Biodiversity Finance Factbook

Hugh Bromley October 22, 2024	-	Biodiversity	COP16 Edition		•
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BNEF at COP16

The 16th meeting of the United Nations Convention on Biological Diversity will convene between October 21 and November 1, 2024, in Cali, Colombia.

BloombergNEF will be on the ground in Cali throughout the convention.

To meet our team or join our events and report releases, please contact your client representative or <u>bnefcop@bloomberg.net</u>

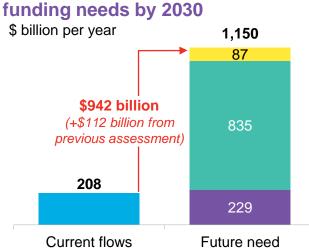
BNEF clients can access our expectations for topics likely to be discussed at COP16 and outcomes likely to be reached here: <u>web | terminal</u>



Executive summary

The gap between current biodiversity finance and future needs has widened to \$942 billion, as a modest increase in investment activity failed to keep pace with inflation. Finance flows into the preservation and restoration of nature have edged higher since the Global Biodiversity Framework was reached in December 2022 but remain vastly off the trajectory needed to hit targets agreed in Montreal. This Biodiversity Finance Factbook provides an update on the need for investment into nature, the current flows of biodiversity finance, and the priority regions where this should be deployed.

- Current biodiversity financial flows amount to approximately \$208 billion per year, up from our estimates of \$166 billion in 2021. A five-fold increase is needed by 2030 to hit the \$1.15 trillion needed.
- Public finance including biodiversity-related overseas development assistance and debt-for-nature swaps has increased since our last assessment, as have estimates of environmentally harmful subsidies. Private finance instruments including green bonds and carbon offsets with biodiversity benefits are down from previous highs and relatively stable.
- The cost of inaction weighs on companies and governments. Approximately 55% of global GDP is moderately or highly dependent on nature, but a vastly higher share relies on functioning ecosystems to some degree. Nature-related risks are costing companies and their investors billions of dollars, but many lack sophistication in their approach to managing these risks.

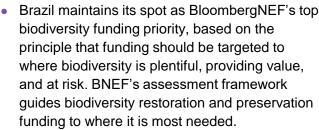


Current annual biodiversity finance

flows vs biodiversity conservation

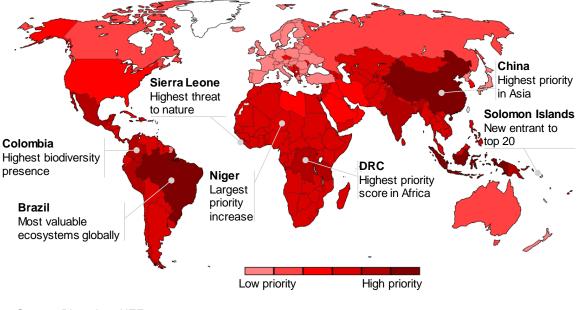
Current flows Future need Source: BloombergNEF, <u>UNEP State of Nature Finance</u> <u>2023</u> (current spend); <u>Paulson Institute, Nature</u> <u>Conservancy, and Cornell Atkinson Center for</u> <u>Sustainability, 2020</u> (future need), CPI Inflation Calculator. Note: Figure uses upper range of estimates.

Executive summary (continued)



- The top five priority regions include China, Indonesia, the Democratic Republic of the Congo and, for the first time, COP16 host Colombia. The priority regions receive high scores on all three metrics, but in particular the value derived from ecosystem services.
- Globally, the biodiversity threat index has increased by five percentage points since 2021, rising in more than two-thirds of geographies.
- There has been notable decline in the biodiversity presence scores of Brazil and China, driven by habitat fragmentation.





Source: BloombergNEF

About This Factbook

This is the third edition of the BloombergNEF Biodiversity Finance Factbook. It provides an update on the need for investment into nature, the current flows of finance, and the priority regions where this funding should be deployed.

The original Factbook, produced in early 2023 at the request of HRH King Charles III for the Sustainable Markets Initiative, provides a broader introduction into the types of finance that may benefit biodiversity, as well as policy and market actions to boost investment activity. It can be accessed here.



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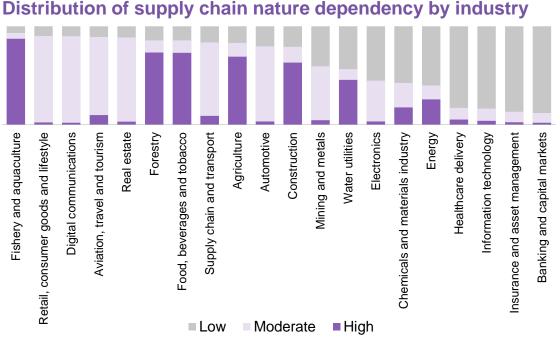


Importance of biodiversity finance

Biodiversity loss presents a rising cost to business and the economy



All economic activity is dependent on nature to some degree



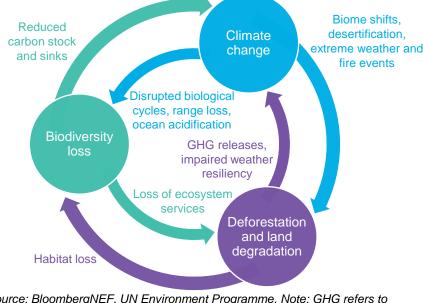
- Global economic activity is underpinned by the stock of natural capital and the ecosystem services that flow from it.
- An estimated \$58 trillion of global GDP is moderately or highly dependent on nature, according to PwC analysis released in April 2023. This is equivalent to 55% of global GDP.
- The qualifiers above are important. All business activity and the totality of economic value generation is dependent on nature to some degree.
- The figure is \$14 trillion higher than estimates of moderately or highly dependent economic activity released in 2020. The updated analysis suggests the global economy is more dependent on nature than previously estimated. Around \$10.1 trillion of the increase is attributable to GDP growth.

BloombergNEF

Source: PwC, Managing nature risks: From understanding to action (2023)

Climate change cannot be mitigated without addressing the biodiversity crisis

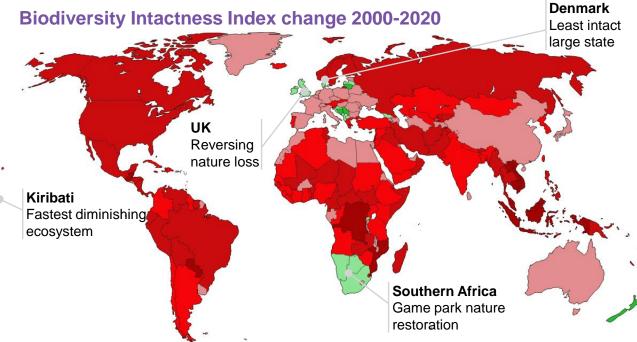
Biodiversity loss and climate change are inextricably linked



Source: BloombergNEF, UN Environment Programme. Note: GHG refers to greenhouse gases.

- Biodiversity loss, climate change and land degradation are inextricably linked such that the worsening of one exacerbates the others. Conversely, addressing each individual threat lessens the dangers posed by the others.
- Biodiversity loss results in reduced organic carbon stocks and a loss of ecosystem services, both of which release GHG emissions and impair climate resiliency.
- Climate change disrupts the breeding and migration cycles of fauna and flora, alters which ecosystems are habitable, and presents threats through extreme weather and fire events.
- Climate change is one of the five core drivers responsible for over 90% of nature loss in the last 50 years. In order of impact, these are: land- and sea-use change, climate change, natural resource use and exploitation, pollution and invasive alien species.
- Most climate solutions also benefit biodiversity. However, they can present additional threats through land use change, resource extraction, establishment of monocultures and over-exploitation of natural capital.

