystem health) (Responsible Investor & Credit Suisse, 2020). These include activities that integrate the Sustainable Blue Economic Finance Principles, ESG frameworks, and sustainable reporting (UNEP FI, 2021b). Examples in this field are:

Oceans Engagement Fund: Credit Suisse, in partnership with Rockefeller Asset Management (RAM), has launched the first impact fund in line with the SDG14 namely “Life Below Water.” Investment decisions will be driven by companies showing the greatest improvements in their overall ESG footprint (Credit Suisse, 2020).

DWS Concept ESG Blue Economy intends to direct its investments to companies that contribute, for example, to mitigating ocean acidification, reducing marine pollution, conserving the use of marine resources, reducing impacts from shipping, and sustainable fisheries. In addition, the fund management selects several companies with which it practices dedicated engagement beyond regular corporate governance measures to make a stronger contribution to a sustainable maritime economy (DWS, 2021).

 UNEP FI has devised a set of guidelines for incorporating the sustainable blue economy into their portfolios. The guidelines include detailed steps and case studies (UNEP FI, 2022).



Nature based-solutions (NBS) are “actions to protect, sustainably manage, and restore natural and modified ecosystems that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits.” (IUCN, 2022). The investment manager Mirova has set up a strategy line on NBS on forest, land, and oceans. Investments follow Mirova’s Natural Capital-ESG policy and rely on a series of project-based KPIs to track the progress (Mirova, 2020).

The **HSBC Pollination Climate Asset Management** also includes topics such as regenerative and sustainable agriculture, sustainable forestry, oceans (including sustainable fisheries, coastal restoration and blue carbon), biodiversity and wildlife protection, and restoration and NBS (HSBC, 2020).

Another example worth mentioning is the **Prescient Living Planet Fund**, developed by WWF Fairtree Capital, Prescient Investment Management and Sanlam, and banks such as the Development Bank of Southern Africa and World Bank. It was named the Best Aggressive Allocation Fund winner in the 2021 Morningstar South African Fund Awards. The investment universe is diversified across industries, asset classes (including equities, bonds, and cash), and local and international markets. The topics include green businesses and conservation (WWF, 2021c).



6) Report

Tracking and reporting will inform the achievement of goals (CBD et al., 2021), regulatory alignment (current and forthcoming), and the need to adjust strategy, namely to explore new business opportunities and divest from high-impact activities. Some recommended key actions are as follows:

- **Gather information** by using existing tools and engaging with clients. As mentioned in the first step on assessment, the results of risk and impact measurement using tools should be enhanced by corporate-level information (PRI, 2020).
- **Periodically track performance on strategy and targets achievement**, including capacity building and the evaluation of approaches used (metrics, targets, tools) to ensure feedback loops that allow for corrective activities. Hence, this action refers to **internal reporting for measurement and controlling purposes**. Biodiversity needs to be a core element of strategic internal metrics, milestones, reporting,

and tracking to ensure continuous improvement and to keep pace with the latest developments.

- **Prepare and disclose annual financial reports with biodiversity content (external reporting)** and make information publicly available. If necessary and desired, an additional report should be prepared that contains qualitative and quantitative information, and an explanation of the methodologies used. A crucial part of external reporting is the description of the methodologies and processes used to measure and manage nature-related risks. Beyond reporting, **active communication** is crucial for improving engagement and reputation. First examples of such include AXA's 2022 Climate and Biodiversity Report (AXA, 2022), and BNP Paribas Asset Management's disclosure of its first biodiversity footprint assessment (BNP Paribas - Asset management, 2022). **Use available ESG data but strive for its enhancement**, namely to include more specific biodiversity values and thus facilitate the positive and negative screening of clients (Global Canopy, 2021).

- **Develop or adopt metrics, indicators, and reporting directives** according to the technical capacities (those available and to be developed) and the targets set, including sectors prioritised. It is advisable to refer to EFRAG's proposal for the Delegated Act (Level 2 regulation), which represents the ESRS-disclosure standard on biodiversity. FIs will find it worthwhile to review the proposed disclosure requirements and use them as a basis to gather information from clients, i.e. to pass on disclosure guidelines (EFRAG, 2021a). Besides, FIs should follow the TNFD developments.
- **Track upcoming voluntary standards** (Global Reporting Initiatives, GRI, and TNFD) that can enhance current practices.



