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Assessing finance for nature-based solutions to climate change

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Key messages

- **It is difficult to accurately assess how much international development finance is being mobilized for nature-based solutions (NbS), and results should be treated as illustrative.** Nevertheless, it is valuable to compile data using different approaches so that decision makers can understand the variation rather than relying on single sets of figures.
- **We used the OECD DAC's global data set on international development finance to assess the scale of climate funding for developing countries that target NbS.**
- **Our estimates suggest that, for developing countries globally over the five-year period from 2016 to 2020, a total of US$ 14.66 billion of commitments that targeted climate change were also targeted at biodiversity objectives (which we call finance for "NbS-like" activities).** Note that this excludes most funding from multilateral development banks, a significant gap in these figures.
- **Since 2017, there has been a declining trend in climate finance targeted towards biodiversity objectives**, both in total amounts committed and as a share of total climate finance (which has also declined). This should worry those interested in reversing the degradation of natural ecosystems and loss of biodiversity globally.
- **Experience with NbS-like finance varies among the countries which are most vulnerable to climate change. Many small island developing states (SIDS) and least developed countries (LDCs) have received little or no climate funding that supports NbS-like approaches, even though these countries are financially constrained domestically, and many have significant natural ecosystems to manage.** For example, the Marshall Islands and Tuvalu are custodians of vast marine territories important for global biodiversity and fisheries, so NbS approaches would seem essential there. Yet the lack of financial support to these countries suggests that NbS approaches are not being prioritized in climate planning and/or project development.
- **Based on a scoping review of a small subset of projects from SIDS and LDCs, it is at best unclear how benefits for both people and biodiversity are achieved.** If this reflects a wider pattern, meaning project activities are not explicitly designed to reflect ecosystem challenges and co-benefits are just assumed, then our present estimates of NbS funding are likely to be masking a more significant finance gap.

1. Introduction

The concept of nature-based solutions (NbS) is used frequently to describe actions that are designed to "protect, sustainably manage, and restore natural or modified ecosystems, that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits" (IUCN, 2016).

NbS covers a broad and loosely defined array of policy options and programming principles. As a result, international organizations often call for NbS in a wide range of contexts to meet "the multifaceted environmental crises and broader societal challenges affecting humanity today, including climate change, biodiversity loss, land degradation, human health, migration, natural hazards and human-induced disaster, food and water security and biochemical imbalances" (Mulder et al., 2021).

NbS feature strongly in international policy arenas, such as the Sendai Framework for Disaster Risk Reduction, the Convention on Biological Diversity, the United Nations Convention to Combat Desertification (UNCCD), the Bonn Challenge of restoring 150 million hectares (ha) of degraded and deforested landscapes by 2020 and 350 million ha by 2030, and the New Urban Agenda (Habitat III). They are also highlighted in the Paris Agreement, under the UNFCCC, as one of the approaches needed to combat climate change. By some estimates, "natural climate solutions can provide 37% of cost-effective CO_2 mitigation needed through 2030 for a >66% chance of holding warming to below 2°C" and 20% between now and 2050 (Griscom et al., 2017) NbS, it is argued, also offer robust solutions in the context of adaptation, being "cheaper, longer lasting and yielding more co-benefits than technology-based solutions" (Mulder et al., 2021 p10).

Despite apparent popularity, NbS remains a contested concept. Proponents highlight the opportunity to make better use of limited resources to address different challenges at the same time, delivering benefits for people and ecosystems simultaneously (Frantzeskaki et al., 2019; Nesshöver et al., 2017). Many countries, but particularly those across the Global South – which hold much of the world's biodiversity hotspots – are constrained by limited financial resources in tackling poverty, promoting broad and sustainable socio-economic development, responding to the other impacts and costs associated with climate change, and protecting and restoring the health of natural ecosystems. Therefore, the appeal of NbS is that it offers an approach that maximizes co-benefits and can provide "cheaper solutions than standard (non-natural) solutions over the longer term, owing to the potential for responding to damages and the ensuing avoided costs" (Mulder et al., 2021).