Importance of biodiversity finance Very few countries are reversing nature loss



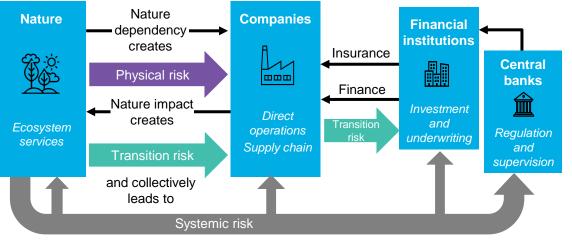
Source: BloombergNEF, Natural History Museum. Note: Green represents net gain in habitat intactness, Red represents net loss in intactness. Darker shades indicate higher gain/loss

Biodiversity is shrinking faster than at

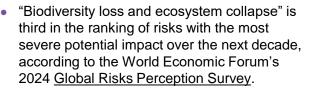
- any point in human history, according to the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services.
- Some of the highest degrees of biodiversity loss are seen on island nations such as Kiribati, Solomon Islands, Aruba and the Cayman Islands, whose unique ecosystems produce high species endemism.
- Sothern Africa has bucked a worldwide trend, with biodiversity intactness rising over the period 2000-2020 through designating land as game reserves for ecotourism.
- Denmark, despite being one of the least intact states, has managed to reverse 4% of nature loss.

Importance of biodiversity finance Nature-related risks are costing companies and their investors billions of dollars

Nature impacts and dependencies create nature-related risks



Source: BloombergNEF



- Operational dependencies and impacts on nature, alongside long-term ecosystem collapse, create three categories of naturerelated company risk: physical, transition and systemic.
- Physical risk to business operations manifests through the degradation of nature and the resulting loss of ecosystem services.
- When these production processes are misaligned with changing regulation, market dynamics or community expectations, a company's impact on nature gives rise to transition risks that can lead to financial costs.

When the Bee Stings

In collaboration with the TNFD, BloombergNEF released 10 case studies on mismanaged nature risk.

Case studies encompass both physical and transition risk, and range from relatively trivial fines through to significant share price movements and corporate bankruptcy.

The free report is available to download at <u>bnef.com</u> and on the TNFD 'Knowledge Hub'

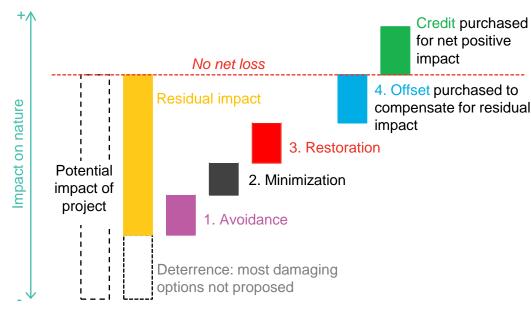
BloombergNEF clients can access additional case studies <u>here</u>.

Company	Sub-sector	Event	Costs	Risks e	exposed
				Physical	Transitior
3M	Specialty chemicals	Since 2016, its US facilities have released toxic per- and polyfluorinated substances, or 'forever chemicals', into watercourses*	At least \$10.5 billion in legal liabilities, layoffs		
AAK	Grain and oilseed milling	Reported** to have sourced palm fruit from protected plantations in Indonesia, contrary to its sustainability claims	5.5% fall in share price in the 24 hours after the newspaper investigation was published		
Bernard Matthews	Packaged food	Inadequate biosecurity measures enabled the avian influenza virus to enter its UK facilities in 2007 according to DEFRA***	£20 million (\$25 million) loss of brand value, layoffs		
Chevron	Oil and gas exploration and production	Faced legal challenges to protect an endangered whale threatened by oil and gas activities in the Gulf of Mexico****	Legal costs and development delays, which threatened up to \$49.6 million in revenue		
	Container shipping	Discharge of untreated ballast water without authority or adequate reporting spread invasive alien species	\$165,000 in fines		
Formosa Plastics	Basic and diversified chemicals	Discharged billions of plastic pellets from the wastepipes of its Texas facilities into waterways	\$50 million settlement, \$9.4 billion plant construction suspended		
FREEPORT- McMoRan	Metals and mining – base metals	Polluted water and forests in Indonesia through its disposal of vast quantities of mining waste	18% share price fall in two days after CEO reacted to tighter environmental laws		
(JBS)	Packaged food – meat products	Repeatedly sourced cattle raised on illegally deforested land in the Brazilian Amazon*****	\$7.7 million in fines, potential loss of \$20 billion valuation gain if US listing blocked		
PG <mark>&</mark> E	Electric transmission and distribution	Sparking transmission lines ignited untrimmed tree branches, leading to a series of deadly wildfires in California	91% share price fall from September 2017 to January 2019, \$5.36 billion settlement		
TESLA	Automotive	Planned Berlin gigafactory's extraction of declining groundwater led to court complaint	3.1% share price fall in 24 hours after court complaint, \$5.7 billion facility delayed		

Source: BloombergNEF. Note: Cases correct as of December 2023 publication. *3M did not admit liability in the settlement. **AK investigation reported by newspaper SverigesNatur. Company noted that sustainable sourcing is important but did not deny allegations. ***UK's Department for Environment, Food and Rural Affairs. Bernard Matthews disputed these allegations in 2007. ***A November 2023 hearing ruled that the lease sale could proceed without further protections for the endangered whale. ****According to Bloomberg

Investment is required both within and outside of company supply chains

Biodiversity mitigation hierarchy

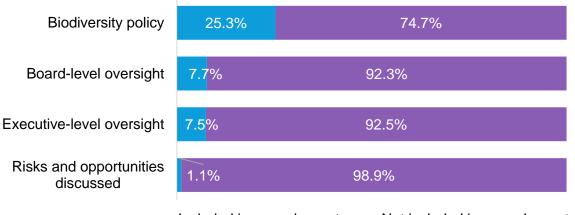


- Investment is needed to both minimize the impact of company operations on nature, and to develop projects that offset unavoidable damage and produce a net positive impact.
- More attention and finance need to be directed toward the former. The mitigation hierarchy guides companies to first seek out ways to avoid and then minimize biodiversity loss caused by their operations and supply chain.
- Next comes restoration of areas in the project, and only then should offsetting of any residual impacts be undertaken.
- Offsets are purchased to compensate for unavoidable biodiversity loss in development projects, while credits are tradable units of biodiversity with a nature-positive outcome.

Source: BloombergNEF, International Institute for Environment and Development, 2020

Importance of biodiversity finance Financial institutions engagement with naturerelated risks lags climate

Financial institutions' approach to nature- and biodiversityrelated risk management



Included in annual report Not included in annual report

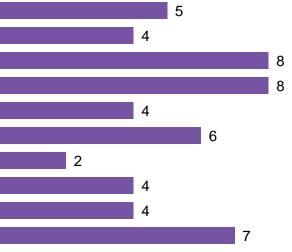
Source: BloombergNEF, Bloomberg Terminal. Note: Data covers 1,784 financial institutions, spanning banking, financial services and insurance from self-reported data in the preceding financial year. "Biodiversity policy" indicates whether the organization has implemented any initiatives to ensure nature or biodiversity protection. "Risks and opportunities discussed" refers to whether the company discusses how nature-related issues may positively or negatively impact the company.

- The majority of financial institutions lack sophistication in their approach to managing nature-related risk.
- Just 7.7% of financials have board-level oversight on biodiversity, 7.5% have executive-level oversight, and only 1.1% report in company filings having discussed nature-related risks and opportunities, according to a BNEF analysis of annual reports spanning 1,784 institutions for which data is available.
- An April 2024 <u>survey</u> by the Global Association of Risk Professionals (GARP) found that only 17% of banks and asset managers are using metrics, targets or limits to assess drivers of nature-related risks, while 75% of the same entities are yet to identify nature-related risks or opportunities

COP16 unlikely to deliver breakthroughs on Global Biodiversity Framework financing goals

BNEF's expectations of COP16 based on 10 key indicators of progress at the UN summit

Submission of revised NBSAPs Alignment of plans with the GBF Biodiversity monitoring framework Procedure for reviewing progress Mobilize \$200 billion per year Progress on financial mechanism Fair sharing of benefits from DSI Climate and biodiversity integration Implementation of Article 8(j) Business engagement



Score out of 10

Source: BloombergNEF. Note: NBSAPs are National Biodiversity Strategies and Action Plans; DSI is digital sequence information; GBF is the Kunming-Montreal Global Biodiversity Framework.

