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Growing the Green

How and why restoration finance needs to quadruple by 2030

ELD ECONOMICS OF LAND DEGRADATION INITIATIVE

State of Finance for Nature - Restoration Finance Report

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2021-2030

THE GOVERNMENT
OF THE GRAND DUCHY OF LUXEMBOURG

MINISTERO DELL'AMBIENTE
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Executive Summary

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Executive Summary

SFN 2023 estimated that current finance flows to NbS are US$200 billion, only a third of levels needed to reach climate, biodiversity and global restoration targets by 2030. **This report focuses on the restoration finance component of that analysis and how to achieve global restoration goals (1 billion hectares to be restored by 2030).** It aims to provide policy makers, businesses and financial institutions with an evidence-based snapshot of the big gap between current finance flows to restoration and the investment needed to tackle ecosystem degradation.

Quadrupling current annual restoration finance flows of US$64 billion to US$296 billion by 2030 is critical to reach global restoration targets while contributing to climate and biodiversity targets. Both ecosystem protection and restoration are needed at scale to reach Rio Convention targets.

Key findings include:

Current finance flows to NbS

- Total traceable finance flows to restoration in 2022 were roughly US$64 billion, increasing significantly by US$12 billion (23%) since 2021.
- Public finance is the main source of finance at US$47 billion (73% of total restoration finance flows). US$42 billion (88%) of public finance is directed to sustainable agriculture, forestry and fishing. Official development assistance targeting restoration amounts to US$ 1.2 billion in 2022.
- Private finance for restoration is relatively modest at US$17 billion (27% of total finance flows to restoration). More than two-thirds (68% or US$12 billion) of private finance for restoration is channelled through biodiversity offsets with smaller amounts channelled via conservation NGOs, carbon markets, farmer investments into regenerative agriculture, philanthropy and impact investing.

Future investment needs and opportunities

- Annual investment in restoration (including sustainable land management) needs to more than triple by 2025 (from US$64 billion to US$215 billion) and to more than quadruple to US$296 billion by 2030 to reach global restoration targets and contribute to climate and biodiversity targets.
- The expansion of agroforestry is a key revenue generating restoration opportunity - increased investment in agroforestry (silvopasture and silvoarable) from US$56 billion in 2025 to US$87 billion in 2030 is needed.
- Restorative reforestation (excluding timber plantations) requires high levels of investment at US$28 billion per year by 2025 and almost doubling to over US$52 billion per year by 2030.
- Asia and the Middle East and Reforming Economies will require the highest investment in restoration at US$102 billion and US$39 billion per year respectively by 2030. Together these two regions may account for almost half of global investment in restoration.

1 Introduction

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The UNEP State of Finance for Nature (SFN) report series tracks finance flows to nature-based solutions (NbS)[1] and compares them to the investment needed to fully deploy the potential of NbS to tackle climate, biodiversity and ecosystem degradation challenges. SFN estimates the NbS finance gap to reach specific targets of the three Rio conventions: United Nations Convention to Combat Desertification (UNCCD), Convention on Biological Diversity (CBD) and United Nations Framework Convention on Climate Change (UNFCCC). Specific Rio targets include limiting climate change to 1.5°C, protecting 30 per cent of land and sea by 2030 (30x30) and reaching global restoration targets under UNCCD by 2030. The NbS finance gap is the difference between current finance flows and NbS investment needs. **This report focuses on finance flows for restoration NbS.**

Ecosystem restoration is central to the UNCCD and to the LDN targets which aim for "a state whereby the amount and quality of land resources necessary to support ecosystem functions and services to enhance food security remain stable, or increase, within specified temporal and spatial scales and ecosystems" (UNCCD 2015). Up to 40% of the global land area is degraded, directly affecting nearly half of the world's population (UNCCD 2023). Land degradation causes the loss of US$6.3 trillion in the value of ecosystem services globally every year (Sutton et al. 2016).

To reverse land degradation, 131 nations have committed to set voluntary Land Degradation Neutrality (LDN) targets. More broadly, global restoration commitments total 1 billion hectares to be restored by 2030. The Bonn Challenge alone has set a target of restoring 350 million hectares of forest landscape by 2030 and has registered 210 million hectares of pledged forest restoration.

Restoration is also critical to reach the biodiversity targets of the CBD Kunming Montreal Global Biodiversity Framework (GBF). Large-scale restoration is required to meet the GBF's nature recovery goals to 2050. GBF target 2 requires that by 2030 at least 30% of the area of degraded terrestrial and marine ecosystems is under effective restoration. Moreover, incorporating gender aspects into restoration efforts through, for example, inclusive restoration planning and implementation and promoting gender balanced representation in decision making bodies, will help meet Rio Conventions targets and ensure that efforts are equitable and inclusive, benefiting all segments of society.

Similarly, restoration is a critical tool to mitigate and adapt to climate change. The Glasgow Climate Pact adopted in 2021 emphasises the importance of restoring ecosystems to achieve the goal of the UNFCCC Paris Agreement including through forests and other carbon sinks.