International development finance – including climate finance – is undoubtedly a key enabler of investments in NbS approaches in developing countries. Many developing countries rely highly on external financial assistance to supplement domestic government revenues to invest in sustainable socio-economic development, and environmental conservation and protection. This is especially true for those classified among the least developed countries (LDCs) and small island developing states (SIDS), because they often have weak or narrow economies, low tax revenues, and high relative costs of servicing debt.[1] Thus, external finance will likely remain essential for implementing NbS in LDCs and SIDS.

Given the limited financial resources available, countries and international funders should be motivated to find strategies that simultaneously address environmental degradation as they promote broader, sustainable socio-economic development. The two themes are, in any case, interlinked: ecosystems are economically important, but also, for many people, culturally and spiritually important, and their protection and restoration are essential in the transition to more sustainable development at the local level. Moreover, given the global public good derived from protecting this biodiversity and using natural assets to mitigate climate change, it is incumbent

1 Our analysis includes the 38 SIDS which are full UN Members, taken from here: https://www.un.org/ohrlls/content/list-sids. The LDCs included in our analysis are those listed here as of November 2021: https://www.un.org/development/desa/dpad/wp-content/uploads/sites/45/publication/ldc_list.pdf

on providers of international financial support to mobilize resources that can help developing countries protect and restore natural ecosystems. At the same time, it builds the resilience of people and economies to climate change. Finding such synergies seems particularly important given that, globally, there are already significant funding gaps for climate adaptation: estimated adaptation costs in developing countries are five to ten times greater than current public adaptation finance flows – and the adaptation finance gap is widening (UNEP, 2021).

2. The challenge with assessing finance for NbS

There are two main challenges when understanding financial flows for NbS. The first is the methodological difficulty of assessing the scope of financial support. The second is the lack of data about whether NbS projects are delivering positive outcomes on the ground and for whom (Seddon et al., 2020).

The report *Financing Nature: Closing the Global Biodiversity Financing Gap* estimated a current biodiversity conservation financing gap of between US$ 598 and 824 billion per year.(Deutz et al., 2020) However, there are few estimates of anything resembling investment potential in NbS specifically, either globally or regionally, and those estimates which have been produced (e.g. as presented in Mulder et al., 2021) are typically too coarse – and methodologically contestable – to be valuable intelligence.

There are several reasons why it is difficult to track how much funding is already being mobilized for NbS. First, the concept itself is not universally defined, meaning different stakeholders use it to describe different kinds of interventions – some of which may, in fact, not be positive for enhancing biodiversity or protecting natural ecosystems. Second, there is no reporting of NbS as a distinct objective in financial reporting by bilateral and multilateral development funders to the OECD Development Assistance Committee (DAC). Thus, any attempt to estimate financial support for NbS to developing countries must make assumptions about what to include and define a reasonable proxy for NbS activities for which there is available data.(as highlighted by Mulder et al., 2021) There is high uncertainty in any estimates of "capital investment in nature"; therefore, there is a need to improve data comparability and quality by agreeing, internationally, on a system for labelling, tracking, reporting, and verifying finance for NbS (Mulder et al., 2021; Swann et al., 2021).

One attempt at a global estimate is provided in the State of Finance for Nature report (Mulder et al., 2021). The assessment includes public and private investment that supports NbS, including both international support and domestic government expenditure. There are several methodological issues to note about their estimates. First, the figure includes all financial support for biodiversity, not only that which simultaneously targets biodiversity and other objectives. Second, it consists of all funding targeted towards specific economic sectors – like agriculture, forestry and fishing, water conservation, and environmental policy – which, in our view, are much broader in focus than the NbS concept. These methodological choices mean the estimates include financial data that could extend well beyond the concept of NbS. Unsurprisingly, their findings suggest large volumes of finance are currently being mobilized for NbS globally, approximately US$ 133 billion per year, of which 86% is public funding. Over a third of this total is sourced from national governments and directed to protecting biodiversity and landscapes. The amount provided by international development assistance and other sources is estimated at US$ 2 billion per year, "a large proportion of which is climate finance". Around US$ 18 billion per year in private finance for NbS includes activities such as "biodiversity offsets, sustainable supply chains, private equity impact investment and smaller amounts from philanthropic and private foundations" (Mulder et al., 2021, p. 6).