- October 2024's Biodiversity COP16, held in Cali, Colombia, will serve as a status check on the implementation of the 23 targets agreed at COP15.
- Finance will be contentious, as ever. Parties are broadly on track to hit a target for \$20 billion in international finance for biodiversity by 2025. The OECD estimates that overall biodiversity-related development finance reached \$25.8 billion in 2022, a significant increase from \$16.8 billion the year before.
- It is unclear how the broader target of \$200 billion annually for biodiversity by 2030 will be met, with Parties not facing sufficient pressure to warrant a display of largesse. One potential roadblock is the accounting methodology for counting total pledges and disbursement.

Finance flows into nature

The widening biodiversity funding gap

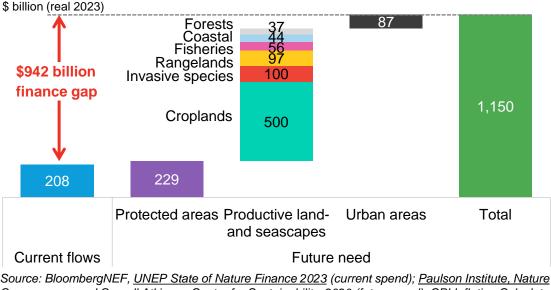
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Finance flows into nature

There is a gap of roughly \$942 billion between current annual biodiversity financing and what's needed by 2030

Current annual biodiversity finance flows vs biodiversity conservation funding needs by 2030



Source: BloombergNEF, <u>UNEP State of Nature Finance 2023</u> (current spend); <u>Paulson Institute, Nature</u> <u>Conservancy, and Cornell Atkinson Center for Sustainability, 2020</u> (future need), CPI Inflation Calculator. Note: Figure uses upper range of estimates.

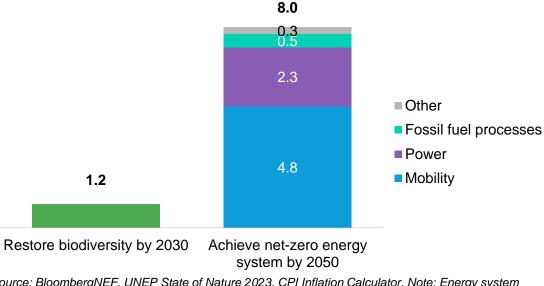
- The biodiversity finance gap between current and future needs has widened to \$942 billion, from \$830 billion at our last assessment.
- Current biodiversity financial flows amount to \$208 billion per year, up from \$166 billion in 2021. The public sector contributes 83% of this finance (\$173 billion). The private sector provides \$35 billion.
- Over \$1.15 trillion per year is needed by 2030 to restore and maintain biodiversity, based on a 2020 report by the Paulson Institute, Nature Conservancy, and Cornell Atkinson Center for Sustainability. This was equivalent to around 1% of <u>global GDP</u> in 2022.
- These are initial estimates, based on the limited data available and reporting inconsistencies.
 Private sector finance data on payment-forecosystem service programs is likely underestimated. <u>Read more on data challenges</u>.

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Restoring biodiversity is one-eighth of the cost of building a net-zero emissions energy system

Annual expenditure required to achieve environmental outcome

Trillion \$ per annum (real 2023)

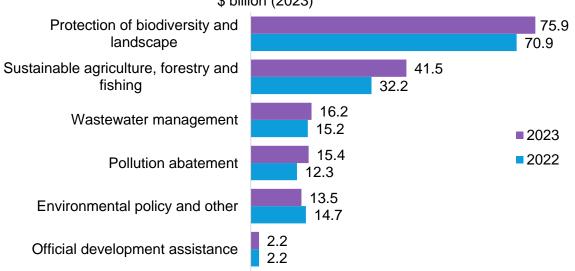


Source: BloombergNEF, <u>UNEP State of Nature 2023</u>, CPI Inflation Calculator. Note: Energy system investment requirements taken from the 'Net Zero Scenario' of the BloombergNEF New Energy Outlook 2024 (web | terminal).

- Current global biodiversity finance flows are a tenth of global climate funding.
- Investment in measures to avert biodiversity loss needs to increase by a factor of five by 2030 to reach more than \$1 trillion per annum.
- For context, investment into the energy transition hit \$1.8 trillion in 2023 a 17% increase above 2022 but needs to quadruple from 2031 onward to reach net zero.
- Restoring biodiversity and achieving a net-zero energy system are not mutually exclusive. Lowering emissions is in most cases positive for biodiversity and nature preservation typically provides climate or climate-resilience benefits.

Finance flows into nature Almost all public biodiversity finance is spent domestically

Breakdown of public finance into areas supporting naturebased solutions \$ billion (2023)

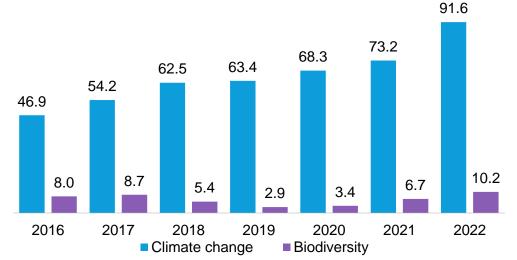


Source: <u>UNEP State of Finance for Nature 2023</u>. Note: Nature-based solutions defined as actions to protect, conserve, restore, sustainably use and manage natural or modified ecosystems according to the <u>United Nations Environmental Assembly definition</u>.

- Public finance drives most biodiversity conservation. In 2023, \$164.7 billion of public finance was directed toward biodiversity across the 60 countries analysed by the UNEP. This is an increase of \$17.2 billion from 2022 in real terms.
- The rise in spending in 2023 is driven by a \$9.3 billion increase in investment into sustainable agriculture, forestry and fishing, over three-quarters of which occurred in the US, China, Canada, Japan and Turkey.
- In 2022 and 2023, 99% of this support was spent domestically, with only 1% going to official development assistance (ODA) in the public sector.
- Almost half of public support is explicitly allocated to biodiversity protection. The remainder funds projects that mitigate biodiversity loss.

Government funding for overseas climate projects is nine times higher than biodiversity-related support

International public finance for climate change and biodiversity \$ billion

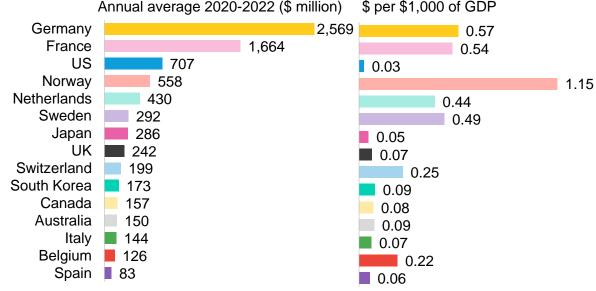


Source: OECD data. Note: Biodiversity finance comprises ODA under UN Sustainable Development Goal indicator 15.a.1 minus revenue from biodiversity-related economic fees, charges and taxes from the OECD PINE database. Given that biodiversity loss and climate change are related fields, there may be some overlap in the data.

- Biodiversity-related ODA increased 51% in 2022 to \$10.2 billion, equivalent to around 3% of total global overseas aid. Climate related-funding increased 25% over the same period, to \$92 billion.
- The first quantitative biodiversity finance target was made at COP15, where 196 countries agreed to mobilize \$30 billion per year toward international finance by 2030. Meanwhile, developed countries agreed in 2009 to deliver \$100 billion in international climate finance annually by 2020.
- BNEF's methodology to estimate international finance tracks ODA labeled by the donor country as biodiversity-related, while the UNEP tracks public spending on nature-based solutions and estimates ODA.

Germany, France and the US are the biggest donors of international public finance

Biodiversity-related official development assistance by donor



Source: OECD data. Note: Biodiversity finance comprises ODA under UN Sustainable Development Goal indicator 15.a.1 minus revenue from biodiversity-related economic fees, charges and taxes from the OECD PINE database. Includes top 15 global donors.

