
Heather Grabbe (heather.grabbe@bruegel.org) is a Senior Fellow at Bruegel

Luca Léry Moat (luca.moat@bruegel.org) is a Research Analyst at Bruegel

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Executive summary

THE ECONOMICS OF BIODIVERSITY are still little understood and the loss of nature, which provides pollination, clean water and other ecosystem services, is often considered to have primarily local economic impact. But nature has an intrinsic value and also has extrinsic value to many parts of the economy. Destruction of nature has global costs because nature loss accelerates climate change by releasing greenhouse gases into the atmosphere, causes water stress and crop failures that reduce food exports, and can force people to move. Soome7 (aTEMC /P 4L



Biodiversity is the variety of ecosystems, species and genes in the world or in a particular habitat. Biodiversity, rather than just the count of species, enables nature to be productive, resilient and adaptable. Just as diversity within a portfolio of financial assets reduces risk and

these credits, analogous to the carbon credit market under the EU emissions trading scheme.

In its future work on biodiversity certification and nature credits, the EU will need to consider the additionality that private capital could bring. Nature credits could be a way of channelling additional money to protect or restore biodiverse ecosystems, if demand were to grow beyond voluntary approaches, for example because of the introduction of obligations through application of the polluter-pays principle. The nature-positive projects that credits would fund are unlikely to generate significant profits, so the overall capitalisation of private-sector markets for nature credits looks likely to remain small if they remain voluntary. To achieve larger scale funding, the markets would have to be created through regulation.

This policy brief examines these issues and provides examples the EU should consider in developing financially rewarding measures that restore and preserve natural capital assets.

The focus in developing existing and new tools should be on whether they can deliver reliable revenue streams over a long period to maintain the value of natural assets. In the EU, the most impactful immediate means of using financing to protect and restore nature would be to defund the damage caused to biodiversity by eliminating nature-harming subsidies, starting with reform of the common agricultural policy.



The links between nature and the economy have long been ignored, with environmental impact treated as an externality that is not measured or accounted for in economic systems. Over the past decades, understanding of the economic impact of climate change has spread, and international cooperation under the United Nations has resulted in a focus on one principal target (stabilising temperature rise) and one major measure (reducing emissions of greenhouse gases). Global warming is now widely accepted in both the public and private sectors – and in the financial sector (Carney, 2015) – as a problem for the global commons that needs collective action.

It is not the case for nature loss. There is even a lack of unified definitions of nature and biodiversity for estimating financing needs. As explained by Dasgupta (2021), biodiversity loss is inherently harder to measure than climate-change impacts because it is complex, nonfungible, silent and invisible, meaning no single measure or target can capture all aspects

and sustainable use of biodiversity. At least half of the fund is intended to benefit indigenous communities that protect intact habitats⁶. However, the amount of finance that this new tool will raise in practice remains uncertain, as not all countries with relevant industries have committed to make it mandatory.

The Cali biodiversity summit, however, failed to reach agreement on resource mobilisation. Establishment of a new biodiversity fund to help poorer nations restore their depleted natural environments was blocked by developed economies, including the EU, Japan and Canada. Pledges to the GBF Fund almost doubled, but reached only \$396 million⁷.

For the EU, the European Commission's latest Environmental Implementation Review (EIR) (European Commission, 2022b) calculated additional investment needs (over current expenditure levels, ie the financing gap) for the implementation of the EU biodiversity strategy for 2030 to be €21.5 billion a year to 2027. These additional investments should focus on protection, restoration and sustainable-use measures for species, habitats and other ecosystems, and on enabling implementation, including mainstreaming biodiversity in business decision-making, and any other aspects covered in the EU biodiversity strategy for 2030 (European Commission, 2021a).

The EU budget will play an important role in meeting these investment needs but much of the needed funding is expected to come from EU countries' national budgets and from private finance. The EIR also estimated the additional investment needs for the implementation of pollution prevention and control policies, and for water protection, management and indus

Introducing financial tools into biodiversity implies measuring and valuing biodiversity.

There is a broad spectrum of approaches to this. Some tools might rely on rigorous measurement, such as measuring increases in species populations in a specified area to assess the outcome of a biodiversity credit. Another approach is to measure the economic value derived from biodiversity – attempting to quantify the services that biodiversity provides, such as pollination, and how much it would cost to replace them. This is not necessarily underpinned by exact calculations of species numbers or habitat condition.

Measuring biodiversity, however, is complex and there is no one correct way to do it. While over 570 metrics have been proposed so far, there is no agreed international standard (Antonelli *et al.*, 2024). Unlike carbon emissions, biodiversity is not evenly distributed. This means that biodiversity must be assessed locally, although its disappearance can have much wider implications (see section 1). Furthermore, biodiversity contains a diverse range of things, from the genetic diversity in a single population to the variety of ecosystems across the globe⁸.

