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Bridging the Gap in Biodiversity Financing

A review of assessments of existing and needed financial flows for biodiversity, and some considerations regarding their limitations and potential ways forward

Working Paper — October 2024

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https://www.ucl.ac.uk/bartlett/public-purpose/

ISSN 2635-0122

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Acknowledgements

The authors would like to thank Matthieu Trichet, Etienne Espagne and Bastien Bedossa for their support and comments on previous drafts.

This work has been conducted in collaboration with the Coalition for Capacity on Climate Action (C3A) program. C3A is a knowledge-exchange and capacity-building program for Ministries of Finance that provides peer-to-peer exchanges, trainings on critical policy issues and collaboration on analytical tools. The authors would also like to thank the World Bank and the Climate Support Facility (CSF) for their support. The views expressed in this co-publication are those of the authors and do not reflect the views or policies of the World Bank or its partners. The World Bank does not guarantee the accuracy of the data included in this work and accepts no responsibility for any consequences of their use.

Reference

This working paper can be referenced as follows:
Gonon, M., Svartzman, R. and Althouse, J. (2024). Bridging the Gap in Biodiversity Financing: A review of assessments of existing and needed financial flows for biodiversity, and some considerations regarding their limitations and potential ways forward. *UCL Institute for Innovation and Public Purpose*, Working Paper Series (IIPP WP 2024-14).

Available at: https://www.ucl.ac.uk/bartlett/public-purpose/WP2024-14

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Morgane Gonon, Romain Svartzman, Jeffrey Althouse

Summary

Global sustainability policy and discourse increasingly focus on closing a “financing (or funding) gap” to meet global goals for climate and biodiversity. In particular, the Global Biodiversity Framework (GBF), adopted by 196 countries in 2022, seeks to fill a finance gap of US$ 700 billion by 2030 to effectively halt and reverse biodiversity loss.

Against this backdrop, this report seeks to provide clarity on the current state of "global biodiversity finance" and related challenges and debates. It first details the existing assessments of both existing financial flows and future funding needs for biodiversity, including details on the various methodologies used to estimate the amounts concerned, the type of financial instruments considered, and the sectors and activities targeted.

Estimates of current global biodiversity finance significantly vary across studies, from a minimum of US$ 78 billion to a maximum of US$ 200 billion annually. Despite their methdological differences, some general patterns emerge across studies. Domestic public expenditures are by far the main component of biodiversity financing today. While most of the current funding is currently coming from and supporting action in high-income countries (mainly the US, Italy, France, and Germany), China has a growing role in domestic and international biodiversity financing. Additionally, studies highlight that multilateral public expenditure and private finance are on the rise, including through the development of market-based mechanisms such as biodiversity credits.

This report also discusses the meaning and limitations of such assessments. In particular, we argue that by focusing predominantly on “bridging a financing gap”, these studies, and the policy discussions using them, risk: (i) concealing the key underlying barriers to protecting biodiversity, including specific socioeconomic dynamics cannot be reduced to a “lack” of financing (e.g. rich countries’ consumption patterns that drive biodiversity loss worldwide); (ii) diverting attention from more important questions related to transforming the financial system itself, especially the need to reform the international financial architecture so as to enable low- and middle-income countries to access long-term public funding for their sustainable development.

While not intending to provide an exhaustive look into such questions, the report calls for future research to clarify how the need to expand access to finance (the “finance gap approach”) must be assessed jointly with the need for transformative socioeconomic changes to achieve sustainability goals, including potential transformations of the financial system itself (a “transforming finance approach”).

Introduction

After four years of negotiations, the Kunming-Montreal Global Biodiversity Framework (GBF) was adopted by 196 countries in December 2022 during the fifteenth meeting of the Conference of the Parties (COP15) on biological diversity. The GBF provides a set of 23 actionable targets concerning the restoration and conservation of biological diversity and sustainable management of natural resources in order to halt and reverse biodiversity losses by 2030.

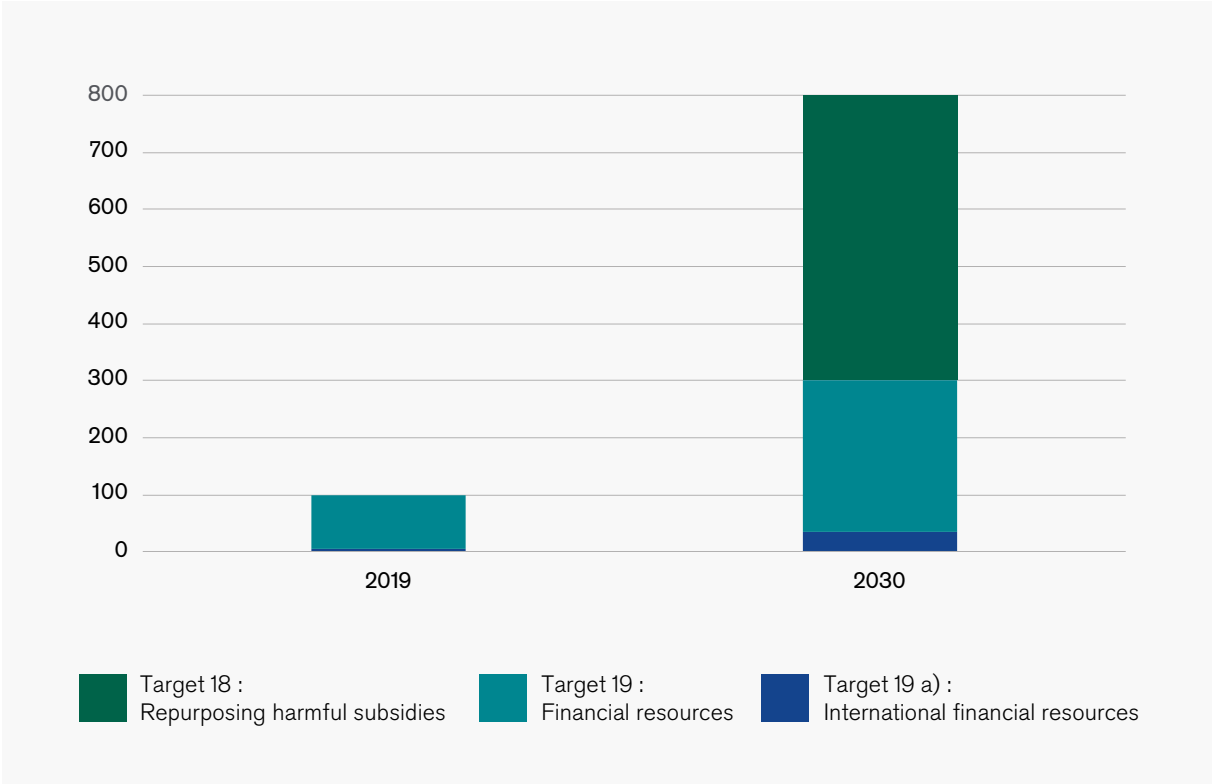
One of the key dimensions of efforts to implement the Global Biodiversity Framework is the mobilisation of massive amounts of investment to support nature conservation, protection, and regeneration. Currently, only US$ 125 to US$ 143 billion are spent each year on mitigation and adaptation to biodiversity losses; when implementing the GBF is projected to require between US$ 722 billion and US$ 967 billion annually until 2030 (about 1% of global GDP) (Deutz et al., 2020). Filling in this so-called "financing gap" for nature with additional funding is widely understood to be a major challenge for sustainable finance, and the global community at large (Karolyi & Tobin-de la Puente 2024, p. 231)[1].

The Kunming Montreal agreement (COP15) proposes two complementary strategies to fill the financing gap: reducing or repurposing harmful subsidies and incentives by US$ 500 billion per year (currently estimated between US$ 279.3 and 542.0 billion per year)[2] (GBF Target 18) and the increase of resources from all sources by at least US$ 200 billion per year, including by international financial resources from developed countries to developing countries to at least US$ 20 billion per year by 2025, and to at least US$ 30 billion per year by 2030 (GBF Target 19 a). The potential means of providing such an increase in funding are explicitly mentioned in GBF Target 19 (b) to (g). They include international financial resources, domestic resource mobilisation, private finance through impact funds and other instruments, blended finance, innovative schemes such as payment for ecosystem services, green bonds, biodiversity offsets and credits, and benefit-sharing mechanisms.

1 Previous estimates of funding needed exist, although they were less prominent in public discourse, and argued for smaller amounts. For instance, in 2012, the report of the High-Level Panel on Global Assessment of Resources for Implementing the Strategic Plan for Biodiversity 2011–2020 provided an estimated range of US$150–440 billion annually for the Aichi targets. In 2020, the panel of experts on resource mobilisation estimated that the resources needed ranged from US$613 billion to US$895 billion annually (CBD, 2020).

2 Estimate reflected in US$ for 2019, provided in Deutz et al. (2020)

Figure 1 *The resource mobilisation strategy of the Global Biodiversity Framework (2022): Target 18 about repurposing biodiversity harmful incentives by at least US$ 500 billion per year by 2030; Target 19 about increasing financial resources from all sources, by 2030 mobilizing at least 200 billion United States dollars per year, including by international financial resources from developed countries to developing countries to at least US$ 20 billion per year by 2025, and to at least US$ 30 billion per year by 2030 (Target 19 a).*[3]



Implementing these financial commitments for biodiversity presents two major challenges:

First, estimating the amount of funding provided through these different instruments is challenging since it involves monitoring a range of public and private actors at the domestic and international levels. Comprehensive reporting must consider all relevant economic sectors, such as agriculture, fisheries, tourism, and forestry. Furthermore, finance flows that aim to improve the state of biodiversity can have different objectives, and biodiversity conservation or preservation might be seen as primary, secondary, or as a co-benefit (Karousakis and Pery, 2020). Biodiversity finance might include biodiversity investments ("financing green") but can also integrate the implementation of safeguards for biodiversity across project portfolios ("greening finance"). The diversity of financial mechanisms, stakeholders involved, scales of action and the need for a complex understanding of the need to improve biodiversity at a national scale can make this so-called "financing landscape" confusing.