Taskforce for Nature-Related Financial Disclosures (TNFD)

Launched in 2021 and targeted for completion in September 2023, the TNFD develops guidelines for financial and non-financial institutions to act on evolving nature-related risks and double materiality issues. The TNFD will deliver a framework to manage risks and opportunities and disclose information. It builds upon the structure and lessons learned from the Task Force on Climate-related Financial Disclosures (TCFD). It also integrates the findings and best practices from other frameworks, networks, and initiatives (GRI, SASB, ISSB, SBTN, NGFS). Thus, the objective is not to develop a new standard, but to incorporate outputs into existing standards. Similarly, the TNFD does not expect entities to prepare a TNFD report, but rather to integrate its guidelines into their corporate reporting.

Through a four-pillar approach (governance, strategy, risk management, metrics and targets), TNFD will guide the mainstreaming of nature-related issues into the DNA of institutions. The Framework will help streamline available information from corporates, public and private data providers, including geospatial data on dependencies and impacts. The availability of and instructions for the use of granular and location-based data should facilitate organisations' reporting, risk management, and profit generation activities. TNFD's approach for nature-related risk and opportunity management is called LEAP (locate, evaluate, assess, prepare) (TNFD, 2022b, S. 1). Furthermore, the LEAP approach has a ramification for FIs, i.e. LEAP-FI. The objective is to meet the needs of five types of FIs: banks, insurance companies, asset managers, asset owners, and development finance institutions. In addition to the four phases of the original LEAP approach, the LEAP-FI includes scoping questions to help FIs prioritise and focus their efforts. Assessment questions focus on the

type of business (FIs may initially choose to focus on one area of their business; ideally the assessment will include all areas over time), entry points (selection of sectors/geographies, asset classes, biomes/ecosystems) and type of analysis (on the project/site, company, or portfolio level).

The beta version released in June 2022 (version 0.2) adds details on metrics for the assessment of impacts and dependencies (evaluate phase of LEAP), and distinguishes between these assessment metrics and disclosure metrics, which are under development. Further guidance currently under development includes sector specific, nature-related issue specific, and realm specific (ocean, freshwater, land, atmosphere) guidance (TNFD, 2022b).

In parallel, TNFD will consider the two timelines and goals of the CBD and the SDGs, namely 2030 and 2050, towards the restoration and maintenance of ecosystems. TNFD also envisions leading capacity-building and piloting activities to assist the development and effective implementation of the framework.

To date, over 250 organisations have now joined the TNFD Forum, among them FIs, regulators, government agencies, and universities. **Interested FIs can join at any time to contribute feedback on the beta versions prepared or run pilots of their implementation** (visit tnfd.global)



7) Advocate and join forces

There is a momentum for FIs to join voluntary initiatives (CBD et al., 2021) **in parallel to the internal transformation as a means of shortening learning curves** (i.e. learning from others), and to drive more significant and necessary change at the public policy level (EY & Microsoft, 2021). FIs have the opportunity to lead by example and attract nature-conscious clients.

FIs can consider **joining one or more of the available initiatives** (Finance for Biodiversity Foundation, 2021) and benefit first-hand from training activities piloting new tools and methodologies. FIs can attend events to learn and exchange knowledge as part of a project or as separate activities. These actions support institutional capacity building while demonstrating commitment towards the outside world. Additionally, **some of these initiatives are useful when proceeding with the previous set of recommendations.**

In a survey conducted by the organisations leading this publication, participant FIs have made voluntary environmental commitments to protect the climate. They have signed up to a diverse mix of internationally agreed standards (most popular was the UNEP Finance Initiative, while multiple respondents had also signed onto the PRB, Green Bond Principles, TCFD/TNFD, and Equator Principles), and in some cases, their own framework. Country or sector-specific organisations and frameworks are also part of respondents' commitments (e.g. the Roundtable on Sustainable Palm Oil).