Another study looks at the scale of public international funding flowing to nature-based solutions for climate adaptation in developing countries (Swann et al., 2021). For 2018, it finds that between

US$ 3.8 and 8.7 billion was mobilized, mainly in grants (85% of the total). These estimates too are significantly higher than our own below, partly because their underlying data set of climate adaptation projects is more widely defined than ours, even though it is taken from the same OECD source.[2] The study's approach includes all finance for adaptation that targets agriculture, forestry, water, general environmental protection, biodiversity, and disaster risk reduction. A similar critique could be made, therefore, as for the above study, in that some of the activities in these sectors could undermine outcomes for nature, in which case they should not be deemed NbS. This study explicitly acknowledges many of the methodological problems associated with assessing the scale of NbS finance.

3. Exploring international development finance data for NbS for climate change

In this paper, we explore the extent to which international development finance supports nature-based solutions. We estimate how much of this finance was earmarked for "NbS-like" activities from 2016 to 2020. It is methodologically challenging to estimate finance for NbS, so compiling estimates using different approaches means that decision makers can understand the variation rather than relying on single sets of figures.

In addition to overall amounts, we analyse: how these commitments have trended over time; what the primary sources of funding are; and what types of financial instruments are used. We show how this finance has been distributed between world regions and how much funding has been targeted to SIDS and LDCs.

We source data from the OECD's Creditor Reporting System, which has been used to derive (at least in part) both of the previous estimates mentioned above. Because there is an absence of clearly tagged data about NbS support, we include financial commitments that principally targeted climate change objectives (mitigation and/or adaptation) and, at the same time, targeted biodiversity objectives (either principally or significantly) – see Box 1 on methods, below. Given that the definition of NbS includes that it targets the needs of biodiversity/natural ecosystems, we argue that to be considered as NbS, *projects must explicitly target biodiversity*. This in an important methodological difference from some previous studies (e.g. Mulder et al., 2021) which have assumed that using climate finance in sectors like agriculture or forestry is synonymous with NbS, even though much of the critical literature on the subject highlights how projects in these sectors can undermine biodiversity outcomes (e.g. Seddon et al., 2020).

This proxy– combining climate and biodiversity objectives – we refer to as 'NbS-like' approaches for climate change to emphasize that, unfortunately, the data on financial flows does not neatly correspond with how the NbS concept is commonly defined. Through this brief, when referring to "biodiversity", we also include the concept of natural ecosystems, upon which biodiversity depends.

2 The study includes not only projects that had climate change as a principal objective (Rio Marker 2), as we do, but also those where climate change was marked as a significant objective (Rio Marker 1). We do not do this because various previous studies have shown that the quality of data declines considerably in the "significant" category, in that the tangible benefits for climate change objectives are more generously assigned.

BOX 1. METHODOLOGY AND LIMITATIONS FOR OUR ESTIMATE OF NBS-LIKE FINANCE FOR CLIMATE CHANGE

Our analysis is based on data of international development assistance, publicly available and downloaded through OECD DAC's Creditor Reporting System (CRS) on 21 June 2022.[3] The CRS includes all funding to developing countries from OECD and some non-OECD bilateral sources, multilateral funders, international funds and multilateral development banks (MDBs), and private philanthropic organizations.

From the global data set for 2016 to 2020, inclusive, we filter for climate change as a principal objective (using Rio Marker 2 for mitigation and/or adaptation) and then filter this subset for projects also coded against biodiversity objectives (Rio Markers 1 or 2 for biodiversity, allowing this to be a principal or a significant objective for the project).