3 Note that 2030 values expressed here include both existing biodiversity finance (approx. US$100 billion, as shown in the first bar for 2019) and additional resources needed, according to the Global Biodiversity Framework (US$ 700 billion).

Second, beyond the financial amounts involved, the instruments used must align with the specific realities and needs of the countries in question, fitting into their unique ecological, economic, and institutional contexts. The Convention for Biological Diversity (2024) recently emphasized moving beyond project-scale initiatives towards a more integrated approach. From this perspective, to close the national funding gap, a resource mobilisation strategy tailored to each country's context is essential. At the national level, biodiversity appears to be primarily a land-planning issue that requires coordinated efforts among diverse initiatives. Furthermore, to enhance domestic capacity for sustainable development, biodiversity finance must address the specific financial needs of developing countries and help reduce their vulnerabilities on a macroeconomic scale.

However, while policymakers increasingly focus on bridging the funding gap related to biodiversity, it is also important to emphasize that tackling the root causes of biodiversity loss may require going beyond a simple increase in “green” financial flows, “all other things being equal”. The structural causes of biodiversity collapse are complex and intertwined with socioeconomic and political factors (IPBES, 2019). Addressing these requires robust international cooperation and appropriate financing mechanisms that reduce social inequalities and minimize the uneven distribution of environmental burdens both within and between countries. The “finance gap” approach – grounded in the belief that unlocking a sufficient quantity of financial flows will necessarily resolve the environmental crisis – can conceal these key underlying barriers to protecting biodiversity.

Importantly, the “finance gap” framing can prevent deeper discussion about the role of the financial system, itself, in structurally compelling biodiversity collapse. Indeed, many now consider that structural reforms of the financial system are a *precondition* to enable the transformative changes needed to halt and reverse biodiversity loss (Svartzman & Althouse, 2022; Dempsey et al., 2024). For instance, Althouse and Svartzman (2022; 2024) provide evidence that the current international monetary and financial system can generate patterns that force countries in the Global South to specialize in exporting pollution- and resource-intensive products, to be consumed in the Global North. Furthermore, it is increasingly understood that the global financial system tends to systematically deprive the most ecologically-vulnerable regions of sovereignty over domestic financial decisions, burden them with debt, and reduce their capacity to respond and adapt to changing environmental circumstances through rising indebtedness (Dempsey et al., 2024; UN, 2023). This leads to a situation today where many of the poorest developing countries – those most in need of financing for conservation, mitigation and adaptation – are actually net exporters of both biophysical and financial resources to the developed world (Summers and Singh, 2024). Potential reforms of the international financial architecture aimed at increasing financial flows to protect biodiversity should therefore be assessed hand-in-hand with the need to transform productive structures in the Global South and consumption patterns in the Global North.

Against this backdrop, this report primarily seeks to provide clarity on the current state of "global biodiversity finance" and related challenges. It details the existing assessments of funding needs for biodiversity (e.g., what amounts are concerned, which instruments are being developed, and which sectors are targeted), with a focus on international financial flows. It provides guidance on understanding the different funding mechanisms, their key features, and the funding needs to

which they correspond, whether they are public or private finance, the financial instruments they rely upon, and the economic sectors in which their use is most prevalent.

This report also seeks to briefly examine the limitations of the "finance gap" approach to biodiversity conservation. In particular, we present different avenues through which research could clarify whether and how the rush to expand access to finance must be paired with broader institutional and economic reforms to achieve sustainability goals.

This paper proceeds as follows. The first section presents the current framing of biodiversity finance issues regarding available data and globally defined targets. We provide an overview of major reports, data sources and methodologies estimating current financial flows aimed at protecting biodiversity and the main contributors (e.g. public vs. private finance). The second section provides an overview of estimations of future funding needs and of the different instruments (e.g., green bonds and biodiversity offsets) proposed by the literature to fill this gap. The third section briefly reviews different criticisms of the biodiversity "financing gap approach", and outlines avenues through which it could be connected to broader institutional reforms needed to protect biodiversity – a "transforming finance approach".

A. Estimating Global Biodiversity Finance: Insights from Key Methodologies

A.1. Global Biodiversity finance assessments

Three main reports have already provided comprehensive accounts and estimates of financial flows for biodiversity[4] (CBD, 2024): the OECD's 2020 report on Global Biodiversity Finance (Karousakis and Pery, 2020, hereafter referred to as OECD (2020)), a report published by The Paulson Institute (Deutz et al., 2020) and the report on the State of Finance for Nature, published by UNEP (United Nations Environment Programme), ELD (The Economics of Land Degradation) and Global Canopy (UNEP et al., 2023)

These reports complement each other, covering different scopes and using different methods to identify biodiversity financial flows, as detailed in Appendix 1. The OECD relied on data provided by OECD member countries[5] and it focused on public financial flows, while Deutz et al.

4 The OECD PINE database is not included. It reports on biodiversity-relevant subsidies (which include taxes, fees, tradable permits, and subsidies for activities such as forest management and conservation) because this database does not indicate whether such subsidies are positive or harmful to biodiversity. We also do not cover harmful subsidies, which are assessed by two of the reports reviewed here (UNEP et al., 2023 and OECD, 2020). It is nevertheless essential to reduce such subsidies to ensure coherent and environmentally effective public action (Matthews and Karousakis, 2022).

5 The primary datasets analysed were: i) the CBD financial resource mobilisation reports; ii) the Biodiversity Finance Initiative (BIOFIN) biodiversity expenditure reviews (BERs); and iii) the Classification of Functions of Government (COFOG).

(2020) extended the OECD methodology to additional countries[6] and included private financial flows. UNEP (2023) took a different approach, aiming to identify the financing of nature-based solutions[7] (NbS) (by both the public and private sectors) with a broad understanding of what can be identified as a NbS, thereby leading to higher amounts than the two other methodologies.

Given these different methodological scopes, total estimates of current global biodiversity finance vary across studies, from a minimum of US$ 78 billion to a maximum of US$ 200 billion annually. More specifically, they amount to (see Figure 2):

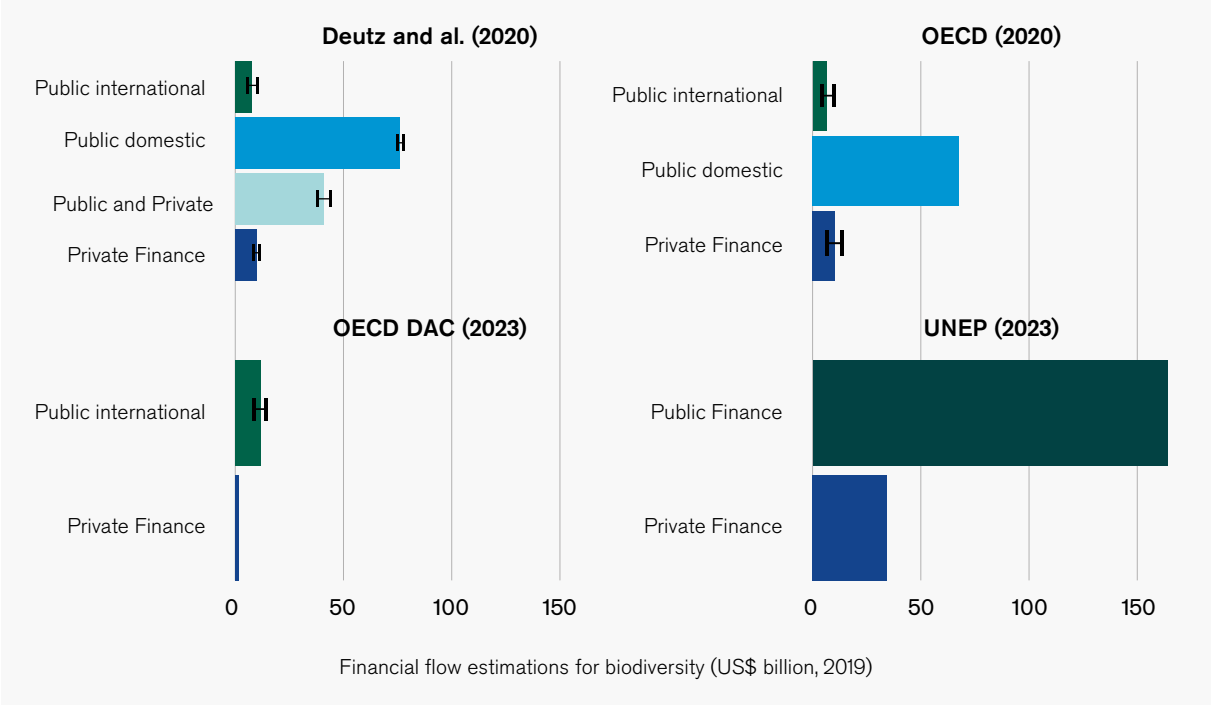
- US$ 78 – 91 billion per year, according to the OECD (2020), split between public domestic expenditure (US$ 67.8 billion per year), international public expenditure (US$ 3.9 – 9.3 billion per year), and private expenditure (US$ 6.6 – 13.6 billion per year).
- US$ 124 – 143 billion per year (as of 2019), according to Deutz et al. (2020), split between public domestic expenditure (US$ 74.6 – 77.7 billion per year) international public expenditure (US$ 4 – 9.7 billion per year), and public-private financial flows to biodiversity conservation (NbS and carbon market, Green financial product, Biodiversity offsets and Philanthropy) (US$ 37.3 – 44.4 billion per year).
- US $200 billion annually according to UNEP et al.'s (2023) approach, based on the identification of financial flows contributing to NbS, split between public (US$ 165 billion per year) and private (US$ 35 billion per year).