In addition to TNFD, the **Overview of Initiatives for Financial Institutions** (Finance for Biodiversity Foundation, 2021) includes a further important initiative, the **Partnership for Biodiversity Accounting Financials (PBAF)**. It was initiated by ASN Bank with the aim to improve biodiversity accounting in the financial sector, and to work towards a harmonised biodiversity accounting approach. It has a global approach, although most of the participating FIs are Dutch (PBAF, n.d).



For the particular case of intensive livestock production, there exists an initiative called **FAIRR**. It is a collaborative investor network that raises awareness of the ESG risks linked to that industry. FAIRR provides research, best practice tools, and collaborative engagement opportunities to help investors incorporate the risks and opportunities into investment decision-making and active supervision processes (FAIRR, n.d.).

Further tailor-made approaches include teaming up directly with other institutions to undertake biodiversity mainstreaming activities. FIs can seize the expertise on biodiversity issues of environmental organisations, NGOs, research centres, and consultancies. For instance, Robeco, an international asset manager, has signed a partnership with WWF-NL to support the implementation of Robeco's biodiversity roadmap by guiding the impact and dependency measurement and management. Robeco and WWF-NL will also co-develop biodiversity investment strategies and engage clients and other stakeholders in the financial sector to integrate biodiversity into their investments (Robeco, 2022).

Another course of action is **public advocacy**. Public advocacy implies furthering reporting and disclosures mandates towards an active positioning as an FI committed to the protection and sustainable use of biodiversity. This means that the institutions can develop a communication campaign to share their positions and engagement activities with clients, stakeholders, and relevant initiatives. **FIs may advocate for appropriate and timely regulation at the policy level to advance public impact** (EY & Microsoft, 2021).

Joint advocacy is likely to amplify the reach and impact of messages. As an example, through another existing initiative, the Finance for Biodiversity Pledge, signatories prepared a position paper with suggestions for the draft GBF. The paper strives for the clear definition of the role of FIs alongside governmental responsibility to create enabling conditions



for action. Furthermore, the view of the 84 member FIs is that since the GBF refers to “financial flows,” it should clearly frame them as both public and private, and ensure that this definition is also reflected in relevant goals and targets (Finance for Biodiversity Pledge, 2022).

An alternative course of advocacy includes **joining or supporting advocacy groups, environmental activists, and conservation activities** without monetary returns.

3 - Concluding Remarks



- All suggested actions rely on sound science-based assessments, capacity building, and shareholder engagement. Proactive institutions will be able to enhance biodiversity-related risk management: by systematically minimising the negative biodiversity impacts of existing products, and by providing financial products and services that contribute to the protection and sustainable use of nature by applying positive and/or negative lists. However, biodiversity-related products still represent a very nascent market segment, or very nascent elements in existing markets. Hence, advanced institutions should consider contributing to market development.
- Unequivocally, studies show the double materiality of biodiversity loss. Therefore, immediate action should be taken to avoid physical, transition, and systemic risks, to avoid negative financial and environmental impacts, and to seize business opportunities that are positive for both investors and ecosystems.
- Recent regulatory developments can drive action, but because they emerge from political compromise, they take time to enforce and are not always sufficiently comprehensive. Hence, market actors should be proactive and follow scientific findings to make decisions and safeguard their capital. Fortunately, several tools, initiatives, and case studies are available or under development to support pioneers.
- FIs will experience more pressure to develop and implement their own biodiversity strategies over the next few years. More stringent laws and biodiversity goals at various levels will define the expected contributions from FIs.
- One major challenge is the lack of well-structured and assessed business cases across sectors that could provide evidence (e.g. alignment with the EU taxonomy, positive nature gains leading to monetary gains) to encourage economic actors to scale biodiversity conservation beyond regulations. Defining such cases relies on a framework that prices in external costs and makes business cases transparent.
- Biodiversity issues are often difficult to grasp and integrate into financial services. Thus, FIs should continue to participate in research and capacity building activities. Cooperation between environmental NGOs, research, and educational institutions are crucial to achieving the required multidisciplinary of sustainability and biodiversity conservation.