Unfortunately, due to the way multilateral development banks report to the OECD DAC, the MDB data cannot be easily assessed for transactions that target climate and biodiversity simultaneously. To try to include at least some of the MDB commitments which targeted both climate change and biodiversity, using the OECD data, we first isolate all MDB transactions that are tagged with a 1 or 2 under the Biodiversity Rio Marker (which means we include only those transactions that principally or significantly targeted biodiversity objectives) and then perform a keyword search of project titles and descriptions using the search terms "climate", "mitigation" and "adaptation". The transactions identified by this step were added to our wider data.

Our analysis uses the data for *constant* prices. This follows OECD DAC recommendations for analyses of trends over multiple years (OECD, n.d.).[4]

Limitations

Estimating NbS finance is methodologically challenging, given the information included in the data available. Our analysis is unable to provide a precise estimate of total finance amounts for NbS for various reasons, including:

International funders reporting to the OECD DAC do not code their support for NbS specifically, so we must rely on coarse proxies that are not precisely aligned with the definition of the concept.

The funders provide the data in the OECD DAC's Creditor Reporting System, which also codes which objectives (e.g. climate, biodiversity) were targeted. There is no independent validation of the accuracy of reporting by funders. This limitation has also been noted in an analysis of the water, sanitation and hygiene (WASH) sector (Fadhila et al., 2022).

3 Accessed at: https://stats.oecd.org/Index.aspx?DataSetCode=CRS1, downloading related data files for individual years 2016, 2017, 2018, 2019 and 2020. The full CRS dataset is integrated into the Aid Atlas online platform developed by SEI (accessible at www.aid-atlas.org). However, for our analysis we downloaded the raw dataset directly from the OECD CRS, since at the time of our analysis the 2020 data was not yet available via Aid Atlas.

4 The dataset provides financial amounts in two ways: as *current* prices (i.e. reflecting the amount at the exchange rate prevailing in the year in which it was reported), and *constant* prices (i.e. the current values of each transaction or activity in the actual year it was reported are deflated by a factor that takes account of exchange rates and currency inflation between the year of the financial flow and the present). For constant amounts, the automatic conversion in the OECD's data is to the second-most recent year of the full data set. For this study the latest data available is from 2020, so the deflators convert all amounts in all years to 2019 US dollars (see the OECD Development Assistance Committee's Information Note on the DAC Deflators for further explanation).

There are apparent reporting gaps. For instance, the Green Climate Fund reports on its web page that it has supported 62 projects with an ecosystems or ecosystems services focus, totalling US$ 760 million of adaptation funding. It also mentions NbS specifically.[5] By our definition, these would qualify as NbS-like activities. However, none of the GCF's projects are tagged in the OECD CRS as targeting biodiversity. Further, the way MDBs report their climate finance to the OECD DAC means that the flows we can identify for this study are only likely to be a small subset of MDB support that would be considered relevant.

Undoubtedly some of the financial support coded in the OECD data for specific sectors like forestry or general environment protection may be relevant for biodiversity outcomes – and could be considered NbS – but were not picked up in our methodology because they were not tagged as targeting biodiversity.

Similarly, some development finance transactions targeting biodiversity may not have been tagged as targeting climate change, even though they may produce benefits for greenhouse gas mitigation and/or climate resilience.

Finally, not all development finance transactions are screened against the Rio Markers for climate change mitigation and/or an adaptation or for biodiversity, which means there may be relevant finance flows that are not captured in the data set used for this analysis. In general, most financial support is screened, so the omission of relevant flows, for this reason, is likely to be relatively low.

A detailed description of the methodology is available from the authors on request.

3.1 Total climate-related finance supporting NbS activities

Over the five years from 2016 to 2020, we estimate total funding commitments of roughly US$ 14.66 billion supported NbS-like activities for tackling climate change in developing countries globally. This **averages to US$ 2.93 billion per year**. Approximately 71% of commitments were grants, while around 28% were concessional loans.