The complexity of biodiversity means that its value can vary according to the species population, ecosystem, geographical and cultural context (Antonelli *et al.*, 2024). There are several frameworks for thinking about the ways in which changes to biodiversity might be measured. For example, the UK government (DEFRA, 2023) defines four metrics:

1. Gains or losses in the variety and abundance of, or within, species (for example, because of changes to wildlife control and management, changes to farmland management, or any land use change);
2. Gains or losses in the amount of space for ecosystems and habitats (for example, because of building development, or changes in land use);
3. Gains or losses in the physical connectedness between ecosystems and habitats (for example, because of transport developments);
4. Environmental changes within ecosystems and habitats (for example, arising from changes in any type of pollution, restrictions of water supply, climate change, invasive alien species).

The UN has a statistical framework for organising data about habitats and landscapes, rather than biodiversity, however. The UN SEEA Ecosystem Accounting (SEEA EA) measures ecosystem services, tracks changes in ecosystem assets and links this information to economic activity⁹.

Other tools, such as the natural-capital approach, rely on quantifying the economic value of the welfare effects of biodiversity. This can be thought of as the use value (eg timber, recreation, carbon storage), option value (future and perhaps unknown uses) and non-use value (inherent value or cultural value) (Moran and Bann, 2000).

Financial regulators, particularly central banks, are beginning to create frameworks and tools to address climate risks, but work on nature-related risks is less advanced. There is a lively debate about how far central banks should go to address climate and nature as part of their primary mandate of price stability, and how to address these risks building up in the

central banks in several ways, including their impact on price stability and monetary policy transmission (Schnabel, 2023), and on the stability of the financial sector because of loans to businesses that depend on ecosystem services (Elderson, 2024).

The European Commission (Cziesielski et al., 2024), European Central Bank and Dutch and French national banks are among the institutions starting to calculate how exposed their

Capital Coalition, 2021). This makes nature visible on balance sheets and means it can be factored in when balancing trade-offs, such as whether to build roads through a forest or to clear mangroves to build a port¹¹.

However, decision-makers in firms and governments have frequently ignored natural capital. For example, calculations of economic growth ignore natural capital, and might overestimate growth in countries that rely on resource depletion to generate OEs

Several tools exist which can direct finance to protecting, restoring and monitoring biodiversity. Fees have been used for many years, including entrance fees to national parks, and hunting and fishing licenses (OECD, 2024). Philanthropy also helps, with around €87 million in biodiversity-relevant funding contributed by private foundations in 2018 in the EU (Nesbit et al., 2022). Global corporate philanthropy totalled \$71 billion in 2022, accounting for 11 percent of global philanthropy (WEF, 2024), but less than 5 percent of corporate philanthropy is deployed to climate and nature – \$607 million in 2022.

The amounts raised through fees and philanthropy are very small relative to the financing needs. In the subsequent sub-sections, we describe tools that would channel additional finance to nature from both the private sector (biodiversity credits and offsets, payments for ecosystem services, green bonds) and the public sector (debt for nature swaps, fiscal incentives). Many new tools are at an early stage of development, which is why it is essential for the

3.3.4 Debt-for-nature swaps

A debt-for-nature swap occurs when a third party (usually an international conservation organisation) purchases an indebted, biodiversity-rich country's foreign debt at a discounted rate. The country commits to repaying this debt to the third party, usually in local currency, and commits to funding nature protection with the difference between the original value of the debt and the discounted value.

Debt-for-nature swaps first emerged during the debt crises of the 1980s. The first debt-for-nature swap was in 1987 between Bolivia, Conservation International, Citicorp and USAID (World Bank, 1993). Since 1987, there have been 145 recorded debt-for-nature swaps according to the African Development Bank, amounting to \$3.7 billion in debt (African Development Bank, 2022).

Debt-for-nature swaps rely on the willingness of commercial banks, governments or other debt holders to sell less than the full value of the original loan. Critics point out that indebted countries may lose autonomy over land, are too small to solve the debt or biodiversity problems, and the swaps often have high transaction costs¹⁶.

3.3.5 Fiscal incentives

Fiscal incentives rely on the volition of governments rather than private individuals or companies. They are the main source of finance for biodiversity because they do not require a profit motivation and can deliver public goods.

Taxes can be based on the polluter pays principle. Biodiversity-positive taxes can include those on pesticides, fertilisers or timber, if they are based on the environmental damage caused. On average from 2020 to 2022, OECD countries generated \$9.96 billion in biodiversity-positive taxes (OECD, 2024). However, this constituted 1.3 percent of all environmental tax revenue.