1.1. Scope of this report

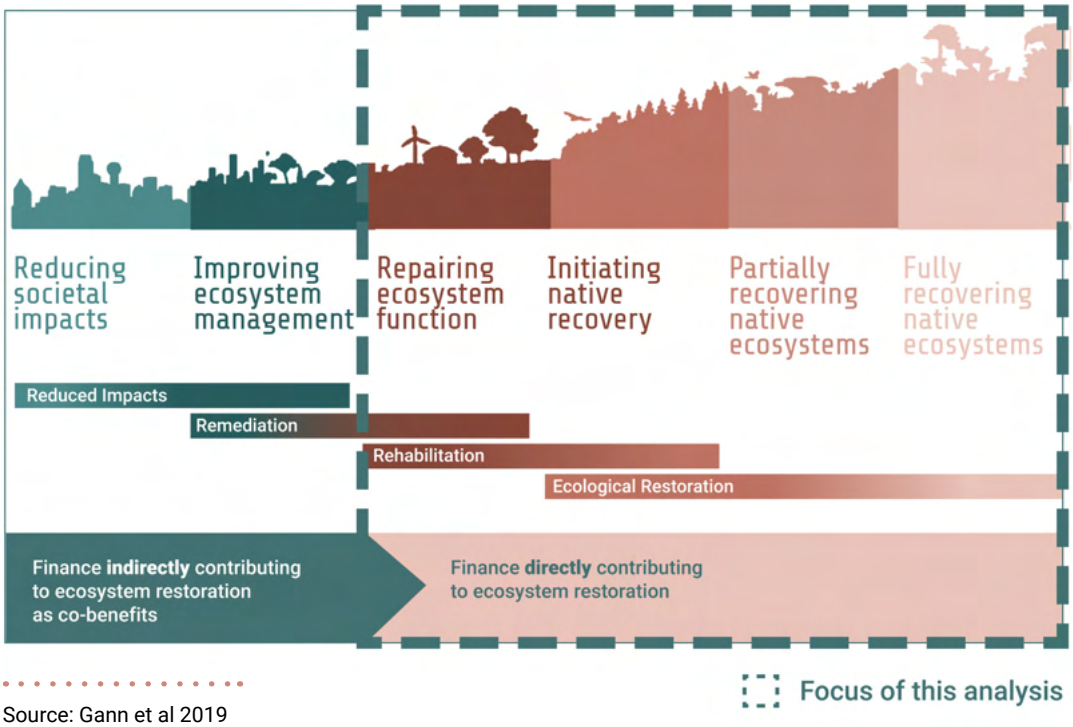
To support implementation of the UN Decade on Ecosystem Restoration, this report focuses on finance flows and investment needs for restoration. Ecosystem restoration is based on "the process of halting and reversing degradation, resulting in improved ecosystem services and recovered biodiversity" (FAO 2021). Active restoration includes different restoration approaches (World Bank 2022):

- Regenerative agriculture: cover cropping, agroforestry, no-till farming
- Forest and landscape restoration: agroforestry, planting of native species
- Restoration of aquatic production systems: stream restoration, reintroduction of native species, coral rehabilitation
- Ecological restoration: reintroduction of key native animal and plant species, invasive species eradication
- Rewilding: reintroduction of key native animal and plant species

This report focuses on NbS that can reverse degradation across ecosystems by restoring and sustainably managing land and seascapes. This analysis covers activities that directly contribute to ecosystem restoration as depicted in the boxed area of Figure 1.1, from repairing ecosystem function through regenerative agriculture to full recovery of natural ecosystems.

[1] NbS are defined as "actions to protect, conserve, restore, sustainably use and manage natural or modified terrestrial, freshwater, coastal and marine ecosystems, which address social, economic and environmental challenges effectively and adaptively, while simultaneously providing human well-being, ecosystem services and resilience and biodiversity benefits" (UNEA 2022).

Figure 1.1. Scope of SFN analysis and the restoration continuum



Source: Gann et al 2019

The data and analysis are based on SFN 2023 (UNEP 2023). The investment needs analysis[2] focuses on a subset of 9 restoration NbS from SFN 2023: reforestation, agroforestry (silvopasture and silvoarable), cover crops, grazing (optimal intensity) and restoration of peatlands, mangroves, seagrass and saltmarshes. For reforestation, only restorative reforestation related to ecosystem restoration is included, discussed further in Chapter 3.

[2] SFN 2023 conducted investment needs modelling on 16 types of NbS, categorised into 3 groups: restoration NbS, protection NbS and sustainable land management NbS.

2 How much finance is directed to restoration?

| Photo by Geranimo on Unsplash

This chapter provides an overview of current finance flows to restoration from public and private sources. The analysis estimates that total annual finance flows to restoration in 2022 were roughly US$64 billion (Figure 2.1) mostly to regenerative agricultural practices that contribute to ecosystem restoration. Public finance is the main source of restoration finance at US$47 billion (73% of total restoration finance flows). Private finance for restoration is relatively modest at US$17 billion (27% of total restoration finance flows).