Commitments were relatively evenly split between activities programmed for adaptation (33% of the total NbS finance), mitigation (37%) and both adaptation and mitigation simultaneously (30%) (see Figure 1). However, as a share of total finance for each objective, NbS-like approaches are being programmed more often for adaptation and projects targeting both mitigation and adaptation simultaneously than they are used for mitigation projects.[6] We note that our estimates are significantly lower than those in previous studies.[7]

5 https://www.greenclimate.fund/results/ecosystems-ecosystem-services

6 As shown in Figure 1, almost 61% of total climate finance in this period targeted mitigation, compared with roughly 22% for adaptation and the remaining 18% for both simultaneously.

7 For instance, Swann et al. 2021 estimate between US$ 3.8 and 8.7 billion in NbS funding was mobilized for adaptation responses in 2018, whereas our estimate for all adaptation finance (not only the finance adopting NbS-like approaches) in 2018 is US$ 2.1 billion, of which US$ 544 million was for NbS-like activities.

Figure 1. Total climate finance commitments and total NbS-like finance commitments, 2016–2020, inclusive

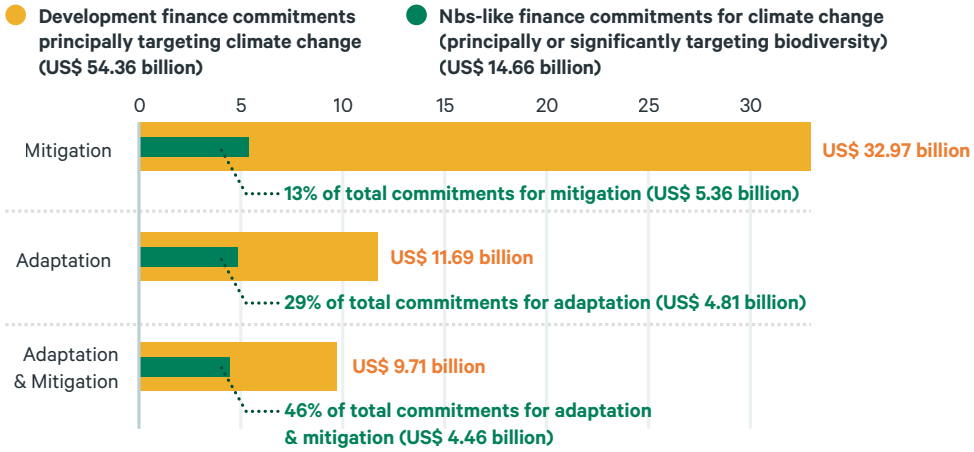
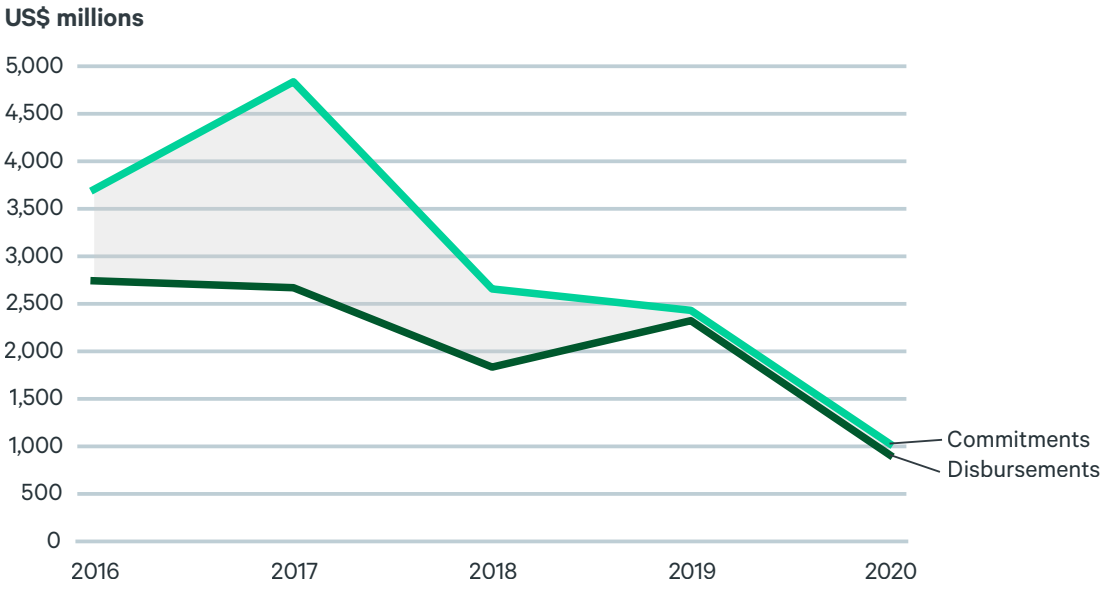