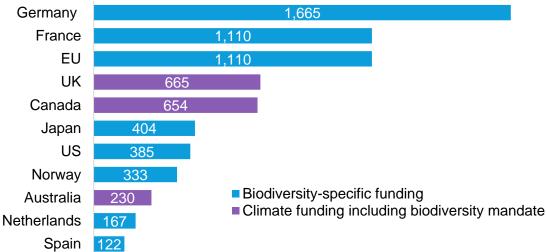
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- Biodiversity donors come from a relatively small pool: five countries (Germany, France, the US, Norway and the Netherlands) accounted for threequarters of funding over 2020-22.
- In comparison to the size of its economy, Norway is by far the largest donor, allocating \$1.15 for each \$1,000 of GDP, while the US is the lowest.
- Japan's current average annual biodiversity-related ODA is less than half its 2015-20 average, while Germany's average spend increased by almost \$800 million since 2020.
- Funding is distributed to 149 countries. Colombia receives the most ODA support, attracting 11% of that allocated for biodiversity over 2020-22.

New government pledges and main UN funding facility fall well short of \$20 billion 2025 target

International public finance for biodiversity announced in joint donor statement in 2022

\$ million



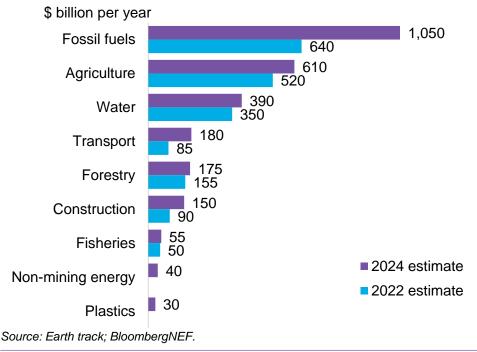
Source: BloombergNEF, Governments' joint donor statement. Note: Assumes joint donor funding is split into equal annual increments over the relevant period. Finance announced converted to USD based on 2 Oct. 2024 exchange rate.

- There has been no significant international public finance activity in 2024, despite a COP15 agreement to reach \$20 billion in annual biodiversity spending by 2025.
- A joint donor statement made by 11 countries at COP15 remains the most significant international biodiversity finance commitment, though the annual pledges of Germany and France are lower than their annual average biodiversity-related ODA.
- The Global Biodiversity Framework Fund enables developed economies to commit international public finance to biodiversity. A total of \$229 million has been pledged, including a \$148 million commitment from Canada.

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Environmentally harmful subsidies are higher than previously estimated, equating to 2.5% of GDP

Environmentally harmful government subsidies

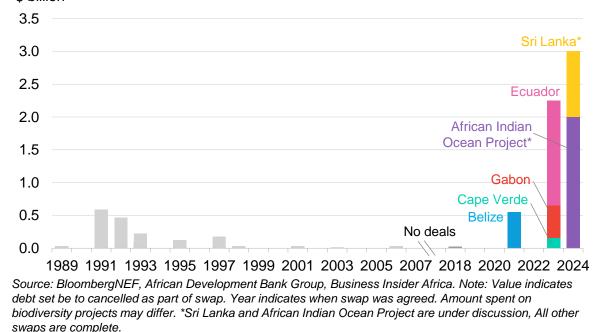


- An estimated \$2.6 trillion is being spent each year on subsidies that accelerate the production or use of natural resources or undermine ecosystems, according to an updated <u>assessment</u>. These estimates have been revised upward by \$800 billion since 2022.
- Fossil fuel subsidies have had the most significant revision, estimated to total \$1.05 trillion per year (up from \$640 million). Other areas harmful to biodiversity that have been revised up include agriculture (up \$90 billion), water (up \$40 billion), forestry (up \$20 billion) and fisheries (up \$5 billion).
- Parties agreed in Montreal to identify such subsidies by 2025 and "eliminate, phase out or reform" environmentally harmful ones by 2030, with an overall goal to cut the spending by at least \$500 billion per year by 2030.
- Repurposing these subsidies could provide a significant source of funding for nature-positive projects and activities.

Finance flows into nature

Debt totaling \$2.3 billion was canceled through debt-for-nature swaps in 2023

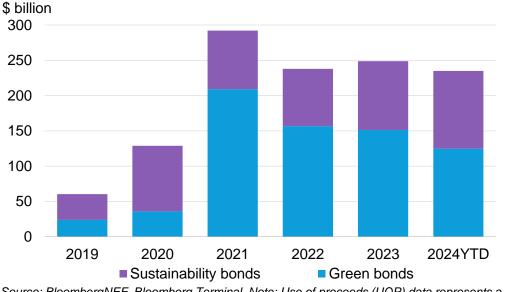
Debt canceled through debt-for-nature swaps, 1989-2024 \$ billion



- A record amount of sovereign debt was canceled through debt-for-nature swaps in 2023, equating to almost half of the \$4.5 billion of deal flow since 1989.
- The recent resurgence is due to deals arranged by The Nature Conservancy, a debt crisis for developing nations catalyzed by the Covid-19 pandemic, and rising interest rates.
- 2024 may set another record. Multiple African nations are negotiating the first multi-country and largest ever debt-fornature swap aiming to protect a coralrich area of the Indian Ocean.
- Debt-for-nature swaps typically allow emerging economies to restructure debt at a lower interest rate or longer maturity, on the condition of allocating proceeds to biodiversity.

Finance flows into nature Biodiversity debt issuance recovering in 2024

Green and sustainability bond issuance with biodiversity use of proceeds



Source: BloombergNEF, Bloomberg Terminal. Note: Use of proceeds (UOP) data represents a maximum that could be allocated to biodiversity activities. Allocation data excludes portfolio level allocation disclosures. Data through August 2024.

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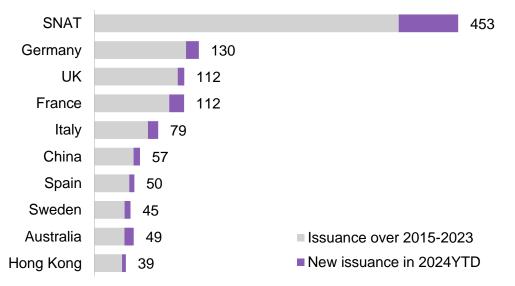
- Sustainable bond issuance with the potential for funds to be directed to biodiversity projects is likely to reach new highs in 2024, with \$235 billion issued through August. The follows two years of subdued issuance following a peak of \$292 billion in 2021.
- However, only a small share is likely to be deployed to projects. Only 3.7% of all funds raised from green bonds in 2021-22, with available allocation data and biodiversity as a listed use of proceeds, were allocated to biodiversity projects (see <u>appendix</u>).
- This is because issuers list a range of possible uses for the funds raised. The actual allocation of the funds can differ from the use of proceeds and is often not reported for at least one year after issuance.
- Biodiversity debt is uniquely challenging to trace. Often debt raised for other projects incorporates facets of biodiversity. For example, sustainable infrastructure is often built with biodiversity considerations but would not be reported as a biodiversity project.

Finance flows into nature

Supranational organizations and governments continue to lead with biodiversity bonds

Top issuers of bonds with biodiversity use of proceeds

\$ billion





- Supranational organizations (SNAT) which issue debt in order to lend to other organizations – accounted for the largest share of biodiversityrelated bond issuance, responsible for around 40% of the total issued between 2015 and 2024.
- Some 70% of all funds allocated directly to biodiversity projects were financed through government debt. This debt typically funds non-revenue generating projects like habitat restoration or reforestation which corporate issuers may struggle to finance.
- Based on allocation data, government financing is responsible for 100% of issuance in six of the top 10 markets. China, South Korea and France have entirely private-sector issuance.