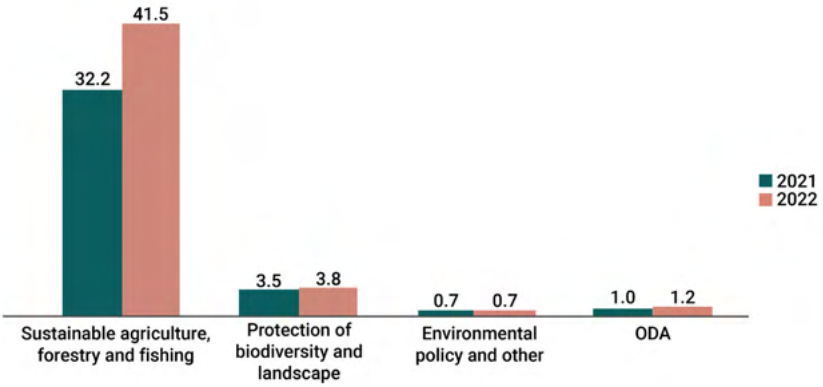
Figure 2.1. Public and private finance flows to restoration in 2022, $ billion (2023 US$)

Source: Data from: OECD (2023e); IMF (2021); OECD (2023a; 2023b; 2023c; 2023d; 2023e) (ODA, Philanthropy, private finance mobilised by ODA); Financial reports from five NGOs: CI (2022), RSPB (2022), TNC (2022), WCS (2022) and WWF (2022); FAO (2018a; 2018b); 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 (2023); Kassam et al. (2019)

2.1. Current public finance flows to restoration

Growth in public spending on restoration was responsible for most of the increase in restoration finance, increasing by almost US$10 billion (26%) from US$37.5 billion in 2021 to US$47.1 billion in 2022. The largest share of public restoration finance (US$41.5 billion or 88%) goes to sustainable agriculture, forestry and fishing (Figure 2.2). The Partnership for Climate Smart Commodities established by the US Department of Agriculture in 2022 demonstrates an increased focus of US public spending on agriculture practices contributing to restoration such as no-till farming and nutrient management (United States of America, Department of Agriculture 2022a). In fact, 76% of traceable global finance flows for sustainable agriculture, forestry and fishing comprise domestic expenditure in just five countries: China, the US, Canada, Japan and Turkey. It is thus not surprising that significant increases in funding in these countries are reflected in global estimates.

Figure 2.2. Public finance flows to restoration, $ billion (2023 US$)



Source: Data from United States of America, Fish and Wildlife Service (2022); China, Ministry of Foreign Affairs (2020); United States of America, Department of Agriculture (2022b and 2022c); ODA OECD Creditor Reporting System (2023); OECD Public expenditure data Classification of the Functions of Government (COFOG; 2021); IMF COFOG (2021).

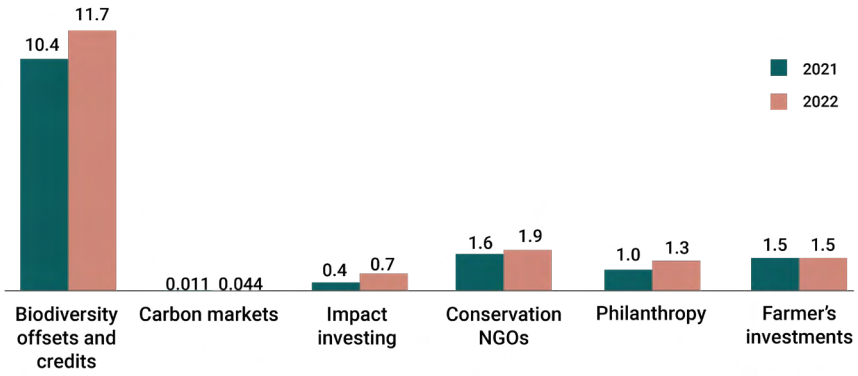
Public spending on restoration activities primarily focuses on supporting the agriculture and forestry sectors to reduce GHG emissions and improve long-term productivity, reflecting increased concern about the impact of land degradation on food security. The EU Farm to Fork Strategy and the US Department of Agriculture commitment to invest US$10 billion in food systems transformations are examples of this trend (European Commission 2023; United States of America, the White House 2021).

The 29% increase in public spending on restorative agriculture and forestry from US$32 billion to US$41.5 billion indicates farmland restoration is a major recipient of public restoration finance. On the other hand, less than 10% of public funding for restoration is directed to active biodiversity restoration activities such as re-wilding, removal of invasive species and habitat restoration. Governments have on average spent roughly US$1.6 billion per year on invasive species management since 1980 (Cuthbert et al. 2022) - a central activity to restore plant and animal biodiversity. Public spending on environmental protection related to restoration amounted to US$670 million, including for example spending to restore contaminated land which is incentivised through instruments such as land remediation tax relief in the UK which provide a 100% deduction in corporation tax for expenditure by companies to clean up land acquired in a contaminated state[3].

2.2. Current private finance flows to restoration

Private finance flows for restoration have increased by US$2 billion from US$15 in 2021 to US$17 billion driven by growth in biodiversity offset markets. Figure 2.3 provides a breakdown of restoration finance channels for which there is data. Over two-thirds (68%) of private finance flows to restoration were for direct compensation of environmental impacts via biodiversity offsets and credits. Note that private finance channelled via sustainable supply chains, estimated in SFN 2023 at US$8.6 billion in 2022 is not included here. Most sustainable supply chains are based on certification of commodities and focus on avoiding negative impact to ecosystems, particularly in the forestry sector. As such, this finance does not fall within the scope of restoration finance as defined in Chapter 1. Moreover, data on sustainable supply chains is not sufficiently granular to identify activities that are restoration focused. The private restoration finance estimate is therefore likely to be an underestimate.