Figure 2 shows that total commitments by funders for NbS-like activities peaked at roughly US$ 4.83 billion in 2017, but since then have declined steadily and were only around US$ 1.03 billion in 2020. These totals are lower than even the lower-end estimates provided by previous studies.[8]

The amount paid out, or disbursed, is less than these committed amounts. Total disbursements over the same period were US$ 10.48 billion, roughly 71% of total commitments. As Figure 2 shows, disbursements have been less variable than commitments on an annual basis, though they have also generally declined since 2016.

Figure 2. The trend over time in total commitments and disbursements of finance for NbS-like approaches to addressing climate change, 2016–2020



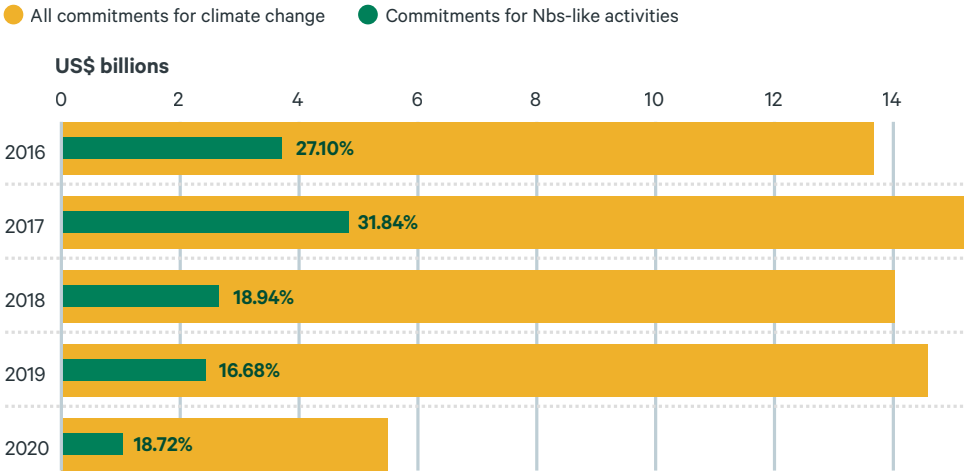
8 Such as Mulder et al., 2021 and Swann et al., 2021.

3.2 NbS as a portion of total climate finance

While total amounts of NbS finance have declined in recent years, so has the total amount of climate finance itself. As well as knowing the total amount of finance for NbS activities, we are also interested in understanding whether NbS approaches are gaining more traction over time within the programming of climate finance. In other words, whether NbS is becoming a more significant theme in the use of climate finance.

Figure 3 shows that the percentage of development finance that has targeted climate change using NbS-like approaches has been declining, from nearly 32% in 2017 down to 16.7% in 2019, with a slight rise in 2020. We note that some previous estimates for adaptation finance are in this same ballpark, i.e., they estimate that NbS approaches made up 9–21% of total adaptation flows in 2018 (Swann et al., 2021).

Figure 3. Percentage of climate finance that uses NbS-like approaches, 2016–2020



3.3 Main sources and recipients of finance for NbS

France, Norway, and the US appear to be the largest bilateral funders (in total commitments) of NbS for climate change in developing countries globally (Figure 4a). Among multilateral organizations, the EU has been a major funder (Figure 4b). As noted already, however, the efforts of the various multilateral development banks (MDBs) are not represented in this data. Moreover, due to differences in how MDBs report data to the OECD DAC, it is not advisable to compare the bilateral totals with multilateral totals (the MDBs have adopted a more refined methodology for calculating amounts of climate finance compared to bilateral funders).