A total of 91 countries have implemented 571 national-level biodiversity-relevant economic instruments

Regional biodiversity-relevant economic instruments

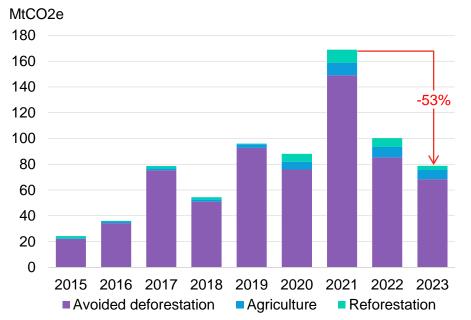
328 350 300 250 Tradeable 200 permits Tax 131 150 112 Fee/charge 100 50 0 **EMEA** APAC AMER Source: OECD PINE database, BloombergNEF. Note: EMEA = Europe, Middle-East and Africa; APAC = Asia-Pacific; AMER = Americas

Total number implemented

- National governments in EMEA administer 57.4% of all global biodiversity-related economic schemes. This is a lower share than earlier findings, likely because OECD data expanded to cover almost twice as many countries in 2024.
- Biodiversity-relevant taxes across countries in the OECD generated an average of \$9.8 billion per year over 2020-22, compared with \$8.7 billion on average from 2015-20. For both periods, this was only 1% of all environmentally-relevant fiscal revenue.
- The Netherlands has the highest biodiversityrelated tax revenue, generating an average of \$3.5 billion per year over 2020-22. This was almost three times that generated by the US, which had the second-highest average annual biodiversity-related tax revenue.

Nature-based carbon offset issuance has not recovered from slump after 2021 high

Annual issuance of nature-based carbon offsets



Source: BloombergNEF, Verra, Gold Standard, American Carbon Registry, Climate Action Reserve. One offset = one metric ton of CO2 equivalent.

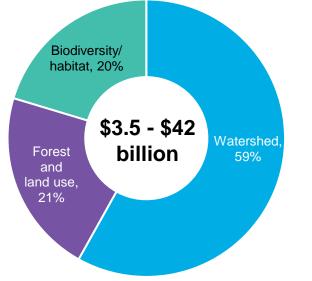
- Nature-based carbon offset issuance has fallen to half its 2021 high. Public criticism of the integrity of some methodologies has caused project developers to hold back on issuing new offset supply.
- The *permanence* of carbon stored in nature-based projects is often scrutinized. Projects are prone to climate change induced events like fire and drought, which reverse prior emissions reduction, rendering the project ineffective.
- Furthermore, nature-based offsets can be at risk of *leakage*. This can be in the form of activity shifting – such as reforestation projects on agricultural land moving farming activity to neighbouring areas – or market leakage – where improved forestry projects limit the supply of timber for construction, with demand then met by carbon-intensive alternatives like steel.
- Nature-based carbon offsets can incentivise the protection of nature by monetizing its carbon benefits. For example, Brazil could create up to 22.5 billion avoided deforestation offsets between 2024-2050 at an average marginal price of \$13/ton.

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Finance flows into nature

Payments for ecosystem services attract significant funding globally but are poorly tracked

Estimated range of global annual flows into payments for ecosystem services



Source: BloombergNEF; total figure – <u>UNEP State of Finance for Nature 2023</u> and <u>Nature Sustainability</u> <u>2018</u>; breakdown is based on Nature Sustainability, 2018.

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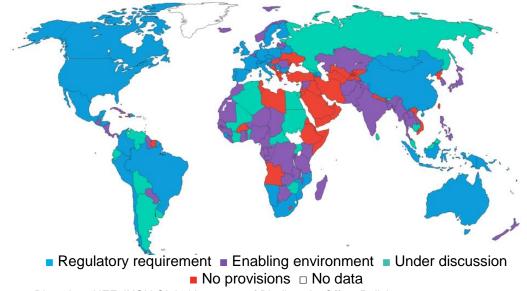
- Under a payment-for-ecosystem (PES) program, the beneficiary of an ecosystem service pays the resource owner or manager to maintain their natural asset, such as a watershed, or change their land-management practices.
- A 2018 overview in Nature estimated there were \$36-42 billion in annual transactions across 550 active PES programs, while the UNEP tracked \$3.5 billion of private finance into PES programs in 2023. The OECD estimated \$9.8 billion of funding across 153 programs in 2021.
- There is no industry standard definition of an ecosystem service, hence tracking PES programs is challenging. There is no recent estimate of the number of active programs globally. BNEF's biodiversity funding estimates likely under-represent PES programs.

Finance flows into nature

Biodiversity offsets markets attract \$6-9 billion in annual financing, and are expected to reach over \$160 billion by 2030

Regional biodiversity offset policies

Over 100 markets have laws or policies requiring offsetting in place, though many are poorly defined, enforced and tracked.



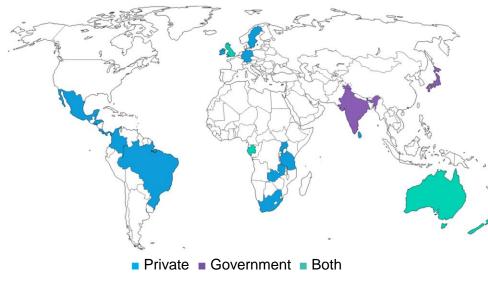
Source: BloombergNEF, IUCN Global Inventory of Biodiversity Offset Policies

- Biodiversity offsets mobilize an estimated \$6-9 billion per year, with most from projects such as wetland and stream mitigation banks. These are areas that are preserved, restored, created or enhanced to compensate for unavoidable impacts elsewhere.
- Despite the prevalence of this instrument, biodiversity offsets face criticism for several reasons, notably their lack of effectiveness.
 Many schemes have failed to achieve so-called no net loss or biodiversity net gain (BNG), in part due to difficulties in determining equivalence between biodiversity loss in one area and uplift in another location.
- Research from the International Union for the Conservation of Nature (IUCN) suggests that of countries claiming to have offsetting regulation in place, 77% do not properly enforce it.

Biodiversity credit markets and certificates are becoming more established, but do not yet account for a major portion of finance

Biodiversity credit and certificate schemes

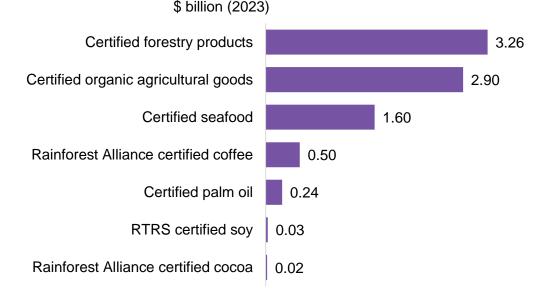
Private and government-led schemes have been created in over 20 regions in the last two years



Source: BloombergNEF. Note: Includes existing and proposed schemes as of October 2024.

- While biodiversity credit supply is flourishing, driven by schemes in Latin America, few buyers have committed to purchases. BNEF estimates that less than \$1 million of credits have been purchased, an extremely low figure given the attention that the instrument has gained since 2022.
- Biodiversity credits are distinct from offsets and have different conservation outcomes. Also called biocredits, biodiversity certificates and nature credits, each is a tradable unit of biodiversity uplift. They are mentioned explicitly in target 19 of the Global Biodiversity Framework as a means of increasing private finance flowing into conservation.
- Over the longer term, supply may be the limiting factor due to scaling challenges, measurement, transparency and monetization. A lack of consistency between schemes, including unit size, conservation period, and monitoring and reporting rules, is slowing the market from scaling.

Private finance flows to sustainable supply chains

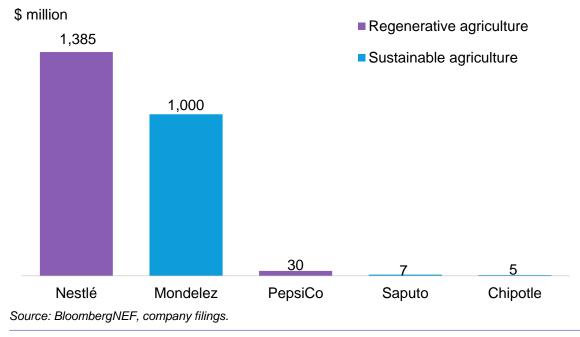


Source: UNEP, Rainforest Alliance, RTRS, Solidaridad, De Jong, UNDP, Deutz et al, Naphade, Statista, FAO, Allied Market Search, Expert Market Search, Research and Market.