Figure 2.3. Private finance flows to restoration, $ billion (2023 US$)



[3] Source: Data from: OECD CRS (Philanthropy, private finance mobilised by ODA; 2023); CI (2022); RSPB (2022); The Nature Conservancy (2022); WCS (2022); WWF (2022); Ecosystem marketplace (2023); Kassam et al. (2018); Hamrick (2016)

Biodiversity offsets and credits

SFN 2023 estimates that roughly US$11.7 billion was invested globally in biodiversity offsets and credits in 2022. Biodiversity offsets are driven by compliance requirements and channel significant finance to ecosystem restoration to compensate for an equivalent ecosystem degradation.

Mandatory biodiversity offsetting schemes such as Biodiversity Net Gain in the UK and the New South Wales Biodiversity Offset Scheme in Australia are emerging as key regulatory requirements. The SFN estimate is likely to be an underestimate as only a subset of schemes provides accurate reporting. More than 100 countries have policies on biodiversity offsetting (Biodiversity Consultancy 2016). Mitigation banks such as the Aquatic Resources Compensatory Mitigation in the US, the New South Wales Biodiversity Banking scheme in Australia and compensation funds in India and the US are major offset mechanisms (Bennett and Gallant 2017).

In the mitigation hierarchy, biodiversity offsets are defined as a last resort mechanism. Offsets should only be considered after avoiding, minimising and rehabilitating (Kujala et al. 2022) ecosystem impact. However, there are concerns that biodiversity offsets do not provide "net biodiversity gains" and that they can provide disincentives to reduce the footprint of economic activities on nature (Hahn et al. 2022). This analysis includes biodiversity offsets with the rationale that, in their absence, there would be a greater loss of biodiversity and more land degradation. Mandatory offsetting schemes help to ensure that biodiversity loss and land degradation are smaller than they would be if these schemes were not in place.

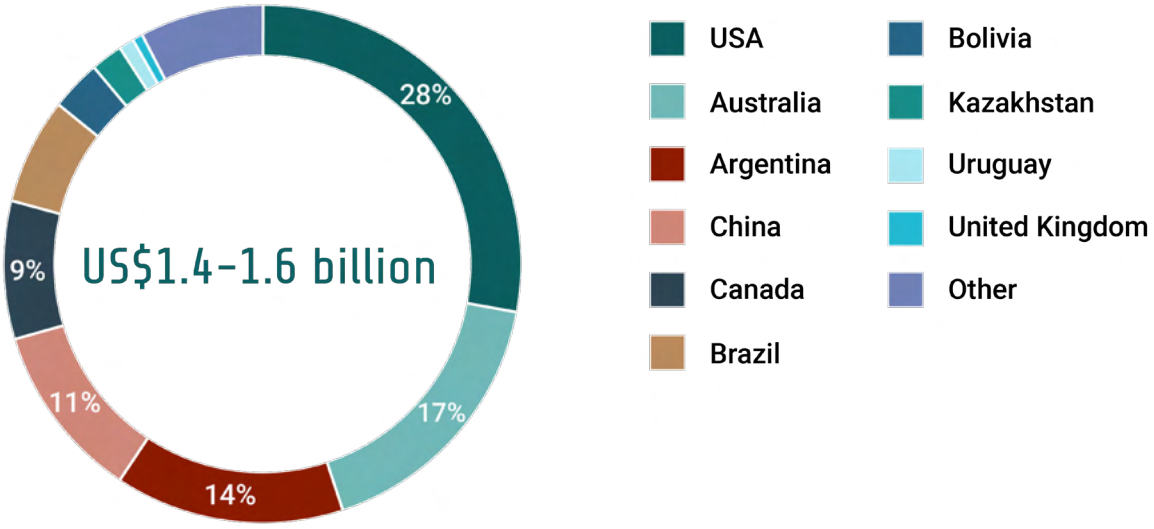
Farmer private investment in conservation agriculture

Private finance flows to NbS include farmer investment in conservation agriculture. Some farmers invest part of their profits in conservation practices[4]. In this analysis, this investment is distinct from sustainable supply chain finance, which is based on downstream corporate investment in supply chains[5]. Publicly available data sets on farmer investment into conservation agriculture are not available. This analysis uses a bottom-up approach based on annual growth in the area under conservation agriculture, average capex per hectare and the share of total agricultural investment from farmer retained profits (see SFN 2023 for details).
The results indicate that US$3.9-4.2 billion is invested annually into conservation agriculture globally. Of this, US$1.4-1.6 billion is financed by farmer retained profit. Figure 2.4 highlights countries with high levels of farmer investment in conservation agriculture. Together, the US, Australia and Argentina account for over half of private investment into conservation agriculture.

While small in absolute size, the fastest growth was seen in impact investment (80% increase from US$0.39 billion to US$0.7 billion) and philanthropy (40% increase from US$0.96 billion to US$1.34 billion). Impacts funds channel around US$700 million in investments to restoration activities. Some funds target restoration through regenerative agriculture and forestry, e.g. Mirova's Land Degradation Neutrality Fund which currently manages US$208 million in assets.