All the reports mentioned above highlight that domestic public expenditures are by far the main component of biodiversity financing today (OECD (2020): 91.92% – 84.73%; Deutz et al. (2020): 63.39% – 61.12%; UNEP et al. (2023): 82.5%) with private sources playing a comparatively small but increasing role (Figure 2). UNEP et al. (2023) and Deutz et al. (2020) identify an increase in private financial flows due to growth in biodiversity offset markets, investments in sustainable supply chains, and impact investments.

6 The economies of the 80 countries tracked by OECD represent 85% of global GDP, and thus the underestimate is assumed to be relatively small; however, a regression analysis was used to interpolate spending for the missing 100 countries in the Deutz et al. (2020) report. In addition to the 80 countries examined by OECD, additional data points for seven countries were also identified where domestic budgets spending on biodiversity is publicly available: Brazil US$ 89.77 million; Chile US$ 107.34 million; Peru US$ 288.32 million; Argentina US$ 37.29 million; Saudi Arabia US$ 47.8 million; Sudan US$ 2.7 million; and Mozambique US$ 2.6 million.

7 Nature-based solutions are actions that protect, sustainably manage, and restore natural or modified ecosystems to address societal challenges while simultaneously providing human well-being and biodiversity benefits. They involve working with nature, as part of nature, to address issues such as climate change, human health, food and water security, and disaster risk reduction. More information available can be found in https://www.worldbank.org/en/news/feature/2022/05/19/what-you-need-to-know-about-nature-based-solutions-to-climate-change

Figure 2 *Comparison of annual domestic and international public and private financial flow estimations for biodiversity across the main institutional reports (USD billion (2019)). A more disaggregated comparison is available in supplementary materials. Source: authors.*



Current funding for biodiversity is concentrated in a few high-income countries. According to the UNEP et al. (2023) methodology, five countries (the US, China, Italy, France, and Germany) account for more than 75% of global biodiversity spending (UNEP et al., 2023). Likewise, the OECD methodology (OECD 2020) finds that public domestic finance for biodiversity usually takes place in the world's largest economies (75% of all domestic financial flows for biodiversity are spent in the Group of Twenty Nations (G20) and 95% in OECD countries).

A.2. Focus on international finance for Biodiversity

While domestic public expenditure is the largest source of biodiversity finance globally (Section I.A.1), developing countries tend to rely on international public finance from bilateral and multilateral sources for biodiversity conservation (McCarthy et al., 2012; Waldron et al., 2013). Multilateral finance sources and the landscape of international institutions involved change rapidly, and commitments are on the rise. At the recent UNFCCC COP28, eight international organisations and development finance institutions[8] announced plans to launch a global initiative to enhance financial instruments for sustainable climate and nature-linked sovereign financing. Among these sources, the Global Environment Facility plays a pivotal role as the operational structure managing the financial mechanism of the Convention (CBD, 2024). According to

8 The Asian Development Bank, the African Development Bank, the European Investment Bank, the Green Climate Fund, the Global Environment Facility, the Inter-American Development Bank, the Agence française de développement and the United States International Development Finance Corporation.

CBD Decision 15/7, the Global Environment Facility was requested to establish, by 2023 and until 2030 unless otherwise decided by the Conference of the Parties, a special trust fund to support the implementation of the Kunming-Montreal Global Biodiversity Framework. This fund aims to complement existing support and significantly increase financing to ensure timely implementation. Funding mechanisms related to other Rio conventions also contribute to financing biodiversity-related projects, such as the Green Climate Fund and the Land Degradation Neutrality Fund.

Another OECD report – "*Biodiversity and development finance 2015-2021: Progress towards Target 19 of the Kunming-Montreal Global Biodiversity Framework*" (OECD 2023) – specifically evaluates international biodiversity finance and gives additional information on donors, recipients, geography of international flows and main trends for the period 2015 to 2021. Data comes from the reporting of biodiversity-related activities to the OECD Development Assistance Committee (DAC)[9] via the Rio Markers[10]. Development finance must be marked as (i) targeting the objectives of the CBD as either a principal or significant objective, or (ii) not targeting the objective (the activity has no relation to the marker). For activities marked as "principal", biodiversity protection must be "fundamental" in the design of, or the motivation for, the action. Activities marked as "significant" have other primary objectives but have been formulated or adjusted to help meet biodiversity concerns. Whether a given instrument is specifically or indirectly targeted to improve biodiversity outcomes, the labeling system of the OECD DAC does not capture the instrument's success in carrying out its objectives.

Biodiversity-related considerations still make up a relatively low share of the total official development finance (ODF) portfolio, accounting for 7% or US$ 9.4 billion on average over the period, but the amounts are increasing. According to the data reported to the OECD, Biodiversity-related ODF[11] has shown an overall increase from 2015 to 2021 (from 10.9 to US$ 18.5 billion), mainly driven by bilateral aid (OECD, 2023). From 2015 to 2021, DAC members made up 71% of the total public flows on average, while multilateral institutions made up 29%. The rise follows the commitments in international climate finance, as 81% of biodiversity-related DAC bilateral ODF also targeted climate change on average over 2015-21 (OECD, 2023). Flows from non-DAC members (Saudi Arabia, the United Arab Emirates, and Kazakhstan)[12] make up an additional 0.1% of the total and gained importance after 2017, when many of these providers started reporting to the OECD. Funding for biodiversity-related activities from providers beyond the DAC membership amounted to US$ 27 million annually on average from 2018–21.

9 The OECD Development Assistance Committee (DAC) is the principal body through which the Organisation for Economic Co-operation and Development (OECD) deals with issues related to development cooperation and aid to developing countries. It currently has 32 member countries as well as several participant and observer organisations like the World Bank and IMF. One of its main functions is to monitor and report on official development assistance (ODA) flows from its members to developing countries.

10 Since 1998, the DAC has monitored development finance targeting the objectives of the Rio Conventions, including the CBD, through four "Rio markers" (biodiversity, desertification, climate change mitigation and adaptation). Countries and institutions reporting their official development finance to the OECD signal flows to biodiversity-related activities using the biodiversity Rio Marker, as well as through two SDG tags – SDG 14 (marine biodiversity) and SDG 15 (terrestrial biodiversity).

11 Biodiversity-related ODF reflects the full values of flows. Data is used without coefficient.

12 Brazil, Chile, Costa Rica, and Indonesia report on their total official support for sustainable development with biodiversity-related objectives.

Considering data on biodiversity-specific development finance (i.e. using data with coefficient – see Box 1) provides a different scale but similar trends. Overall, biodiversity-specific development finance from all sources increased by 53% over 2015–21, rising from US$ 7.3 billion to US$ 11.1 billion (US$ 9 billion annual average over the period). Public development finance for biodiversity increased by 31% - largely driven bilaterally by individual DAC members, which made up 76% of the total public flows on average over 2015–21, with the remaining 24% coming from multilateral institutions (Figure 2). Flows from non-DAC members and South-South providers made up an additional 0.2% of the total.

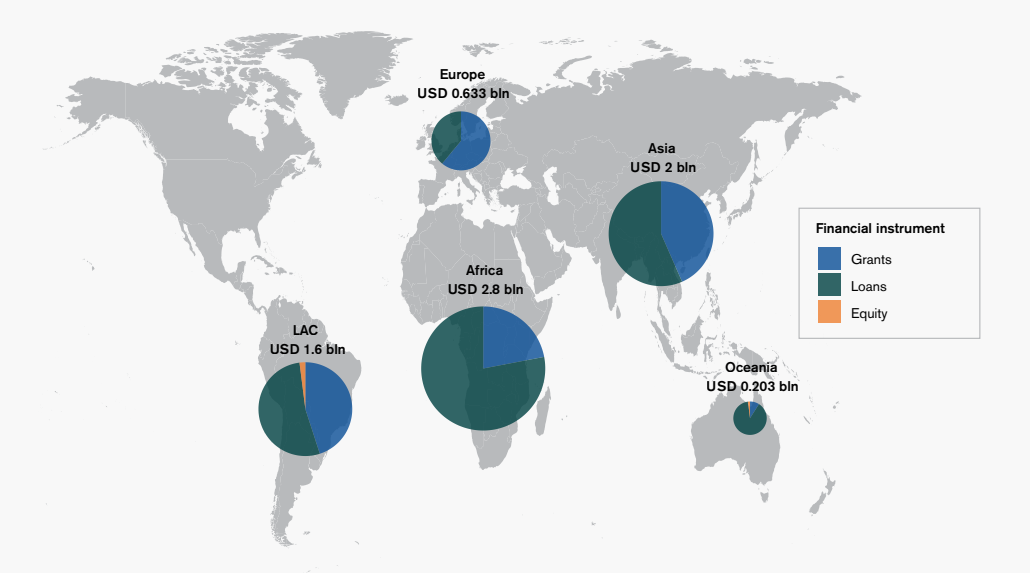
Box 1:
Biodiversity-related and Biodiversity-specific development finance

1. Biodiversity-related: This reflects the full values of all flows reported to the OECD that have a biodiversity component. It includes projects where biodiversity is a principal or significant objective.

2. Biodiversity-specific: This applies coefficients to the reported flows to estimate the portion specifically targeting biodiversity. The coefficient is applied to financial flows for projects where biodiversity is a "significant" objective rather than the principal focus. The biodiversity-specific approach results in lower but more targeted estimates compared to the biodiversity-related approach.

Bilateral biodiversity-related aid is mostly attributed by DAC members to Africa and Asia, receiving US$ 2.84 billion (39% of total biodiversity-related ODF) and US$ 1.96 billion (27%), respectively, on average annually over 2015–21. The top five recipients of bilateral biodiversity-related ODF (25% of the total estimated) are Colombia, India, Ukraine, Ethiopia, and Indonesia. The top recipients of multilateral development finance over 2015–21 (46% of the total estimated) are China, India, Brazil, Indonesia, Colombia, Mexico, Philippines, Kazakhstan, Bolivia, and Vietnam (Figure 3). Research has established that the allocation of biodiversity aid is positively associated with the number of threatened species in recipient countries, which reflects the interest in endangered areas or areas of critical natural capital, and positively associated with indicators of good governance (Miller, 2013).