- Sustainable supply chains channel approximately \$8.6 billion toward biodiversity and conservation, according to <u>UNEP</u>s latest figures. This value is growing slowly and pales into insignificance compared with overall market value for those products.
- Companies have varying levels of influence and resources to invest in sustainable supply chains. Involved in 80% of global trade, multinational corporations have significant sway over the suppliers and producers in their supply chains.
- Companies have four main mechanisms to improve supply chain impacts on nature: improved corporate policies, standards and implementation, third-party sustainability standards, sustainable jurisdiction and landscape-level sourcing, and conservationfocused management of naturally sourced ingredients.

Agri-food companies have committed billions to sustainable and regenerative agriculture

Investment targets for sustainable and regenerative agriculture



•	Food and agriculture companies are leaning on regenerative agriculture as their primary strategy for addressing the emissions and nature impacts associated with their products. However, few have set explicit investment targets.

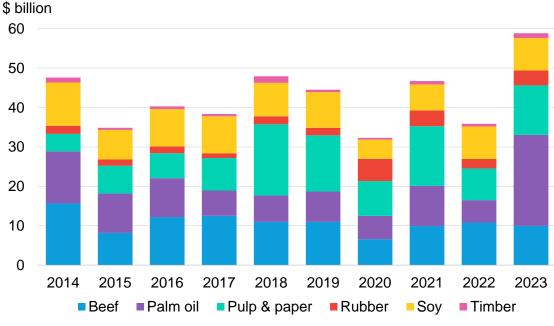
- Five companies have pledged a total of \$2.4 billion toward sustainable and regenerative agriculture. Several more agri-food businesses were part of a pledge to deploy \$2.2 billion into regenerative agriculture made at COP28. Many more companies are disclosing investments without a spending target in place.
- Companies disclosing an investment goal tended not to be specific about where these funds would be deployed, whether to invest in technologies, fund farmer payment schemes or pay external consultants.

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Exposure to deforestation-linked commodities is an emerging risk for banks

Debt finance exposed to deforestation risk, by commodity type



Source: BloombergNEF, Forests & Finance.

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- Debt finance provision to deforestation-linked commodities increased by \$23 billion from 2022 to 2023 – a gain of 64%, with a significant jump in bond issuance and lending tied to palm oil. While debt finance to beef, soy and timber fell slightly over the period, it still constitutes a substantial share of total atrisk financial flows.
- Banks face increasing pressure to help address environmental harm, and in turn minimize transition risk exposure of their institutions, shareholders and clients. To date, banks have been focused on climate change. Nature loss is a newer and less developed theme.
- Provision of debt finance that was exposed to deforestation risk averaged above \$42 billion per year in the decade to 2023, with a slight upward trend over the period, excluding the Covid-19-induced slowdown in 2020.

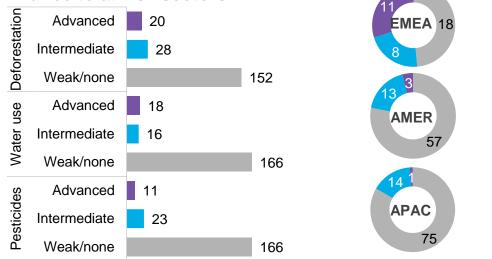
Finance flows into nature

Three quarters of banks have weak or no policies to limit lending that could be harmful to nature

Bank lending policy

stringency by region

Lending policies of the 200 largest providers of debt finance to at-risk sectors



■ Weak/none ■ Intermediate ■ Advanced

Source: BloombergNEF, bank documents, Forests & Finance. Note: Top 200 banks by financing of consumer staples.

 BNEF <u>analysis</u> of the largest 200 lenders to at-risk sectors shows that over three-quarters have no or only weak publicly-stated environmental lending policies across the three key risk areas of deforestation, water use and pesticides.

- An overwhelming majority of lenders have very weak or non-existent policies in at least one area, with only 8.2% of all policies assessed attaining an 'advanced' rating.
- Banks headquartered in EMEA are more likely than their AMER and APAC peers to have advanced policies addressing these areas.
- While policies are lacking in all three areas, banks are beginning to consider deforestation in positioning statements. More institutions receive 'advanced' or 'intermediate' grades for deforestation policy than for water use and pesticides. There are clear differences between regions.

Biodiversity funding priorities

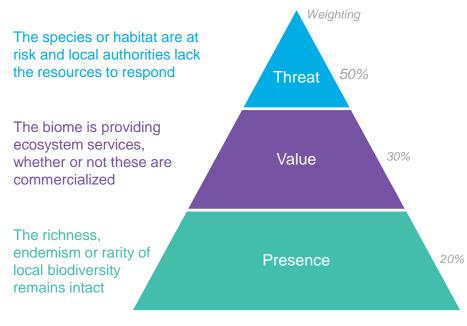
Directing investment to where biodiversity is plentiful, providing value and at risk





Funding is required where biodiversity is plentiful, providing value and at risk

Biodiversity finance priority indicators



Source: BloombergNEF

- BloombergNEF has developed a weighted framework to guide biodiversity restoration and preservation funding priorities to maximize impact. This framework comprises three indicators of countries that would benefit from external funding and intervention: the *presence* of biodiversity, the *value* of ecosystem services provided by nature, and the *threat* these resources face.
- A biodiversity funding priority region will have intact ecosystems with a high degree of species richness, endemism, or rarity, and which provide ecosystem services that support the local and global economy. It is located within a jurisdiction that lacks the financial means or authority to protect the resource from human population pressures, extractive and agricultural industries, or illegal trade.
- Lower funding priorities include regions lacking intact biodiversity, where ecosystems do not support economic activity, where the host nation has sufficient financial resources to manage the nature loss themselves, or where funding outcomes could be diluted by corruption.

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Bloomberg leverages the UK Natural History Museum's Biodiversity Intactness Index (BII) to provide insight on the state of nature in areas where companies operate.

The index is backed by the PREDICTS database of species studies, comprising 5 million observations across more than 50,000 sites.

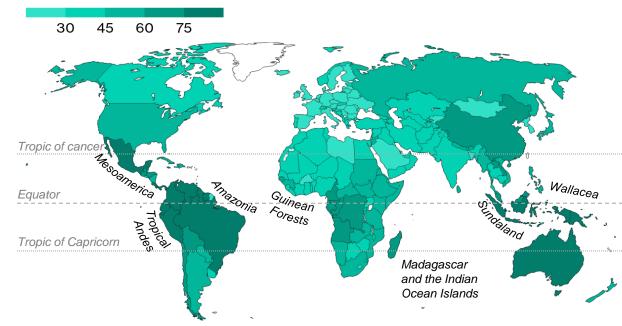
The BII fields are used in conjunction with other datafields to understand the materiality of nature to the company, and its approach to mitigation.

ESG Nature <GO>



Presence of biodiversity measures the number of species and contiguity of habitat

Biodiversity presence index



• For the first time, the presence index accounts for contiguity of natural habitat using the Natural History Museum's <u>Biodiversity Intactness Index</u>.

- The presence index also takes into account biological richness and endemism – measures of the abundance of native species and the number found only in that region.
- Colombia tops the presence index having a high number of unique species and relatively intact pristine habitat. Peru and Papua New Guinea also rank highly.
- There have been notable decreases in presence scores from Brazil and China. The decline is driven by habitat fragmentation, despite an abundance of native species.

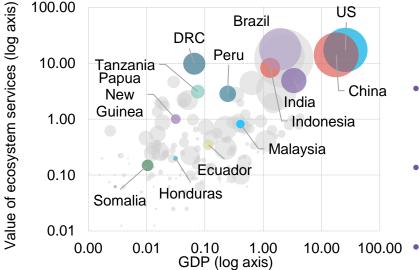
BloombergNEF

Source: BloombergNEF, CBD, Natural History Museum.