Governments can also use subsidies to finance biodiversity protection. According to the OECD, there are 240 biodiversity positive subsidies in force across 34 countries (OECD, 2024). However, annual government expenditures on agricultural, forestry and fishery subsidies that are harmful to biodiversity were two to four times higher than total annual capital flows going to biodiversity conservation (Deutz et al., 2020). Elimination of subsidies that encourage harm to nature would be more productive.

The EU has characteristics that make it especially important in solving the collective-action problem of financing biodiversity. It is a regional governance system with regulatory powers and financing for public goods over long time horizons, and also an international actor that provides finance for global public goods. The EU could directly implement some of the tools outlined above through its common policies and budget, while encouraging the private sector to apply others. However, more than 80 percent of the EU's own natural habitats are in poor condition¹⁷. Before developing new approaches, the EU should evaluate the structure of incentives already created by its common policies, budget and regulation of the financial sector. In particular, the EU could do much more to phase out harmful subsidies.

¹⁶ A. C. ... Ya ... Q ... 'Q&A: Ca ... b ... a ... a ... a ... h ...
¹⁷ ... ' Carbon Brief

The Commission has conceded that biodiversity is an area of public finance with a relatively low absorption rate and level of execution of projects (European Commission, 2024).

This is related to lack of capacity, expertise and experience at member-state level, and to lack of political will for conservation measures²³.

Moreover, the methodology for tracking EU biodiversity spending measures investments as either contributing 'principally' or 'significantly', or as 'not targeted', to biodiversity objectives. For tracking purposes, these are counted as 100 percent, 40 percent and 0 percent of the investment respectively (Compton, 2024). This framework is applied differently in the CAP and in cohesion policy, and results in substantial overestimation of expenditure on biodiversity and its positive impact, with no regard for the results achieved (Compton, 2024; ECA, 2024). The European Court of Auditors has recommended that the EU should move to a more results-based tracking methodology, and should improve data collection and introduce more measurable objectives (ECA, 2024).

An example of this is the 2021 Recovery and Resilience Facility, intended to boost the EU economy after the COVID-19 pandemic. The RRF required each EU country to allocate 37 percent of the RRF funding it received to biodiversity (European Commission, 2021b). However, almost no allocations to biodiversity have been made. One reason for low public funding in the EU could be that the do-no-significant-harm assessments (European Commission, 2023), normally required by EU regulation, were not carried out as intended, degrading the only safeguard in place for RRF funds (Bozekova et al., 2021). There was also no binding obligation for member states to use RRF funding for biodiversity.

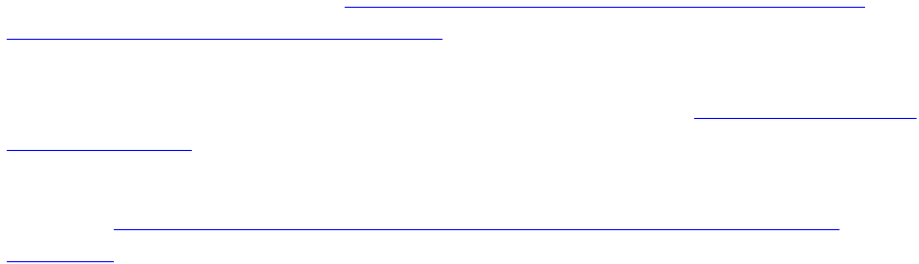
A further EU role is setting the regulatory framework for sustainable finance that also applies to nature-positive finance. The EU's regulatory tools, such as the taxonomy of green investments and disclosure requirements, could be used more effectively, and the EU should develop a coherent framework for transition finance (Merler, 2025).

3.2.2.2. Financing nature restoration and protection

In considering new approaches to increase public and private financing of nature restoration and protection, a number of issues need to be considered:

- **International political economy:** Will the proposed approach garner support in all countries? Will it survive in other countries even if there is political backlash in one country?
- **Additionality:** How much additional finance will the approach bring? Will it set standards or ensure reliable commitments by public and private players?
- **Permanence:** Will the proposed approach retain support over the time period needed to achieve climate and environment targets? For example, will a forest protection measure ensure continued carbon sequestration until 2050 and beyond? Will the approach encourage new monoculture plantations that are more vulnerable than mature, biodiverse forests are to climate change, pests and diseases?
- **Sustainability without policy support:** Is there a reason for business and other groups to continue funding even if state intervention ceases, i.e. promising measures is not just about reputation but important for business models?
- **Levels of effect:** Are the services that an ecosystem provides local or international? Are they systemically important because they reduce risks for the economy?

²³ Bankwatch, 'Ecosystems on the Brink: What's Holding Back Biodiversity?' Bankwatch Network Blog, 5 October 2022, <https://bankwatch.org/blog/biodiversity-on-the-brink-what-s-holding-back-nancing-for-nature>.



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