Figure 3 *Estimated biodiversity-related development finance from multilaterals by region (in bln US$). Source: adapted from OECD 2023*



International private finance tracking remains challenging and comprehensive data on private sector finance for biodiversity is not readily available (CBD, 2024). Estimations are based on different sources of data for biodiversity offsets (which constituted the largest proportion of private finance, at an estimated range of US$ 2.6–7.3 billion per year), sustainable commodities, forest carbon finance, payments for ecosystem services, water quality trading and offsets, philanthropic spending, private contributions to conservation non-governmental organisations (NGOs), and private finance leveraged by bilateral and multilateral public development finance. International private finance mainly targets core biodiversity-related activities (e.g., conservation and protection) but can also address environmental policy and administrative management, site preservation, agricultural and forestry development, river basin development, water resources conservation, as well as supporting small and medium-sized enterprises and business development (OECD 2020).

Despite difficulties in estimating private financial flows, these seem to be increasing. According to the OECD, philanthropic organisations are increasingly channeling investments into biodiversity-related initiatives, with a notable uptick from US$ 501 million in 2017 to US$ 932 million in 2021, reflecting an 86% surge. Most philanthropic funding for biodiversity-related causes, totaling 78%, was directed towards middle-income economies (Indonesia, Brazil, India, Peru, and China, collectively constituting 40% of the total funding).

Finally, it is important to note that progress on financing and considering biodiversity in public policies and international financing suffers from a lack of data and non-harmonised reporting. More precise data is needed to establish a real diagnosis of the state of funding and would also have the potential to clarify the scope of 'biodiversity' finance, and to strengthen the standards and rules for allocating funds in this area. While countries have a template for reporting their domestic biodiversity-related expenditures to the CBD, they are not required to follow a strict

methodology for quantifying these financial commitments (OECD 2020). Regarding official development assistance and international flows, there is no agreed definition or common approach for applying the Rio Markers related to biodiversity. When reporting against quantified international finance goals (such as the CBD), many DAC members only report their official development finance that targets biodiversity as a "significant" objective as a share of the total finance provided. They estimate this by applying coefficients to reflect the share (see Box 1) (Convention on Biological Diversity & United Nations Environment Programme, 2024). Additional research is necessary to accurately measure the financial movements, industries, and nations involved. Moreover, there is a need to establish a reporting structure that corresponds with the Global Biodiversity Framework and integrates the IPBES framework for actions aimed at mitigating the impact of the five primary drivers of biodiversity decline.

B. International Framework for Addressing Biodiversity Loss: Estimating Funding Needs and Bridging the Funding Gap

B.1. Funding needs for biodiversity

The progression in estimated funding needs for halting and reversing biodiversity loss reflects the increasing awareness and expanding scope of biodiversity efforts globally. In 2012, the report of the High-Level Panel on Global Assessment of Resources for Implementing the Strategic Plan for Biodiversity 2011–2020 provided an estimated range of US$150–440 billion annually for the Aichi targets. In 2020, the panel of experts on resource mobilisation estimated that the resources needed to implement the post-2020 Global Biodiversity Framework ranged from US$613 billion to US$895 billion annually (CBD, 2020), in line with the analyses of the Paulson Institute report by Deutz et al (2020). Goal D of the Global Biodiversity framework (2022) identifies a finance gap of $700 billion per year, to be progressively closed by 2030.

The variation across studies – both institutional and academics – in the amount of financing needed to halt and reverse biodiversity losses represents the variation in the scopes of the activities under consideration and the transition to be carried out. Smaller global estimates (US$ 103 billion to US$ 178 billion annually), for example, reflect only on investments in protected areas if coverage were increased from current levels to 30 per cent by 2030[13]. In contrast, the larger global estimate (US$ 599 billion to US$ 823 billion annually) reflects the financial resources needed for multiple activities, including: protecting additional lands and waterways; making the agricultural, fishery, and forestry sectors more sustainable; conserving biodiversity in urban and coastal areas; managing invasive species; and protecting urban water quality (CBD 2020). Moreover, this larger estimate integrates a broader notion of economic costs, considering

13 This would be 4.7 to 7.3 times more than current expenditures on protected areas (US$ 24.5 billion annually). The methodology is based on estimating future scenarios, including investments in management and establishing new protected areas.

not only the direct costs needed but also the related opportunity costs[14] incurred for moving these key economic sectors towards sustainable production in the next three to four years.

The funding needs have been estimated separately, based on peer-reviewed academic literature, by Deutz et al. (2020) for the following (see Figure 4):

(i) Protected areas and conservation costs (US$ 149–192 billion per year globally), which reflect the acquisition cost of land and operating costs to monitor and manage enclosed areas.

(ii) Sustainable management of productive landscapes and seascapes, which includes the transition of agricultural (US$ 396–501 billion per year), forestry (US$ 19–32 billion per year), and fishing (US$ 24–47 billion per year) sectors. More specifically:

   a. Financial resources needed for the agricultural transition are evaluated to support the transition to biodiversity-positive farming on 100% of existing cropland by 2050 by providing income support for farmers equal to the production value (FAOSTAT adjusted for region-specific valuations) of the incrementally transitioned cropland for three to four years.

   b. Regarding forest land, globally, 1.460 billion hectares of forest land are estimated to be currently managed for productive purposes. Transitioning these to sustainable forest management practices involves significant funding to not only alter forest management practices but also to compensate for potential reductions in timber yields.

   c. global fisheries to sustainable practices by 2030 involves implementing sustainable fisheries management practices. This includes exercising caution in harvesting, considering the impact of fishing on the ecosystem and granting secure fishing rights to align economic incentives with conservation efforts[15].

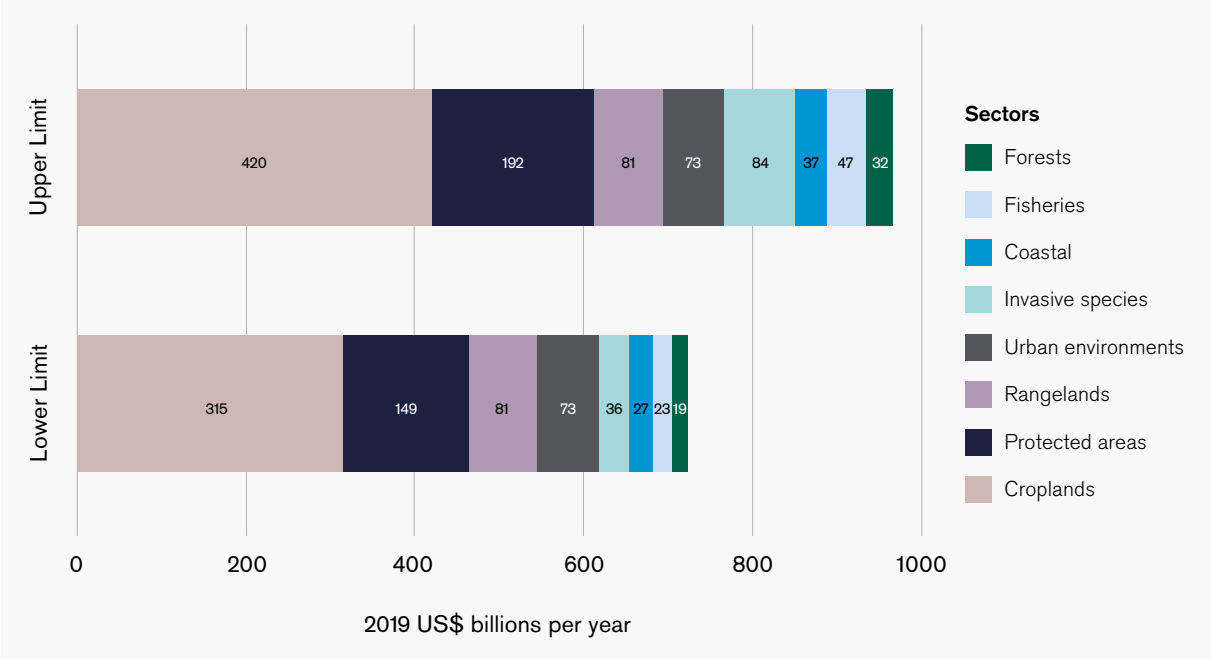
(iii) The costs of addressing the impacts of urban expansion have been estimated at US$ 72.6 billion per year. This estimation assesses the costs of protecting drinking water through investments in watersheds, reducing waterborne pollution from cities, and protecting natural habitats on the peripheries of cities, considering projections for urban expansion (Deutz et al., 2020, see Appendix 2).

(iv) The cost of managing the impacts of invasive species is estimated to require US$ 36–84 billion per year. It includes costs for invasives species eradication, as well as control measures and preventive actions to mitigate the spread and impact of invasive species across various ecosystems.

14 Opportunity costs express the losses in income incurred from an action (e.g. protecting a forest), in terms of potential loss of economic benefits (e.g. selling the wood from the forest), in addition to the direct financial cost of undertaking such action (e.g. paying rangers to protect the forest). Inclusion of opportunity costs raises an important methodological issue.

15 Deutz et al. (2020) used data from Mangin et al. (2018) and inflated the reported management costs of sustainable fishing from US$ 2012 to US$ 2019 equivalents.

Figure 4 Global biodiversity conservation funding needs. (in 2019 US$ billions per year) – Source: Deutz et al. (2020).