Nature provides unvalued or under-valued services to the local and global economy

Gross ecosystem product vs GDP

2023 trillion dollars

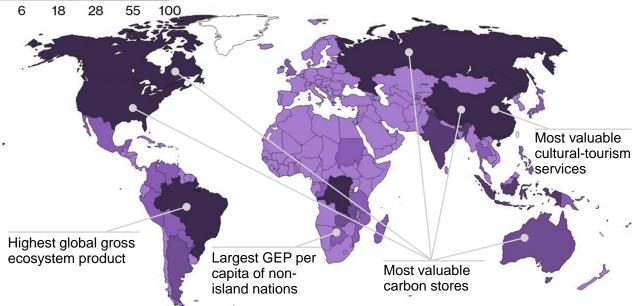


Source: BloombergNEF, Word Bank, Jiang et al, 'Mapping Global Value of Terrestrial Ecosystem Services by Countries', Ecosystem Services, 52, 2021. Note: DRC = Democratic Republic of Congo. Figures are represented in 2023 US dollars.

- The ecosystem services provided by nature underpin many economic activities. These services include *provisioning services* of material and energy extracted from nature, *cultural services* that support recreation, tourism, art and health, and *regulating services* that maintain air and soil quality and protect against natural disasters and disease. *Supporting services* provide habitat for plants and animals. The aggregate value of ecosystem services is recorded as the *gross ecosystem product*.
- Many ecosystem services are not directly commercialized. This is especially true of regulating and supporting services, which tend to be the most valuable provided by nature. In most countries, climate regulation is the most valuable ecosystem service.
- Ecosystem services tend to be more valuable when they support a large economy across a vast land-mass. The larger the economy and land area, the more valuable the services provided by nature, regardless of how much economic value is explicitly extracted from nature.
- This dynamic may also be due to a lack of data and studies demonstrating value in less-developed nations. The value provided by ecosystem services should be considered in partnership with the presence of biodiversity as an indicator of *potential* value.

Global value of ecosystem services tops \$182 trillion

Value of ecosystem services index



Source: BloombergNEF, Jiang et al (2021) Mapping global value of terrestrial ecosystem services by countries. Ecosystem Services. 52. 101361. 10.1016/j.ecoser.2021.101361. Note: GEP stands for Gross Ecosystem Product.

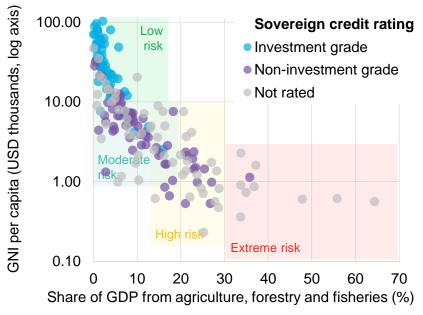
- The value of the services provided by nature can be distilled into a metric known as gross ecosystem product (GEP). Globally, this is in excess of \$182 trillion.
- Large and biodiverse land masses such as Brazil, the US and China top the list of highest GEPs. Low GEP exists in regions with anthropogenically induced nature loss like Western Europe, or in desert/arid environments like the Sahel region of northern Africa.
- Island nations receive some of the greatest value from nature per inhabitant. Geographies like Nauru, Aruba, Sao Tome and Principe have among the highest GEP per capita.

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Highest-risk areas are economically dependent on exploiting nature

National wealth versus reliance on natureexposed industries



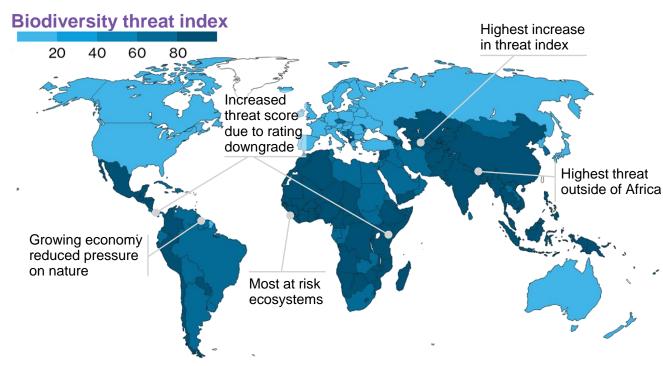
Source: BloombergNEF, World Bank, S&P Note: based on 2023 data, or latest available.

- Biodiversity is under the greatest threat in low-income economies where a greater share of economic activity is derived from highly nature-dependent industries such as agriculture, forestry and fisheries. These resources may be over-exploited to drive economic development and improve living standards.
- Agrarian nations may lack the economic resources to support biodiversity initiatives themselves. They may also lack robust environmental protection laws and authorities, and credible policing and legal systems to address illegal farming, fishing, land-clearing, or wildlife trade.
- Many low-income and agrarian nations are not investment-grade, leading to limited foreign private investment. Investors across varying risk tolerances are needed to address biodiversity threats in non-investment-grade and unrated economies.
- Biodiversity possessed by higher-income countries is less at risk as it is exploited to a lesser degree. Wealthy countries tend to possess the financial, regulatory and legal systems to address any threats internally.

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Threat to biodiversity has increased with economic instability



- Globally, the threat index has increased by five percentage points since 2021. The threat index rose in more than twothirds of geographies.
- Much of the world faces a very high level of threat to biodiversity, as nations are unlikely to sacrifice economic activity in nature-exposed industries without support.
- Turkmenistan, Niger, Zimbabwe and Yemen saw the largest increases, exceeding 10%
- Much of the increase in threat score has been driven by growth in nature-dependent industries.

Source: BloombergNEF Note: Biodiversity threat index scores range from 0 to 100. Based on 2023 data, or latest available.

Funding priority regions are geographically diverse

Top-20 BloombergNEF biodiversity funding priorities, 2024

Presence index (20%)		Value index (30%)	Threat index (50%)	Priority score
Brazil	84	100	79	86 -
China	62	79	86	79 -
Indonesia	85	46	88	75 -
DRC	68	55	82	71 -
Colombia	100	15	84	67 🔺 1
Peru	96	16	85	67 🔺 1
India	39	28	90	61 🗸 2
PNG	88	6	82	60 🔺 11
Tanzania	55	17	87	60 🔺 1
Mexico	80	1 1	80	60 🔻 1
Sierra Leone	43	1	100	59 -
Comoros	71	0	89	59 🔺 2
Malaysia	72	5	84	58 -
Sol. Islands	67	1	89	58 🔺 16
Madagascar	66	8	85	58 🔻 3
Philippines	53	1 1	88	58 🔻 8
Dominica	74	0	86	58 🔺 12
Bolivia	74	12	78	57 🔻 1
Zambia	51	26	78	57 🔺 3
Somalia	45	1	95	57 ▼ 5

Brazil maintains its spot as the world's top biodiversity funding priority, based on BNEF's weighted assessment of presence, value and threat indices.

- Notable changes in 2024, primarily driven by the revised presence index, see Papua New Guinea rise 11 spots.
- Heavily fragmented India drops two places despite its 3% increase in threat index.
- COP16 host Colombia enters the top five biodiversity priority regions for the first time.

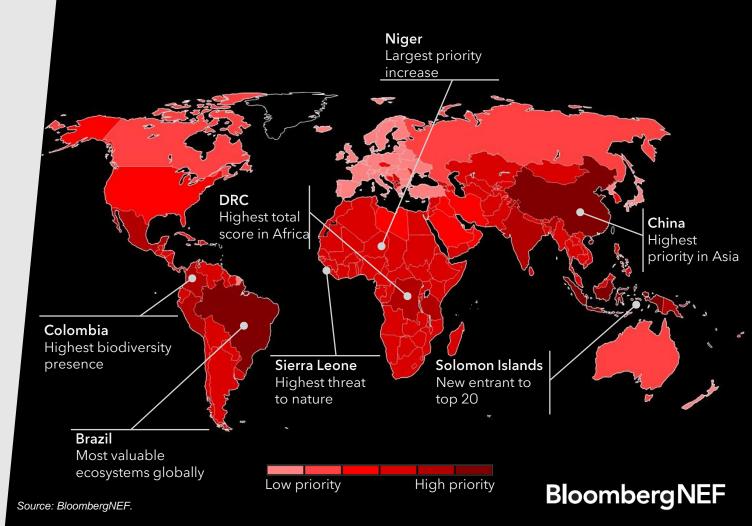
Source: BloombergNEF, CBD. Note: DRC = Democratic Republic of Congo, PNG = Papua New Guinea, Sol. Islands = Solomon Islands



BloombergNEF biodiversity funding priority regions, 2024

Funding should be prioritized toward the most biodiverse, valuable and threatened biomes across the developing world.