Glossary

Biodiversity: The variability among living organisms from all sources, including terrestrial, marine, and other aquatic ecosystems and the ecological complexes of which they are a part; this includes diversity within species (genetic), between species, and of ecosystems (CBD, 1992).

Biodiversity finance: expenditure that contributes – or intends to contribute – to the conservation, sustainable use, and restoration of biodiversity (Hanson et al., 2012; OECD, 2020).

(biodiversity) Dependency: a business's reliance on or use of nature where nature functions as an input, or if it enables, enhances, or influences environmental conditions required for successful business performance (Natural Capital Finance Alliance & UNEP-WCMC, 2018).

Biodiversity-related risks: Financial or economic risk related to biodiversity loss (NGFS, 2022).

Double materiality: This concept was proposed by the EC in 2019 and acknowledges the double character of materiality (impact and financial) in terms of nonfinancial/sustainability reporting. Businesses face **impact materiality** as their own operations and value chain impact the environment and society. **Financial materiality** refers to the level of significance of a sustainability issue on the reporting entity's ability to create or erode financial value (EFRAG, 2021b).

Convention on Biological Diversity: Signed by 150 government leaders at the 1992 Rio Earth Summit, the Convention on Biological Diversity is dedicated to promoting sustainable development. Conceived as a practical tool for translating the principles of Agenda 21 into reality, the Convention recognises that biological diversity is about more than plants, animals and microorganisms, and their ecosystems – it is about people and our need for food security, medicines, fresh air and water, shelter, and a clean and healthy environment in which to live (CBD, 2022).

Ecosystem services: the benefits people obtain from ecosystems, including biodiversity, in terms of

economic and other human activity, many of which cannot be replaced by human actions, and in some cases only at very high cost. Ecosystem services can be classified as follows (Alcamo et al., 2003):

- Provisioning services represent products obtained from ecosystems (e.g. timber and fuel wood from forests, freshwater from rivers).
- Regulating services result from the regulation of ecosystem processes including climate, hydrological, and biochemical cycles.
- Cultural services are the nonmaterial benefits people obtain from ecosystems through spiritual enrichment, cognitive development, reflection, recreation, and aesthetic experiences, including cultural diversity, spiritual and religious values, and knowledge systems.

Supporting services are those necessary for the production of all other ecosystem services. They differ from provisioning, regulating, and cultural services in that their impacts on people are either indirect or occur over a very long time, whereas changes in the other categories have relatively direct and short-term human impacts. Examples include soil formation and the nutrient cycle.

EU Taxonomy: The Taxonomy Regulation (TR) (EU) 2020/852, which entered into force in July 2020, defines a framework to qualify environmentally sustainable economic activities useful for companies, investors, and policymakers, considering the following six environmental objectives (European Commission, 2020a):

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
6. The protection and restoration of biodiversity and ecosystems.

Some key concepts of the taxonomy are:

Technical screening criteria: the specific requirements and thresholds that each activity will need to meet in order to be considered as significantly contributing to a sustainability objective and doing no significant harm to others. The technical screening criteria are set out in secondary legislation from the EU, called Delegated Acts.

Substantial contribution: an economic activity can make a substantial contribution to one or more of the environmental objectives set out in the taxonomy. This means that, based on the technical screening criteria, the economic activity either has a substantial positive environmental impact or substantially reduces negative impacts of the activity on the environment.

Do no significant harm (DNSH): an economic activity should not qualify as environmentally sustainable if it causes harm to any of the environmental and climate objectives. In the taxonomy, criteria are set out for each economic activity to ensure that as well as making a substantial contribution to one or more of the objectives, the activity does not cause harm to any of the other objectives.

Impacts: a positive or negative effect of business activity on the quantity or quality of biodiversity levels or ecosystem services (Hanson et al., 2012; Natural Capital Finance Alliance & UNEP-WCMC, 2018).