The evaluation method is questionable, as it is based on very strong assumptions and micro costs that are questioned in the literature (Iftekhar et al., 2017; Knight and Overbeck, 2021). The study by Deutz et al. (2020) has the merit of giving orders of magnitude and including sectoral transformation issues, including opportunity costs and implementation costs. However, these are given at the level of the practice or farm, which remains a fairly limited vision of the transformations to be achieved.

Unlike the evaluations that have assessed a funding gap by sector (Deutz et al. see Part 1. section B.1), the Global biodiversity framework does not assign spending targets to sectors of activities (conservation, agriculture, fisheries, etc.), but to instruments and financial channels (repurposing of harmful subsidies, additional domestic, international, public and private sources).

B.2. Financial and Policy Mechanisms to Close the Biodiversity Financing Gap

This section provides guidance for understanding the various funding mechanisms and solutions being considered to help bridge the biodiversity funding gap[16]. Investments and spending in biodiversity can be categorized according to (i) whether they are public or private finance and which entities developed and deployed them, such as Multilateral Development Banks (MDBs), governments, private sector actors and charitable organisations; (ii) the financial instruments they rely upon, including subsidies, earmarked taxes, market-based instruments, etc.; and (iii) the

16 Certain mechanisms originally mentioned to provide climate adaptation and resilience also finance nature restoration. See for instance the instruments' inventory recently published by the NAP global network

economic sector in which their use is most prevalent.

We provide a simplified characterisation of the diverse financial instruments aimed at protecting biodiversity in Table 1. Our categories are based on expertise from the BIOFIN catalogue and the report by Deutz et al. (2020). The BIOFIN catalogue[17] (UNDP, 2018) reports 68 instrument categories, which give a comprehensive list of 126 financial tools and mechanisms that can be used to finance biodiversity actions and projects. Table 2 provides specific examples of these instruments and financial solutions.

Table 1 *Characterizing Biodiversity finance instruments*

Instrument features	Categories	Source
1. Source of Funding	Public; private; blended financing sources.	Adapted from Biofin Catalogue
2. Financial instrument	Market; tax; regulatory; fiscal; grant; risk (insurance); equity.	Adapted from Biofin Catalogue
3. Purpose of the instrument	Deliver biodiversity management efforts more effectively; Generate new fundings or additional fiscal space; Realign current expenditures	Adapted from Biofin Catalogue
4. Financing requirements addressed	Protected areas and biodiversity conservation; Sustainable management of productive landscapes and seascapes; Urban areas and areas of high human impact; Non-specific allocation.	Adapted from Deutz et al. (2020)

The development of market-based mechanisms and the offset paradigm demonstrates a shift away from relying solely on donor funding towards an investor-driven approach to biodiversity conservation. Multiple reports emphasize the importance of generating returns on biodiversity investments (Credit Suisse et al., 2014; Deutz et al., 2020). Consequently, various instruments have been created to increases the availability of private, for-profit investments with a positive impact on conservation.

Most biodiversity-related financial instruments described in the BIOFIN database remain regulatory (65.4%)[18]. This includes, for instance, biosafety fees, corporate social responsibility tax, ecological fiscal transfers, green procurement, incentives for sustainable business, lower cost of capital for conservation investments, tariffs, fees, and taxes in the water sector and in the tourism sector. Market-based mechanisms represent 45.6% of the mechanisms listed and include biodiversity offsets, carbon markets, financial guarantees, green bonds, non-state protected areas, outsourcing strategies, and payment for ecosystem services. According to our analysis, 52% of the instruments listed by BIOFIN involve international transactions and partnerships, making them suitable for cross-border implementation; instruments like taxes, governmental subsidies, quotas, and concession fees typically require national administration and are managed within the legal and regulatory domestic context (47%).

17 See https://www.biofin.org/finance-solutions

18 Categories as “Market“ or “regulatory“ are non-exclusive.

Table 2 *Examples of financial instruments for Biodiversity – adapted from Biofin Catalogue and Deutz et al. (2020)*

Instrument category	Description	Instruments	GBF (Target 18-19)
Payment for ecosystem (or environmental) services	Beneficiaries/users of an ecosystem service, such as water regulation, directly or indirectly pay the service provider in exchange for service provision and maintenance. The concept of "user pays" is that whoever preserves or maintains an ecosystem service should be paid. Beneficiaries/users of an ecosystem service can make a direct payment to the provider of that service through a private contract or an indirect payment through the intermediation of the State, which charges the users through a tax or fee. Payments for ecosystem services are primarily made in the water, forest, agriculture, and energy sectors.	Payment for Ecosystem Services-state intermediation and/or fee Payment for Ecosystem Services-private to private	Target 19
Subsidies	Reform, green, or phase out a subsidy that directly or indirectly harms biodiversity. In general, a subsidy harmful to biodiversity induces production or consumption behavior that exacerbates biodiversity loss through land and ocean degradation, unsustainable exploitation of renewable natural resources, overuse of inputs, or ineffective waste management. Subsidies can take the form of direct transfers, tax credits, and regulatory advantages that generate economic or financial benefits to the recipient. A broader definition may include implicit subsidies, which are defined by the failure to internalize negative externalities to the environment (e.g., pollution).	Repurpose of harmful subsidies (Direct transfers, Tax credits, Regulatory advantages) Biodiversity beneficial subsidies	Target 18 & 19
Green Bonds	Green bonds can mobilize domestic and international capital market resources for climate change adaptation, renewables, and other environment-friendly projects. They are no different from conventional bonds; their unique characteristic is the specified use of proceeds invested in projects that generate environmental benefits. In its simplest form, a bond issuer (public or private) will raise a fixed amount of capital, repaying the capital and accrued interests over a set period. Sovereign bonds and forest bonds are being issued to finance biodiversity-related activities.	Forest bonds Ecosystem green bonds Conservation notes Climate bonds Blue bonds	Target 19
Biodiversity offset	Measurable conservation outcomes resulting from actions designed to compensate for significant residual biodiversity loss arising from project development after appropriate prevention and mitigation measures have been taken. Offsets can, for example, deliver biodiversity benefits (e.g., reforestation) through a transaction, where offset sellers (e.g., a conservation NGO) sell offsets to developers (e.g., a mining company) who seek to compensate for the residual biodiversity loss. Offsets have been established in agriculture, forest, construction, manufacturing, and mining. Aggregating offsets under a policy framework can optimise the biodiversity benefit by increasing ecosystem connectivity, preventing future habitat fragmentation, and creating large contiguous sites.	Wetland banking Nutrient trading Biobanking	Target 19
Carbon market	Carbon markets aim to reduce greenhouse gas (GHG) emissions cost-effectively by setting limits on emissions and enabling trading of emission units (instruments representing emission reductions). Trading enables entities that can reduce emissions at low cost to be paid by high-cost emitters, thus lowering the economic cost of reducing emissions. Carbon markets can include emission allocation and reduction credits like carbon offset credits. Forest or agricultural-based offset credits may be used in various carbon markets to offset industrial emissions.	Voluntary climate financing REDD+ Climate credit mechanisms	Target 19

Instrument category	Description	Instruments	GBF (Target 18-19)
Debt swap	Governments can write off a proportion of their foreign-held debt through debt restructuring agreements. The savings accrued will be channeled into domestic conservation initiatives and climate adaptation programs. This often entails the establishment of a Conservation Trust Fund to channel the funds. Debt-for-nature swaps can target official and commercial lending, with the former being the most common scheme.	Debt for nature swap – official lending Debt for nature swap – commercial lending	NA
Standards (IFC's Performance standard, Rio markers, Taxonomy)	Biodiversity is integrated into sustainable investment policies through different standards and commitments. (See Supplementary materials).		

The different mechanisms available for biodiversity finance complement each other to generate revenue or access additional financial resources for biodiversity, prioritize more effective implementation of biodiversity management efforts and improve cost-effectiveness, synergies, and equitable distribution of resources, or help avoid future expenditure by reducing or modifying counterproductive policies, expenditure, and behavior (e.g., fertilizer taxes) (See Investment Standards in Appendix 3). Informational and motivational tools are aimed at changing individual or community preferences and can complement additional funding and reallocation to fill the previously mentioned financial gap. They are not mentioned in Table 1 as they cannot be considered as financing solutions. Finally, some financial instruments are only applicable on a domestic scale, while other mechanisms can facilitate international flows over and above development aid.

Developing effective resource mobilisation strategies for biodiversity necessitates a comprehensive understanding of the scalability potential of various financial instruments and their capacity to contribute to biodiversity preservation. This includes evaluating their financial capacity, market demand, regulatory environment, institutional capability, and partnership opportunities. For example, the scalability of international instruments relies on the co-financing arrangements developed by development banks and multilateral institutions. Governments can encourage private sector entities to invest in expanding markets for sustainable investments by fostering public-private partnerships or issuing bonds. Deutz et al. (2020) estimated a growth in financial resources resulting from scaling up a selection of financial instruments and mechanisms for biodiversity by 2030, corresponding to low-ambition and high-ambition growth scenarios (Table 3). The authors especially emphasize the critical role of biodiversity offsets in the future, primarily to compensate for the swift growth of urban centers and related infrastructure developments.

Table 3 *Estimating the scaling up of a selection of financial instruments in 2030 (in 2019 US$ billion per year) – adapted from Deutz et al. 2020.*

Mechanism that increases capital flows into biodiversity conservation	Low ambition	High ambition	Potential growth 2019–2030 (calculated or evidenced)
Biodiversity offsets	162,00	168,00	25 times higher[19].
Natural infrastructure (watershed investing)	104,70	138,60	12.2% to 14.1% (CAGR [20])
Domestic Budget and tax policy	103,00	155,40	2.97% to 6.5% (calculated[21])
Nature based solutions and carbon markets	24,90	39,90	37.04% to 32.6% (CAGR)
Green financial products - green debt	18,70	75,60	23.53% to 26.10% (CAGR)
Sustainable supply chains	12,30	18,70	10.6 to 11.36% (CAGR)
Private equity impact investing	12,30	16,90	16.6 to 17.0% (CAGR)
Official development assistance	8,00	19,40	6.5% (CAGR)

A key finding of the Deutz et al. (2020) report is that even at the upper end of the estimates for increased capital flows toward biodiversity conservation of US$ 446–632 billion annually by 2030 (instruments listed in Table 3), the global biodiversity financing gap will not be closed without significant efforts directed toward realigning current harmful expenditures, mainly in agricultural, forestry and fishing sectors, and re-orienting existing financial flows towards biodiversity or away from harmful activities (Withana et al., 2012; Matthews and Karousakis, 2022; Gonon et al., 2023).