[4] These investments are equivalent to the economic decisions of households/individuals for climate finance tracked in the Climate Policy Initiative Global Landscape of Climate Finance reports. Households and individuals accounted for about 20% of total private climate finance in 2019/2020 (CPI 2021).
[5] Sustainable supply chains are not included in this analysis as they do not primarily fall within the scope of restoration as defined in Chapter 1 as actions to make supply chains more sustainable focus on reducing impacts and improving ecosystem management.

Figure 2.4. **Farmer private investment in conservation agriculture by region**



Note: Only conservation agriculture on cropland is considered as global data on the extent of broader regenerative practices are not publicly available.

Source: SFN 2023

Carbon markets

The voluntary carbon market (VCM) is an important potential source of private finance for restoration. Due to concerns about the integrity of carbon credits in the VCM, the volume of transactions contracted by 51% from 2021 to 2022. However, as average VCM credit prices reached a 15 year high, the overall value of the VCM remained stable with only a small decline from $2.1 billion in 2021 to $1.87 billion in 2022 (Ecosystem Marketplace 2023).

Investment in credits in the 'Forestry and Land Use' category and in the 'Agriculture' category, which represent roughly 60% of the total value of the VCM, are included in the SFN global report as private investment to NbS. This restoration finance analysis includes only the value of credits from agriculture-based VCM projects[1] (roughly $42 million in 2022), which constitute only 2% of the total value of the VCM (Ecosystem Marketplace 2023). Credits from forest and land use projects, which focus on protection (via REDD+) and reforestation/afforestation, are excluded as most fall outside the scope of restoration as defined in this report. These conservative assumptions are likely to result in underestimation of private finance for NbS via the VCM.

Note that while a relatively small share of the VCM, the value of transactions in agriculture carbon credits increased by four times from 2021 to 2022 due to increased volume of transactions (283%) and significant average price increases (Ecosystem Marketplace 2023)[6].

[6] Including projects on sustainable management of farmland and pasture, including natural ecosystem preservation and restoration, management of animal manure and fertilizer emissions, and methane reduction through sustainable rice cultivation.

2.3. Methodology, data and limitations

Funding for restoration from governments and public financial institutions was estimated based on domestic expenditures across three government budget lines in the OECD (2023e) public expenditure data Classification of the Functions of Government (COFOG): sustainable agriculture, forestry and fishing, protection of biodiversity and landscapes and environmental policy and other. Public restoration finance data was extracted from sector-level data, using activity listing to identify restoration activities within COFOG and ODA sectors. Some categories are marked with restoration activities, such as agriculture, forestry, fishing and hunting in COFOG and agricultural land resources in ODA.

Table 2.1. Sector level data extraction for public restoration finance analysis

Source	Category	Marked for restoration	Rationale (✓ Fully marked, ◐ Partially marked, ✗ Not marked)
COFOG	Agriculture, forestry, fishing, and hunting	✓	Many activities focusing regenerative agriculture, reforestation, fire management
	Waste water management	✗	No active restoration activities included in this category
	Pollution abatement	✗	No active restoration activities included in this category
	Protection of biodiversity and landscape	◐	Active restoration only a small part of the sector (assume 5-10%), mostly protection
	Environmental protection not elsewhere classified	◐	Active restoration only a small part of the sector (assume 5-10%), mostly protection
ODA	31110: Agricultural policy and administrative management	✗	No active restoration activities included in this category
	31120: Agricultural development	✗	Mostly focuses on expansion of agricultural projects
	31130: Agricultural land resources	✓	Large focus on soil quality rehabilitation
	31140: Agricultural water resources	✓	Many activities focusing on restoring ecosystems to enhance water resources
	31210: Forestry policy and administrative management	✓	Many activities focusing on management of reforestation
	31220: Forestry development	✓	Many activities focusing on reforestation projects and forest landscape restoration
	32162: Forest industries	✗	Higher risk to include non-restorative timber planting, reforestation (commercial)
	41010: Environmental policy and administrative management	✗	No active restoration activities included in this category
	41020: Biosphere protection	✗	Mostly focuses on protected areas and "passive" restoration
	41030: Biodiversity	✓	Large focusing on enhancing biodiversity through rewilding, invasive species mgmt
	41040: Site preservation	◐	Includes a small share of active land and biodiversity restoration in sites (5-10%)
	41081: Environmental education/training	◐	Includes some training towards active restoration activities
	41082: Environmental research	✓	Can directly contribute to restoration practices
	31281: Forestry education/training	◐	Includes some training towards active restoration activities
	31282: Forestry research	✓	Directly contributes to the development of restoration practices
	31291: Forestry services	◐	Can include direct support to forest and landscape restoration
	31382: Fishery research	✓	Directly contributes to the development of restoration practices

Restoration-related ODA data was sourced from OECD (2023c) Creditor Reporting System. Finance flows data from COFOG and ODA used in SFN 2023 were scaled based on the share of each budget line that could be confidently attributed as NbS funding or finance. This restoration deep dive undertakes further scaling to extract the restoration element of funding. For example, SFN 2023 included only 10% of government expenditure on agriculture, forestry and fishing as only this small share is considered NbS. This analysis on restoration funding uses this SFN 2023 estimate of funding to sustainable agriculture, forestry and fishing as this amount is considered to contribute to restoration. On the other hand, SFN 2023 treats 90% of funding for the protection of biodiversity and landscapes as NbS, but only 5% of this scaled expenditure on protection of biodiversity and landscapes is considered as restoration since most biodiversity funding focuses on protection activities.