The top priority regions receive high scores on all three metrics, but in particular the value derived from ecosystem services.



Appendix





The estimates of current biodiversity financial flows (see <u>above</u>) are based on the following four sources, adjusted for inflation to 2023 US dollars:

- OECD, Official Development Assistance database, data updated 2024.
- The Paulson Institute, Nature Conservancy and Cornell Atkinson Center for Sustainability, *Financing Nature: Closing the Global Biodiversity Financing Gap*, 2020.
- UN Environment Programme, State of Finance for Nature 2023.

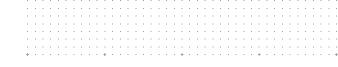
The estimate for biodiversity conservation needs by 2030 was based on the 2020 report by the Paulson Institute, Nature Conservancy, and Cornell Atkinson Center for Sustainability.

Sources for current biodiversity financial flow estimate

Туре	Sub-type	Estimate (\$ billion 2023)	Source
Public domestic	Government spending and tax policy	163	UNEP
Public international	Overseas development assistance	10	OECD
Private	Sustainable supply chain finance	8.6	UNEP
	Payments for ecosystem services	3.5	UNEP
	Impact investing, NGOs, philanthropy and other private finance	8.5	UNEP
	Biodiversity offsets/ credits and carbon markets	13.2	UNEP
	Farmer investments	1.5	UNEP

Source: BloombergNEF. Note: 'Other private finance' includes investment mobilized through the Global Environment Facility, Green Climate Fund and Development Assistance Committee.

Green financial product estimates



Due to data availability, this Factbook focuses on activity-based sustainable debt, specifically green and sustainability bonds (see <u>above</u>), based on information from the Bloomberg Terminal. In total, green bonds comprise the largest sustainable debt market, with a market size of \$2.4 trillion. Sustainability bonds, which can be used to finance environmental and/or social projects, total some \$615 billion. Altogether these instruments account for some 53% of the sustainable debt market.

Use of Proceeds and Allocation Methodology:

- Use of proceeds Green and sustainable debt is typically issued against an issuer's green or sustainability bond framework, which outlines the total range of sustainable activities that could be funded by the debt issuance. As a result, at issuance, investors are provided with a range of activities that the sustainable debt could be used to finance, this is called the use of proceeds. For the context of this report, if a bond has biodiversity included in the list of proceeds, the total value of that bond is counted as a biodiversity bond as that represents the maximum value which could be directed toward biodiversity projects or activities.
- Allocation Typically at least one to two years post-issuance, issuers publish allocation reports detailing exactly how the funds have been used. For this report we examined all available allocation reports in 2021 and 2022 for green bonds with biodiversity listed as a use of proceeds to record the portion of the bond explicitly directed toward biodiversity activities. As issuers are not required to follow the bond's listed use of proceeds, this methodology may exclude bonds where the use of proceeds changed post issuance. Additionally, biodiversity is often baked into other allocation categories i.e. issuers allocating 100% of their proceeds to green buildings that consider biodiversity factors, is a form of finance flow into biodiversity but is not counted as biodiversity finance under this methodology. Finally, this analysis is performed at the instrument level, so issuers who report allocation data at the portfolio level are excluded.

Appendix BloombergNEF biodiversity funding priority scores

The BloombergNEF biodiversity funding priority scores are the weighted product Pre of three indices capturing presence, value and threat.

This quantitative assessment considers the biodiversity present within a nation, – the estimated value of ecosystem services it is providing (whether or not commercialized), and the government's – financial and jurisdictional ability to protect the resource from human population pressures, extractive and agricultural industries, or illegal trade.

Threat scores have been risk-adjusted by the sovereign credit-worthiness – an indicator of the likelihood that funding will flow efficiently through to projects.

	Index methodology	Data source
Presence	 Weighted product of: National Biodiversity Index expressed as a percentile (50%) Biodiversity Intactness Index expressed as a mean (50%) 	Convention on Biological Diversity, <i>Global Biodiversity Outlook 1</i> (2011) Natural History Museum Biodiversity Intactness Index
Value	National gross ecosystem product value expressed as a percentile of global maximum (Brazil = 100)	Jiang et al, 'Mapping <i>Global Value of</i> <i>Terrestrial Ecosystem Services by</i> <i>Countries</i> ', Ecosystem Services, 52 (2021)
Threat	 Weighted product of: Reverse percentile of GNI/capita (50%) Share of GDP from agriculture, forestry, and fishing (30%) Trading Economics credit-worthiness score (20%) Proxies used where deemed appropriate 	 World Bank, GNI per capita, Atlas method (current US\$), 2023 update World Bank, Agriculture, Forestry, and Fishing, Value Added (% of GDP), 2023 update Trading Economics, Government Credit Rating
Priority	Weighted product of presence (20%), value (30%) and threat (50%) indices	

Source: BloombergNEF

BloombergNEF research and data presented in this report

BloombergNEF covers the impact of policy, technology, finance and corporate action to help professionals navigate the twin challenges of climate change and nature loss.

- Expectations for Biodiversity COP16: Cali Fauna Dreamin' (web | terminal)
- When the Bee Stings: Counting the Cost of Nature Risks (web | terminal)
- Nature: The New Risk Shaping Sustainable Finance Policies (web | terminal)
- Carbon Offset Methodologies 101: Nature-Based Projects (web | terminal)
- Banking on Nature: Lending Policy and Risk Exposure (web | terminal)
- Biodiversity Markets Primer: Credit Where It's Due (web | terminal)
- Use of Proceeds Leads Sustainable Debt Investors Astray (web | terminal)
- Sustainable and Regenerative Agriculture: Company Targets (web | terminal)
- Energy Transition Investment Trends 2024 (web | terminal)
- New Energy Outlook 2024 (web | terminal)

BloombergNEF nature and biodiversity research and data

THEME: Scaling Biodiversity Markets and Finance

Biodiversity is the next frontier of environmental, social and corporate governance, but its impacts reach far beyond the boardroom. (web | terminal)



Supply chain risk and opportunity

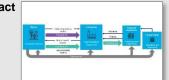
FLAGSHIP: When the Bee Stings

Quantified exposure to physical, transition and systematic risks arising from a company's impacts and dependencies on the natural world



THEME: The Financial Impact of Nature-Related Risks

Mismanaging nature-related risk has burned billion-dollar holes in many corporate balance sheets. (web | terminal)



More on Bloomberg

- Company deforestation risk metrics
- Geospatial nature intactness
- Asset exposure to water scarcity
- TNFD-aligned data disclosure

- Corporate nature and deforestation commitments
- Revenue dependency on ecosystem services
- Deforestation traceability in agri-food supply chains
- Asset-level physical exposure to nature loss
- Nature impacts and dependencies of the energy transition

- Nature-related financial disclosure
- Water stress in supply chains
- · Credit and investment screening for nature loss
- Deforestation and nature policy tracking
- Nature-related trade barriers and market access

Finance and environmental markets

FLAGSHIP: Biodiversity Finance Factbook

Tracking finance flows into the preservation and restoration of nature and framing discussions where funding should be prioritized



- Nature-focused funds and investment
- Labeled finance for nature and biodiversity
- Biodiversity credit and offset markets
- Public investment into nature preservation and restoration

- Nature-based solutions project database
- Data, metrics and frameworks for nature
- Biodiversity preservation funding priorities
- International conventions and policy tracking

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Our expert coverage assesses pathways for the power, transport, industry, buildings and agriculture sectors to adapt to the energy transition.

We help commodity trading, corporate strategy, finance and policy professionals navigate change and generate opportunities.

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