19 Deutz et al. (2020) estimated the potential conservation funding from future biodiversity offsets through the following steps: (1) based on projections of future development, estimated the spatial area of natural habitat impacts (a common proxy for biodiversity impacts) that should require offsets; (2) applied an impact-to-offset ratio to this area of habitat impact; (3) applied average offset costs per hectare for higher income countries and middle-to-lower income countries; and (4) estimated a range of potential conservation funding from biodiversity offsets based on policy adoption and the full potential. Then, they applied the per-hectare cost estimates for higher income and middle-to-lower income countries.

20 Compound annual growth rate.

21 Some mechanisms have 2030 projections that are based on global policy targets set for the relevant funding sources, such as doubling ODA flows or domestic budgets and tax policy by 2030. Subsequently, CAGRs have been calculated to provide a target growth rate assuming a linear trajectory between 2019 and 2030.

C. Limitations of the current Biodiversity finance Approach in driving Transformative Changes, and potential ways forward

The previous sections have mostly described existing studies that argue (in implicit or explicit manners) that bridging a specific funding gap will enable us to halt and reverse biodiversity loss. This section provides an alternative perspective, arguing that another approach to designing a global resource mobilisation strategy for biodiversity is necessary. We contend that the conventional focus on filling finance gaps conceals both how and why harmful environmental patterns persist, and how and why biodiversity finance is apparently lacking in the regions where it is needed most. We then consider the potential for generating "transformative change", focusing on how major structural reforms of the global financial architecture can relieve the financial constraints faced by countries in the Global South, which keep them locked into environmentally harmful productive structures.

C.1. Limitations of the current Biodiversity finance Approach in driving Transformative Changes

According to IPBES, the transition to a social and economic structure that functions "in harmony with nature" requires "transformative changes" (IPBES, 2019). Transformative changes are changes that go above-and-beyond minor incremental reforms that tend to reproduce or reinforce the status-quo. They include changes that promote fundamental shifts in development paradigms and socio-ecological dynamics, addressing societal inequalities and governance issues, promoting more sustainable use of land, water, energy, and materials, adjusting consumption patterns, food systems and international trade.

Such a profound transition would imply major impacts in sectors that are often harmful for biodiversity (e.g., energy, agriculture, mining, etc.) and fundamentally reshape access to employment, the distribution of incomes, balance of payments, and liquidity across the globe. In this sense, halting biodiversity loss and driving socio-economic systems toward nature-positive development means transforming production and consumption patterns, as well as the interconnections among actors, institutions, and technologies (Kok, 2022).

Indeed, the prospect of transformative changes raises questions about the very structure of global trade and production directly concerned. For example, numerous studies now empirically demonstrate how countries in the Global South specialize in the most environmentally-damaging sectors for export to the Global North (Dorninger et al., 2021).[22] Additionally, the expansion of global value chains is widely acknowledged as a significant driver of deforestation and biodiversity loss in developing regions (Moran and Kanemoto, 2017; Pendrill et al., 2019; Althouse et al., 2023).

22 The UNEP (2024), for example, has found that sectors related to the extraction and processing of raw materials - which tend to concentrate in developing countries - account for up to 90% of land-use related biodiversity losses and 55% of greenhouse gas emissions.

Moreover, since trade patterns are ultimately conditioned by availability and access to finance - including the investment decisions of firms, financial institutions, and states - the architecture of global finance may also require profound structural changes. Research now regularly argues that the financial system itself plays a role in reinforcing harmful environmental patterns, often in the most ecologically and economically vulnerable regions (Althouse and Svartzman, 2022; Dempsey et al., 2024).

From this perspective, halting and reversing biodiversity losses does not so much require a greater *quantity* of finance, but a change in the *quality* of social and environmental patterns engendered by financial institutions. Three main arguments can be found in the literature to criticize the idea that aiming to "fill the financing gap" will suffice to improve biodiversity outcomes.

First, the "finance gap approach" does not generally inquire about which type of financial instrument may be needed, assuming that 'one dollar spent on nature is always good'. In fact, this could become particularly problematic to assess the ability of market-based mechanisms to overcome challenges related to additionality, permanence, and leakages (Balmford et al., 2023; Wunder et al., 2020).

Despite expectations that private funds and market-based mechanisms will become a growing factor in global biodiversity finance, both theoretical and empirical research raise questions about their capacity to expand beyond, or even meaningfully substitute for, effective public policies in addressing the biodiversity crisis (Kedward et al., 2023). Literature extensively discusses the implementation challenges surrounding biodiversity protection and conservation, particularly in the context of payment for ecosystem services and market-based mechanisms (Wunder et al., 2020; Groom and Palmer, 2012; Sunderlin et al., 2024). For example, the values placed upon biodiversity are characteristically place-based, hence creating difficulties for reporting, monitoring and comparisons across geographies (Purvis and Hector, 2000). Measurement across scales involves functional, structural, and compositional indicators, necessitating a multi-faceted approach to assess the holistic state of nature. Moreover, research now regularly highlights the potential negative trade-offs and even demonstrably harmful impacts of different forms of international biodiversity action (e.g., biodiversity offset markets) (Pörtner et al., 2023; Tedesco et al., 2023). Despite the promise of delivering positive outcomes for both people and nature, the results of these efforts have been decidedly mixed (Brooks and Kennedy, 2004).

Secondly, in addition to implementation challenges, international biodiversity finance is delivered in a way that can lead to fragmented and discontinuous efforts in national conservation and sustainable use (Convention on Biological Diversity & United Nations Environment Programme, 2024). Indeed, international biodiversity finance is overwhelmingly project-based, involving the allocation of funds to specific, time-bound projects with defined objectives and outcomes.

The current framing and strategy to mobilize resources for biodiversity therefore lead policymakers and the private sector to prioritize conservation and restoration efforts in isolation from the economic drivers of biodiversity loss. This trend is particularly apparent in developing

economies, where coordination between different projects and donors is low, and individual projects are rarely integrated into a coherent development strategy.[23] For example, Costa Rica is internationally recognized as a model of environmental sustainability despite being a major producer of tropical fruits prone to monoculture, such as bananas and pineapples. While studies have pointed to the global environmental benefits stemming from Costa Rica's biodiversity financing schemes (including a payment for ecosystem services program), these have also been linked to greater deforestation in some of the most ecologically valuable regions, driven by the expansion of export-oriented cropland (Jadin et al. 2016). This highlights the importance of a multi-scale analysis when evaluating the causes and impacts of biodiversity finance initiatives. Rather than simply aiming to increase funding for a given project, the focus should be on developing a vision of biodiversity protection that involves multiple pathways for protection. These can include substantial investment in policies, technologies, and measures that preserve biodiversity as an asset for the sustainable development pathway of a given region, as well as strict regulations (e.g., quotas, bans, and other non-financial tools) that may require little or no financing (Obura and Treyer, 2022, Treyer et al., 2023).

Thirdly, biodiversity finance strategies have also been specifically criticized for reinforcing power imbalances between the Global North and Global South (McAfee, 2012). The underlying assumption in international conservation policies is that countries in the Global South are endowed with natural capital as ("unspoiled") biodiversity-rich land (Aulong et al., 2011). As opportunity costs for biodiversity conservation are lower in the Global South (McAfee, 2012), cost-effectiveness and cost-benefit assessments show that restoration and conservation should be prioritized in the Global South, while the Global North prioritizes high value-added industrial production and services (Strassburg et al., 2020).

In theory, this approach could allow the Global South to earn precious foreign exchange through conservation by turning nature into an asset, traded as biodiversity and carbon offsets. Instead of exporting physical goods, the Global South could earn income by conserving land. Conservation rents, in this case, would become a new type of "export" for the South.

However, global conservation finance would thereby risk reproducing unequal development by positioning the Global South mainly as a supplier of ecosystem services to the Global North. This framing effectively shifts the "conservation burden" onto poorer nations, while wealthier countries continue their unsustainable consumption and production. Such a situation is likely to strengthen the Global North's dominance in production and deepen the financial dependence of the South on the North. Research shows the danger of viewing the preservation and maintenance of natural capital through the lens of "nondevelopment," with compensation coming from high-income countries (Karsenty et al., 2017). Without broader refroms and integrated development plans, biodiversity conservation financing is likely to support a global system that privileges the accumulation potential of the Global North.

23 Interestingly, biodiversity and climate offset projects are also expected to increase in these regions, in part because nature is viewed as more "pristine" and the opportunity cost of preventing production and land use is lower (McAfee, 2012).

C.2. From a “financing gap approach” to a “transforming finance approach” to protect biodiversity?

Another major limitation of the “financing gap approach” is that it tends to approach the financial sector as a given, viewing finance primarily as a neutral system of intermediation that would simply need to be nudged to caring more about climate, biodiversity and nature (e.g. through derisking strategies, or better information). In this way, the approach leaves little room for deeper discussions about how current financial structures might reinforce harmful environmental patterns, and side-steps debates about what a just and sustainable financial system even looks like.