Data and estimates for restoration related private finance flows were identified from finance flows of businesses and corporations, private financial institutions, specialised funds, conservation NGOs and philanthropy and farmer investments into conservation agriculture, when data granularity is sufficient to identify restoration activities (Table 2.2).

Table 2.2. Sector level data extraction for private restoration finance analysis

Category	Marked for restoration	Justification and approach (Fully marked / Partially marked / Not marked)
Carbon markets / Forest and land use carbon finance	Partially marked	Include carbon credits directed to increasing soil carbon (agriculture category) only, forestry and land use (including REDD+) are not included as they are mostly directed at avoided deforestation or can include non-native commercial plantations which are not within ecosystem restoration .
Sustainable supply chains	Not marked	Not included because most certification financial flows are towards avoiding impact (especially in forestry which the largest financial flow). Data is not granular enough to extract activity specific financial flows
Biodiversity offsets	Fully marked	Fully included as offsets finance active restoration of ecosystems to compensate for degradation
Impact investing	Partially marked	Included impacts funds with main solutions tagged as “ecosystem restoration” or “regenerative agriculture” in the capital for climate database
Conservation NGOs	Fully marked	Fully included as most activities from the NGOs tracked directly participate to biodiversity restoration projects
Private finance mobilized by ODA	Not marked	Not included as the data is not granular enough to identify restoration activities and the overall category is large (general environmental protection)
Philanthropy	Fully marked	Included as the data is already filtered to the biodiversity sector which is mostly constituted of ecosystem restoration activities
PES	Not marked	Not included as the data is not granular enough to identify restoration activities and PES often finance avoided impact.
Farmer's investments into conservation agriculture	Fully marked	Fully included as regenerative agriculture, of which conservation agriculture is a subset, is considered an active restoration activity

Further details on methodology, data and limitations can be found in the SFN 2023 technical annex.

3 How much investment in restoration is needed to reach global restoration targets?

| Photo by Justin Kauffman on Unsplash

This section explores how much investment in restoration NbS is needed to deploy the full potential of ecosystems (the AFOLU contribution) to reach global restoration targets by 2030. The investment needs modelling focuses on 9 high potential restoration NbS: reforestation (restorative), restoration of peatlands, mangroves, seagrass and saltmarshes, agroforestry (silvopasture and silvoarable), cover crops and grazing (optimal intensity). The modelling from SFN 2023 is based on reaching specific climate targets (limiting climate change to 1.5C), biodiversity targets (30x30) and global restoration targets through implementation of protection and restoration NbS.

This report focuses on restoration and the achievement of global restoration goals, which is modelled with the constraints that ecosystem protection is undertaken in line with Rio targets, specifically 30x30 and limiting climate change to 1.5C.

Global restoration targets include pledges made in NBSAPs under the CBD, NDCs under UNFCCC and voluntary LDN commitments under UNCCD as well as the Bonn Challenge. In total, these restoration pledges represent a commitment to nearly 1 billion hectares of restoration (Sewell et al. 2020), of which 450 million are committed under LDN. These commitments will change as NBSAPs are updated, NDCs reworked in 2025 and further commitments made under LDN. However, this analysis is based on commitments of just under one billion hectares, which has been used in SFN analysis since the first edition in 2021.

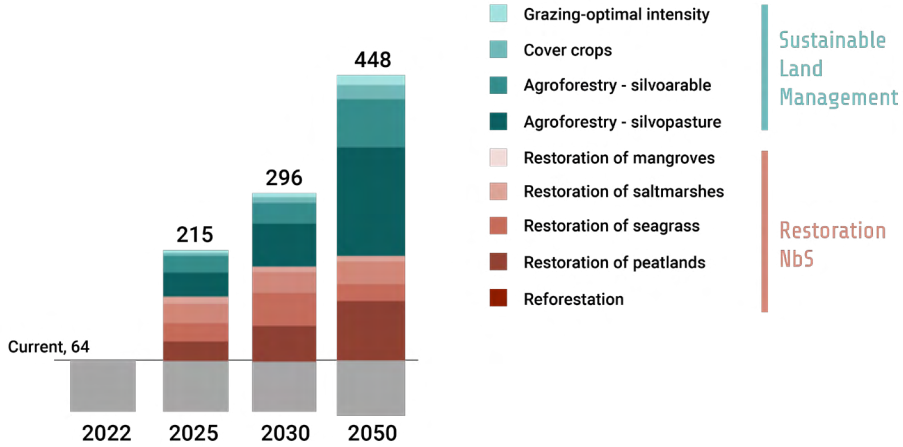
This analysis further assumes that current restoration finance flows are committed to current projects and that future projects required to meet targets by 2030 will require additional investment.

3.1. Annual investment needs and opportunities

The analysis indicates that annual investment in restoration and sustainable land management NbS[7] needs to more than triple by 2025, from US$64 billion to US$215 billion, and to more than quadruple to US$296 billion to reach Rio targets by 2030.