Nature: Nature includes biodiversity, ecosystems (both physical structure and functioning), evolution, biosphere, humankind's shared evolutionary heritage, and biocultural diversity. Nature is inextricably linked to humans and not a separate entity (IPBES, 2017).

Nature-positive: The term nature-positive is the subject of ongoing discussions linked to the agreement of the CDB's Post-2020 Global Biodiversity Framework and the TNFD (TNFD, 2022b, S. 01). Nonetheless, a multi-stakeholder group proposes that nature-positive means halting and reversing nature loss by 2030, measured from a baseline of 2020 (Nature Positive, n.d.). This definition should inform actions under the three Rio Conventions – the Convention on Biological Diversity (CBD), the United Nations Framework Convention on Climate Change (UNFCCC) - Paris Agreement, and the United Nations Convention to Combat Desertification (UNCCD) – as well as the SDGs, and guide the activities of government, civil society, and business. In this vein, the **Global Goal for Nature** identifies temporal objectives: Zero Net Loss of Nature from 2020, Net Positive by 2030, and Full Recovery by 2050 (Locke et al., 2021).

Nature-related risks: refers to risks that arise when a change in a business's impacts or dependencies on nature become a threat to that business's operations and profitability due to factors of exposure and vulnerability (WWF, 2019). Unlike **biodiversity-related risks**, nature-related financial risks are financial or economic risks posed by any natural process, including climate, weather and biodiversity loss, or a combination of these and other natural phenomena (NGFS, 2022).

List of acronyms

CBD	Convention on Biological Diversity
COP	Conference of the Parties
CSDDD	Corporate Sustainability Due Diligence Directive
CSRD	Corporate Sustainability Reporting Directive
EC	European Commission
ECB	European Central Bank
EFRAG	European Financial Reporting Advisory Group
ESAs	European Supervisory Authorities
ESG	Environment, Social, Governance
ESMA	European Securities and Markets Authority
ESRS	European Sustainability Reporting Directive
EU	European Union
FC4S	International Network of Financial Centre for Sustainability
FIs	Financial institution
FTSE 100	Financial Times Stock Exchange
GBF	Global Biodiversity Framework
GRI	Global Reporting Initiative
GVA	gross value added
IPBES	International Panel on Biodiversity and Ecosystem Services
IPCC	International Panel on Climate Change
IUCN	International Union for Conservation of Nature
NACE	Nomenclature of Economic Activities
NBS	Nature-based solutions
NGFS	Network of Central Banks and Supervisors for Greening the Financial System
PBAF	Partnership for Biodiversity Accounting Financials
PSF	EU Platform on Sustainable Finance
RTS	Regulatory technical standards
SDGs	Sustainable Development Goals
SFDR	Sustainable Finance Disclosure Regulation
TNFD	Taskforce for Nature-Related Financial Disclosures
UN	United Nations
UNEP-FI	United Nations Environment Programme Finance Initiative
UNEP-WCMC	UN Environment Programme World Conservation Monitoring Centre
WEF	World Economic Forum

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Economic activities are at the heart of biodiversity loss. At the same time, most economic sectors are heavily dependent on ecosystem services. Nature's degradation is challenging the integrity of the biosphere, ultimately endangering human survival, and also representing a significant threat to the financial system's stability. Understanding and managing biodiversity-related physical and transition risks will enable financial institutions to avoid losses and reputational damage. Furthermore, understanding the complexities of biodiversity and ecosystems may also enable financial market actors to take advantage of rising business opportunities that are nature-positive.

Regulation touching upon biodiversity and ecosystems already in place or being planned may only push firms to comply rather than instigating the dynamic needed to transform the economy to operate within the planetary boundaries. Moving beyond compliance is essential if financial institutions are to comprehensively manage risks and play a role in effectively restoring and protecting biodiversity and ecosystems. This paper will present a series of recommendations for financial institutions to "go beyond regulation" and transform how they think about and act on biodiversity – based on scientific evidence and reflecting the vision for a full recovery of nature by 2050.