Research increasingly suggests that the current structure of the global monetary and financial systems tends to create major obstacles for the poorest and most vulnerable countries to mitigate and adapt to the effects of climate change and environmental degradation (Althouse and Svartzman, 2022, 2024; Murau et al., 2023; Dempsey et al., 2024). Indeed, the international monetary and financial institutions are shown to create structural dependencies that drive low-income nations to specialize in the most environmentally damaging sectors, including raw material extraction and processing. Moreover, financial structures also burden low-income countries with a tendency towards foreign indebtedness, volatility in trade and financial flows, limited access to long-term capital, and reduced fiscal and monetary sovereignty necessary for planning and industrial upgrading.

As such, the countries that are most in need of additional long-term financing to mitigate and adapt to climate change and biodiversity losses are also the most mired in debt and the most dependent on environmentally harmful production. This has given rise to a situation where already poor and vulnerable countries are actually net exporters of both financial resources (Summers & Singh, 2024) and biophysical resources to the Global North (Dorninger et al. 2021).

For this reason, there are increasing calls for a major overhaul of the international monetary and financial system. As president of the G20, for example, Brazil has specifically developed a task force to push for reforms of the international financial architecture, arguing that the system has shown itself increasingly “obsolete and ineffective in addressing evolving development challenges and achieving the Sustainable Development Goals (SDGs)” (G20 2024, p. 5). Moreover, The Economic Commission for Latin America and the Caribbean (ECLAC) has proposed innovative financing for the development agenda for recovery in the region based on five policy actions: (i) expand and redistribute liquidity from developed to developing countries; (ii) strengthen regional cooperation by enhancing the lending and response capacity of regional, subregional and national financial institutions, and strengthening linkages between them; (iii) carry out institutional reform of the multilateral debt architecture; (iv) expand the set of innovative instruments aimed at increasing debt repayment capacity and avoiding excessive indebtedness and (v) integrate liquidity and debt reduction measures into a development financing strategy aimed at building forward better.

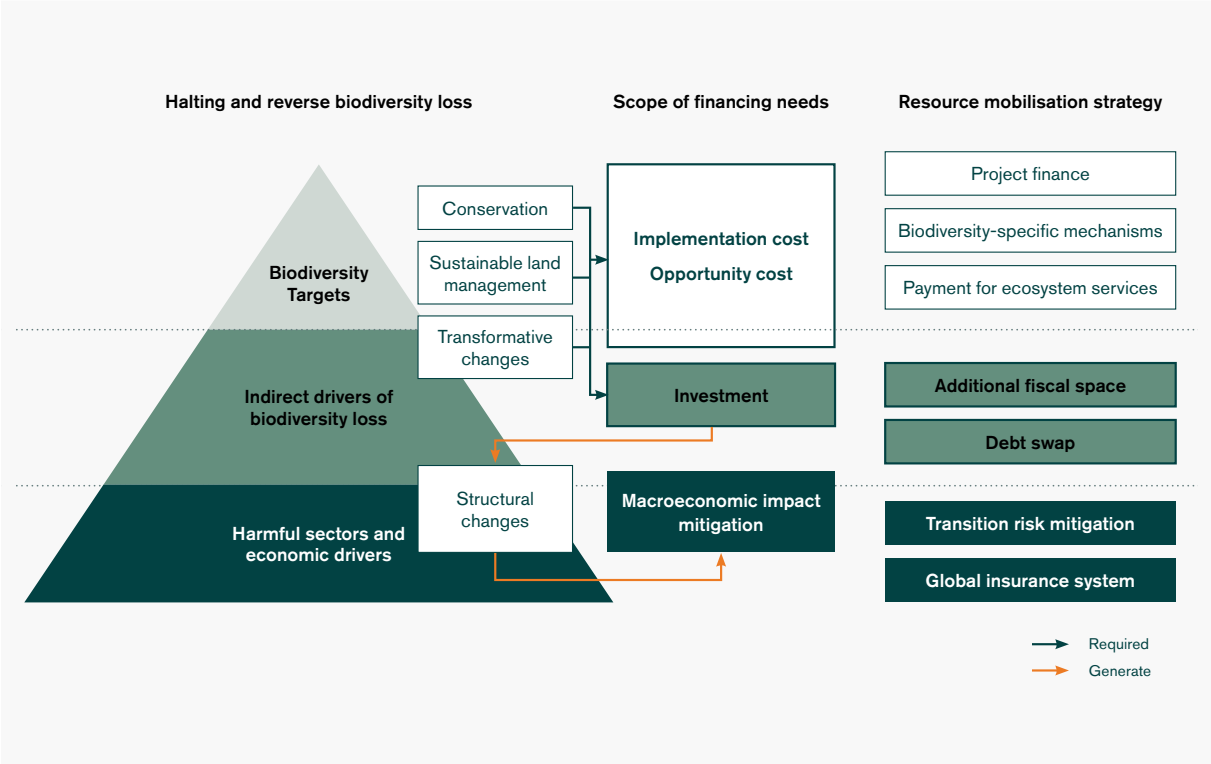
Recent debates in climate finance could also bring some insights. One of the outcomes of Climate COP28 was a strong push for transformative changes in the architecture of both global

climate finance and finance in general to ensure a timely, green, and resilient development for all. These include: the announcement of a new fund for “Loss and Damage”, beyond the newly launched Global Green Shield; the Bridgetown Initiative led by the Prime Minister of Barbados; proposals by the Vulnerable Twenty (V20) group; High-Level Expert Group on Climate Finance report; proposals to alter the capital adequacy ratio framework to boost Multilateral development banks' investing capacity. Such initiatives can all contribute to a potentially transformative agenda in the coming months to COP29 in Azerbaijan and COP30 in Brazil.

Other proposals related to more structural reforms can be mentioned. In particular, debates are currently intensifying around global tax proposals against a backdrop of the need for investment in the transition (Zucman, 2023) and the recognition that high levels of foreign debt can be an obstacle to sustainable development (Dempsey et al., 2022;).

While the purpose of this report is not delve into the intricacies of each potential reform, it seems clear that the prospect of the “financing gap” must be complemented with a more critical approach based on “transforming finance” for the transition. At the very least, it will be important to: (i) (re-)consider financial instruments in light of the deeper socioeconomic transformations needed to halt and reverse biodiversity loss; (ii) consider how the financial system, including the international financial architecture, may itself need to be reformed so as to enable transformative change (Figure 5).

Figure 5 *Building a resource mobilisation strategy that supports transformative pathways. The diagram emphasizes a multi-layered approach, integrating direct conservation efforts with broader systemic and economic changes. Source: Authors*



Conclusion

The Kunming-Montreal Global Biodiversity Framework (GBF) marks a significant milestone in global efforts to address biodiversity loss, presenting ambitious targets and strategies to mobilize financial resources necessary for biodiversity conservation and sustainable management. The financing gap remains a challenge, with current annual spending on biodiversity far below the estimated needs. Key strategies proposed by the GBF to bridge this gap include reducing harmful subsidies and significantly increasing financial resources from various sources. While implementing diverse financial instruments to attract private finance has been at the center of attention, their contribution remains marginal.

Against this backdrop, this report has sought to provide clarity on the current state of "global biodiversity finance" and related challenges and debates. It first detailed the existing assessments of both existing financial flows and future funding needs for biodiversity, including details on the various methodologies used to estimate the amounts concerned, the type of financial instruments considered and the sectors and activities targeted. Estimates of current global biodiversity finance vary significantly across studies, from a minimum of US$ 78 billion to a maximum of US$ 200 billion annually. Nevertheless, some general patterns emerge. Domestic public expenditures are by far the main component of biodiversity financing today, with most of the current funding coming from and supporting action in high-income countries (mainly the US, Italy, France, and Germany). China is also becoming an increasingly significant player in biodiversity finance both domestically and internationally. Additionally, multilateral public expenditure and private finance are on the rise, a trend which is expected to continue.

The challenges in monitoring and reporting financial flows, along with the need for comprehensive and harmonized data, cannot be understated. Accurate data and effective reporting mechanisms are major for tracking progress and ensuring accountability in meeting the GBF targets. The complexity of the financing landscape, involving multiple stakeholders and sectors, necessitates tailored national strategies that align with specific ecological, economic, and institutional contexts.

Moreover, addressing the biodiversity financing gap is not only a financial challenge but also a strategic and operational one that requires coordinated action. Many unresolved questions remain regarding combining several instruments in a policy mix (Ring and Barton, 2015). Coordinating market-based instruments with international, domestic, public, and private interventions within a given territory first requires defining which projects are suitable for funding by each mechanism. The recognition that different financing instruments can also have different objectives, conditionalities and macro-financial consequences has prompted scholars and international organisations to reevaluate their equivalence in filling the funding gap for biodiversity (Kedward, 2023). These perspectives are essential for addressing the complexities of territorial interactions between instruments and policies.

Lastly, this report highlights different arguments criticizing the “finance gap” approach to biodiversity conservation. In particular, by focusing only on financial flows, this approach may:

(i) conceal the key underlying barriers to protecting biodiversity, which are the result of specific socioeconomic dynamics that are not reducible to a "lack" of funding (e.g. rich countries' consumption patterns, which significantly contribute to biodiversity degradation worldwide); (ii) prevent deeper discussions related to transforming the financial system itself (as a contributor to biodiversity degradation), and in particular the need to reform the international financial architecture. While not intending to delve deep into such questions, the report calls for future research to clarify how the need to expand access to finance (the "finance gap approach") must be assessed jointly with the need for transformative socioeconomic changes to achieve sustainability goals, including potential transformations of the financial system itself (a "transforming finance approach").