Figure 3.1 depicts the annual investment needed for restoration from 2025–2050.

Figure 3.1. Annual restoration investment needs to reach LDN targets, $ billion (2023 US$)



Increased investment in agroforestry (silvopasture and silvoarable) is needed, with potential growth from US$56 billion (26% of total annual restoration investment) in 2025 to US$87 billion (29%) in 2030. Agroforestry is complementary to other land uses, so its potential for expansion is larger than other restoration NbS. Moreover, as many NbS based on sustainable land management generate financial revenues, agroforestry, improved grazing and cover crops provide important opportunities for private investment and are critical to scale NbS finance.

Restorative reforestation (excluding timber plantations) requires high levels of investment at US$28 billion per year by 2025 and US$52 billion

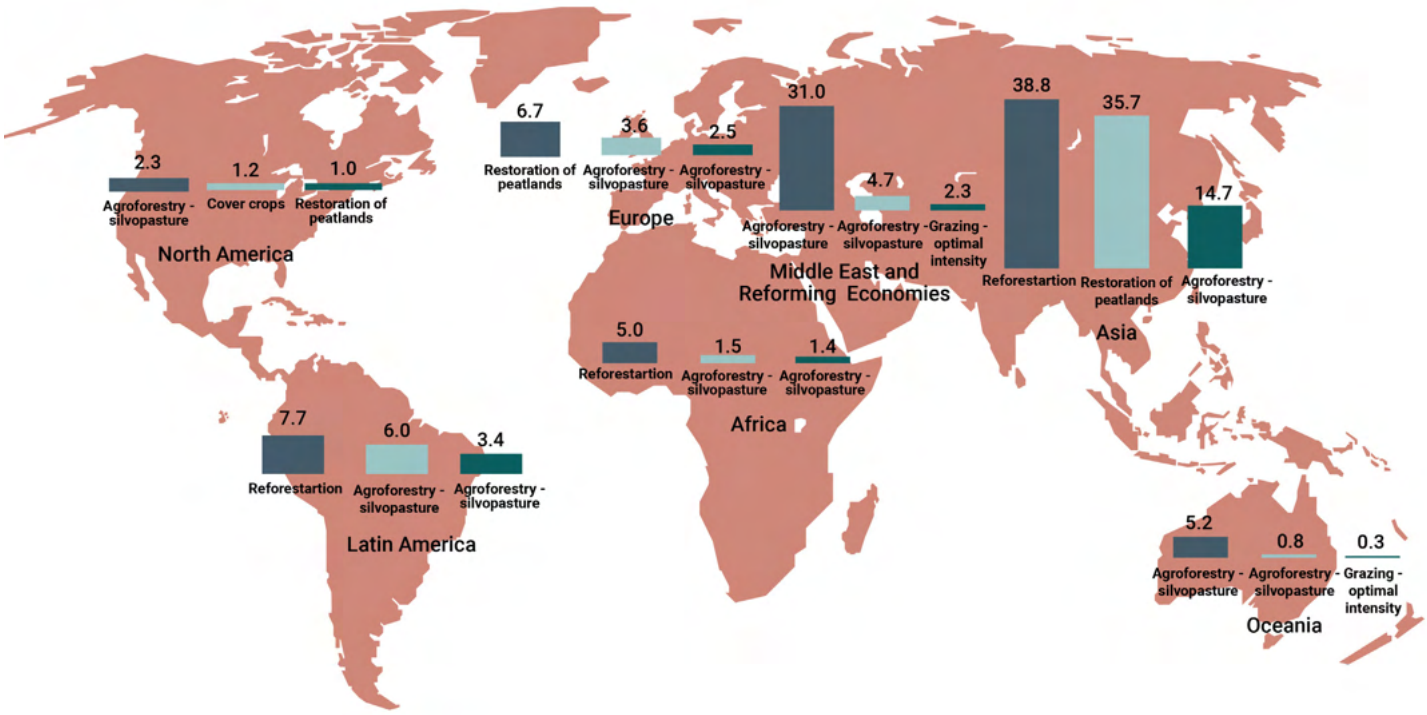
[7] In this analysis restoration and sustainable land management NbS are included as restoration. The distinction is carried over from the SFN 2023 analysis, but both fall within the scope of restoration as presented in chapter 1 of this report.

per year by 2030. This is driven by the relatively high cost of restoring degraded ecosystems and the large extent of ecosystem degradation globally. Restoration of peatlands (US$44 billion per year) and seagrass (US$28 billion per year) also require significant investment to achieve restoration targets by 2030. Restoration of saltmarshes and mangroves require relatively low levels of investments (US$8 billion and US$0.5 billion in 2030 respectively).

3.2. Restoration investment needs by region

Modelling suggests that future annual investment needs by 2030 are likely to be greatest in Asia, which requires an US$102 billion, and the Middle East and Reforming Economies, requiring US$39 billion. Together these two regions could absorb almost half of global investment in restoration. Asia will require high levels of investment in reforestation (US$39 billion), restoration of peatlands (US$36 billion) and silvoarable agroforestry (US$15 billion). These high predicted investment levels are driven by ambitious restoration commitments in the NDCs of large Asian countries. China aims to plant 70 billion trees by 2030 (World Economic Forum 2022), and India's NDC commits to expand forested land by 30 million hectares by 2030 (Carbon Brief 2022).