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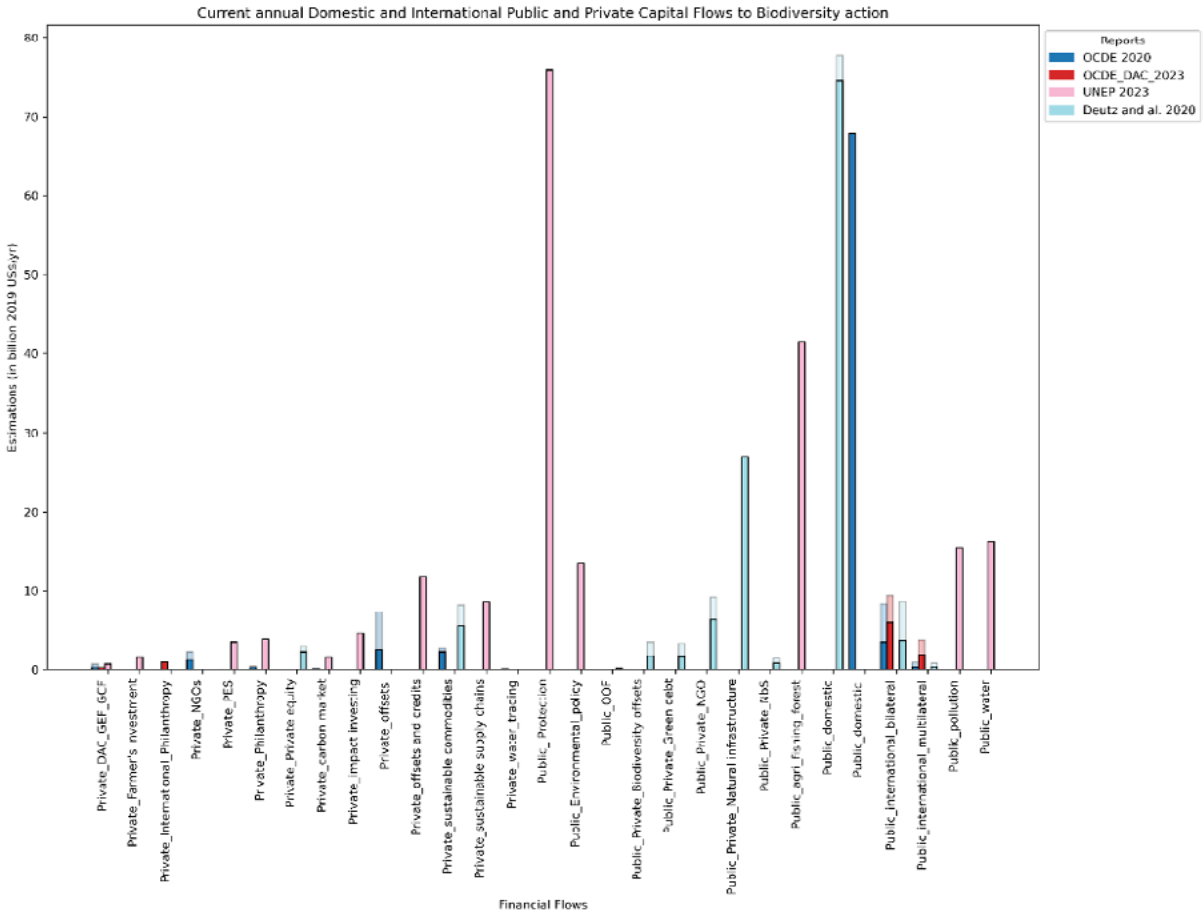
Appendix 1.
The main reports on current biodiversity finance assessments

Report	Scope	Data	Method for estimation of current biodiversity finance	Main results
OCDE – A comprehensive overview of Global Biodiversity finance (2020).	Estimate of global biodiversity finance flows: public domestic, public international, private. An estimate of harmful expenditures.	CBD FRF UNDP BIOFIN – BER COFOG OECD CRS GEF secretariat	Merging and restructuring database Assumptions to avoid doble counting.	Domestic (predominantly public) expenditure on biodiversity: US$ 49 billion in 2015. Other flows of biodiversity finance (ODA and private sector finance channeled through biodiversity offsets and philanthropic foundations) = US$ 39 billion per year.
UNEP – State of finance for Nature - The Big Nature Turnaround – Repurposing $7 trillion to combat nature loss.	Financial flows to Nature-based solutions and Nature-negative finance flows from both public and private sectors sources.	Negative flows: Public: agriculture (FAO, UNDP and UNEP 2021; OECD 2022a), fossil fuels (IEA database), fisheries (Sumaila et al. 2019; Skerritt and Sumaila 2021) and forestry (Koplow and Steenblik 2022). Private : corporate loans, bonds and equity proceeds in 2022 - US$14.5 trillion as classified by the Refinitiv Business Classifications (TRBC). Public and private flows to Nbs : OECD (2023e); IMF (2021); OECD (2023a; 2023b; 2023c; 2023d; 2023e) (ODA, Philanthropy, private finance mobilised by ODA); Financial reports from five NGOs[24].	In the absence of NbS-tagged financial datasets, SFN 2023 combined finance flow data with informed assumptions about NbS relevance to estimate NbS finance flows.	Current finance flows to NbS are US$200 billion. 82% of these funds are provided by governments. Private finance for NbS US$35 billion (18%). 57% of private flows is channelled through biodiversity offsets and credits and sustainable supply chains. Negative Public and private sources: US$7 trillion per year Private finance flows with direct negative impact: US$5 trillion, which is 140 times larger than private investments into NbS.

24 CI (2022), RSPB (2022), TNC (2022), WCS (2022) and WWF (2022); FAO (2018b; 2018c); Rainforest Alliance (2022a; 2022b); RTRS (2022); Solidaridad (2019); De Jong (2019); GIIN (2020); Capital for Climate NbS Funds (2023); Impact Yield (2023); Partnership for Forests (2023); Ecosystem Marketplace (2022); Kassam et al. (2019)

Report	Scope	Data	Method for estimation of current biodiversity finance	Main results
Biodiversity and development finance OECD 2023 (Casado-Asensio, Blaquier, et Sedemund 2022)	Biodiversity related and biodiversity specific in official development finance	OECD DAC statistics from OECD (2023[8]), Creditor Reporting System the biodiversity Rio marker, SDGs 14 and 15, biodiversity purpose codes, and keywords	The estimates are based on OECD statistical data, capturing both official development assistance (ODA) and non-concessional development finance. It includes breakdowns by biodiversity-related providers, sectors, financial instruments, recipient country groupings, and on the biodiversity and climate change nexus.	Biodiversity-related official development finance (ODF) increased from all sources, from US$ 10.9 billion in 2015 to US$ 18.5 billion in 2021. Biodiversity-specific ODF increased over 2015-21, from US$ 7.3 to US$ 11.1 billion. Increase due to DAC members.
Deutz, Andrew, Geoffroy M. Heal, Rose Niu, Eric Swanson, Terry Townshend, Zhu Li, Alejandro Delmar, Alqayam Mehghji, Suresh A. Sethi, et John Tobin-de la Puente. 2020. « Financing Nature: Closing the Global Biodiversity Financing Gap ». Paulson Institute.	Government funding (domestic public), official development assistance (ODA) (international public), and private capital.	Additional to OECD's report: additional data points for seven countries (out of OECD scope) were identified where domestic budgets spending on biodiversity is publicly available. To create the estimated domestic spending for the additional 100 countries, a univariate regression was calculated. Additional data for green bons, green loans and sustainability loans through Bloomberg, cmlimate bonds initiatives, and Linklaters. additional literature review	Based on OECD's findings with a complementary assessment for private and public-private that includes first order estimates for biodiversity offsets, green financial products, sustainable supply chains, natural infrastructure, and nature-based solutions and carbon markets, using a range of academic sources and published industry market size reports.	In 2019 US$ bn/yr: domestic budgets and tax policy: lower estimate: 74,6 - upper estimate: 77,7; ODA bilateral: lower estimate: 3,7; upper estimate: 8,7. ODA multilateral: lower estimate 0,3; upper estimate: 0,8. Other official flows: lower estimate: 0,1; upper estimate: 0,2. Current public-private financial flows: lower estimate: 37,3; upper estimate: 44,4. Private (including sustainable supply chains and green financial products) : lower estimate: 7,7 ; upper estimate: 11,2.

Appendix 2.
Disaggregated current domestic and international, public and private financial flows to biodiversity action



Appendix 3. Investments standards and commitments

- IFC's Performance Standard on Environmental and Social Sustainability is a set of eight standards that guide organisations in identifying, managing, and mitigating environmental and social risks and impacts.
- The Rio markers are a set of statistical policy markers used to monitor external development finance for environmental purposes within the OECD/DAC (Organisation for Economic Co-operation and Development/Development Assistance Committee). They are applied to Official Development Assistance (ODA) and, more recently, to other official flows (OOF). The Rio markers consist of five: Biodiversity, Desertification, Climate Change Adaptation, Climate Change Mitigation, and Environment.
- The Equator principles are voluntary guidelines financial institutions adopt to ensure that large-scale development or construction projects appropriately consider the associated potential impacts on the natural environment and the affected communities.
- Taxonomies aim to guide capital towards more environmentally friendly practices. For instance, the European Union's work on taxonomy, which is part of the EU's broader environmental and sustainability goals, aims to categorise and evaluate the impact of economic activities on biodiversity. The taxonomy is expected to play a key role in the EU Biodiversity Strategy for 2030. In particular, the Do Not Harm principle, as a part of the European Green Deal, applied to public investment avoid any significant harm to any of the six environmental objectives, within the meaning of Article 17, on the establishment of a framework to facilitate sustainable investment (EU Taxonomy Regulation).
- The Classification of Environmental Protection Activities and Expenditure (CEPA) is an international statistical classification established in 2000 for categorizing activities, products, expenditures, and other transactions related to environmental protection. It encompasses a wide range of activities aimed at preventing, reducing, and eliminating pollution or any other degradation of the environment, including measures for biodiversity. It is used in environmental economic accounts based on the SEEA standard. The Classification of Resource Management Activities (CReMA) details activities aimed at preserving and enhancing the stock of natural resources, complementing the CEPA framework (Convention on Biological Diversity & United Nations Environment Programme, 2024; UN, 2021).

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