Figure 3.2 Annual investment needs for top 3 NbS by region by 2030, $ billion (2023 US$)



Latin America requires the third highest restoration NbS investment focusing on reforestation and agroforestry. In Africa, NbS opportunities are predominantly protection-related and therefore financing needs for restorative NbS appear to be relatively low.

3.3. Methodology, data and limitations

This restoration finance analysis combines land use modelling and supplementary analysis based on scientific literature to estimate investment needs for NbS. The Model of Agricultural Production and its Impact on the Environment (MAgPIE) used is a global land use allocation model which explores land competition dynamics in the context of carbon policy scenarios. The model derives total land available for different uses from 2023 to 2050 and the associated costs of NbS implementation. MAgPIE's costs and land use change outputs are used to calculate annual and cumulative finance needed for NbS from 2023 to 2050.

Future work can be expanded to include a broader range of restoration NbS, such as NbS in urban areas including urban forests and urban habitats for wildlife, which contribute significantly to reaching Rio Convention targets.

Details on the modelling are provided in the SFN 2023 technical annex.

4 Key findings and recommendations

| Photo by Matt Howard on Unsplash

SFN 2023 estimated that current finance flows to NbS are US$200 billion, only a third of levels needed to reach climate, biodiversity and global restoration targets by 2030. **This report focuses on the restoration finance component of that analysis and on how to achieve global restoration goals.** It aims to provide policy makers, businesses and financial institutions with an evidence-based snapshot of the big gap between current finance flows to restoration and the investment needed to tackle ecosystem degradation. Quadrupling current annual restoration finance flows of US$64 billion to US$296 billion by 2030 is critical to reach global restoration targets while contributing to climate and biodiversity targets. Both ecosystem protection and restoration are needed at scale to reach Rio Convention targets.

4.1. Key findings

This section provides an overview of the key findings.

Current finance flows to NbS

- Total traceable finance flows to restoration in 2022 were roughly US$64 billion, increasing significantly by US$12 billion (23%) since 2021.
- Public finance is the main source of finance at US$47 billion (73% of total restoration finance flows). US$41.5 billion (88%) of public finance is directed to sustainable agriculture, forestry and fishing.
- Private finance for restoration is relatively modest at US$17 billion (27% of total finance flows to restoration). More than two-thirds (68% or US$12 billion) of traceable private finance for restoration is channelled through biodiversity offsets and credits.

Future investment needs and opportunities

- Annual investment in restoration (including sustainable land management) needs to more than triple by 2025 (from US$64 billion to US$215 billion) and to more than quadruple to US$296 billion by 2030 to reach Rio targets.
- The expansion of agroforestry is a key revenue generating restoration opportunity - increased investment in agroforestry (silvopasture and silvoarable) from US$56 billion in 2025 to US$87 billion in 2030 is needed.
- Restorative reforestation (excluding timber plantations) requires high levels of investment at US$28 billion per year by 2025, almost doubling to US$52 billion per year by 2030.
- Asia and the Middle East and Reforming Economies will require the highest investment in restoration at US$102 billion and US$39 billion per year respectively by 2030. Together these two regions may account for almost half of global investment in restoration.

4.2. Recommendations

High-level recommendations for action are made below. Further work is required to identify the policy and financial instruments with the greatest ability to catalyse finance for restoration. Recommendations focus on financing green, i.e. scaling public funding and private investment into restoration.

Government action via public finance

- Embed biodiversity and restoration targets in law with specific targets on finance.
- Increase domestic expenditure on restoration. Governments and international institutions should adopt gender-responsive budgeting of restoration finance, ensuring that expenditure meets the needs of women and men and addresses gender inequalities in access to finance[8].
- Invest for gender and inter-generational equality[9].
- Ensure that limited finance is used most efficiently by applying integrated planning approaches, e.g. IUCN Global Standard for NbS which consider targets from all three Rio Conventions and mitigate possible trade-offs (e.g. between climate and biodiversity targets).
- Increase ODA and the share of ODA targeting ecosystem restoration.

Government action to catalyse private finance

- Expand government regulation when private sector action is essential. For example, expand legislation for compliance biodiversity offsets, sustainable supply chains and carbon pricing.
- Incentivise private investment by reducing restoration costs and/or risks for private entities through blended finance instruments.
- Provide capacity building and technical support to ensure high-quality restoration and related revenues.

Private sector action to scale restoration finance

- Invest in restoration including restorative and regenerative practices in agriculture, forestry and fisheries.
- Adapt/tailor financial instruments to local contexts to facilitate investment and promote scaling in restoration, for example, sustainable/green bonds. Invest for gender and inter-generational equality.
- Invest for gender and inter-generational equality. Develop funds targeting women and youth-led businesses or those that generate measurable social impacts for women and youth, particularly in sectors like agriculture, forestry, or conservation, where women play key roles.

[8] Incorporating gender considerations into policies and programmess related to restoration can involve setting targets for women's participation and monitoring gender-specific outcomes of restoration activities.
[9] https://www.undp.org/sites/g/files/zskgke326/files/publications/PB5-AP-Gender-and-Climate-Finance.pdf
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