While most MDB commitments are not visible in our data set (and hence the Sankey diagram for multilateral organizations), we find in our data some MDBs reporting disbursements only. These include US$ 84 million from the World Bank (US$ 12 million from International Development Association and US$ 78 million from the International Bank for Reconstruction and Development), and US$ 4 million from Nordic Development Fund. Among the climate funds, the Global Environment Facility (GEF) has committed US$ 642 million) and the Adaptation Fund US$ 6 million.

Figures 4a and 4b also show that Africa received commitments of around US$ 4.19 billion over the five years, of which the region South of Sahara was targeted with roughly US$ 3.4 billion. Around US$ 2.87 billion in support was mobilized for Asia and the Middle East. A further US$ 2.76 billion was committed for South and Central America and the Caribbean region. Around US$ 647 million was provided for some European countries eligible for official development assistance. Funders' regional focus of almost US$ 4 billion is unspecified when reporting the data to the OECD DAC.

Figure 4a. Main bilateral sources of finance for NbS and regional breakdown of recipients, 2016–2020

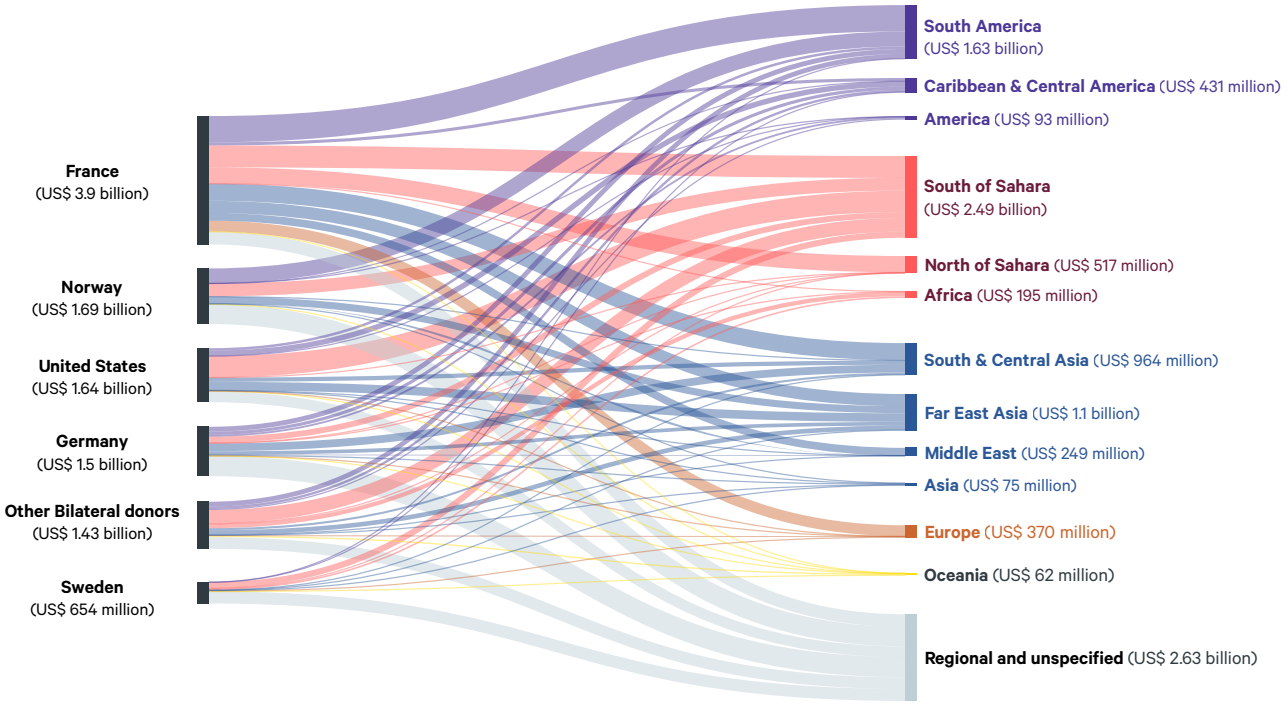
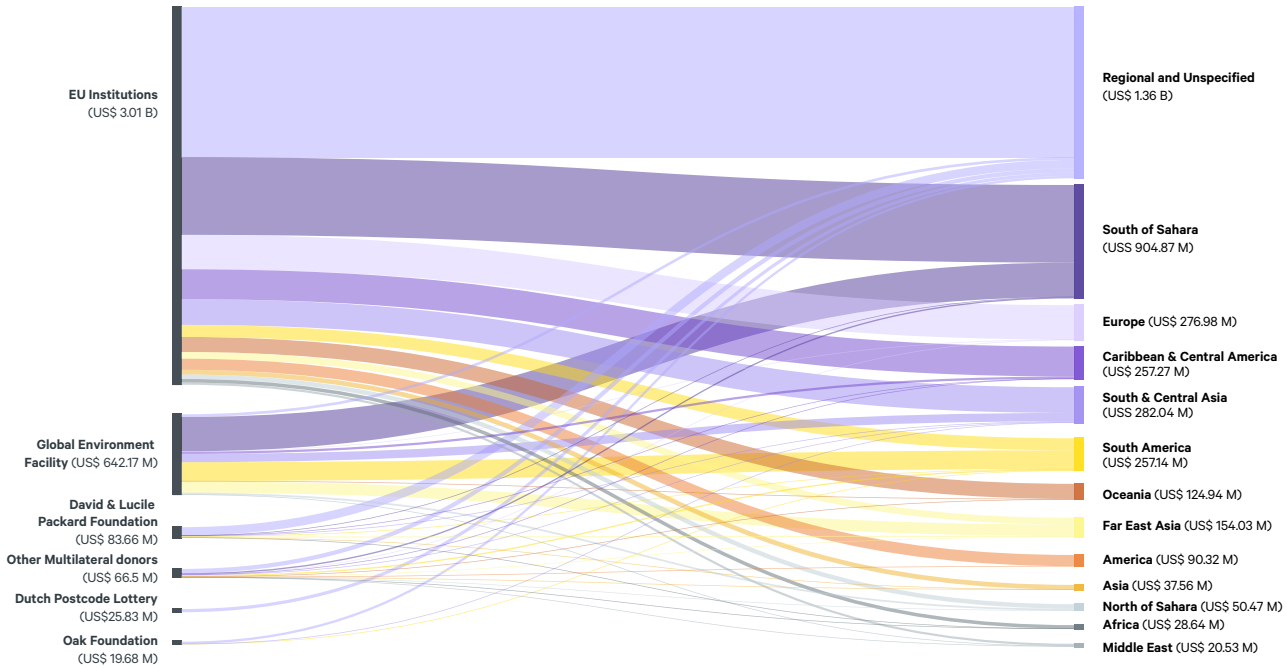


Figure 4b. Multilateral sources of finance for NbS and regional breakdown of recipients, 2016–2020



3.4 Share of finance targeted to SIDS and LDCs

For all SIDS combined, just over US$ 673 million in climate funding was committed for NbS-like activities, just under 5% of the US$ 14.66 billion committed globally (Figure 5a). Around 49% was for Caribbean SIDS (US$ 268 million for individual countries, plus a further US$ 61 million tagged as “regional” for the Caribbean), 15% was for African and Indian Ocean SIDS (US$ 101 million), and just 36% was for the Pacific islands (US$ 85 million to individual countries, and US$ 160 million

tagged where the recipient is tagged as Oceania Regional or, in a few cases, Melanesia Regional).[9] Pacific states manage the largest marine areas of the SIDS regions, so this figure of 36% seems relatively low.

The spread of funding across individual countries is large, as expected. At the upper end, Haiti received commitments of US$ 139 million for NbS activities. Mauritius (US$ 86 million) and Timor Leste (US$ 57 million) were the next largest recipients. At the lower end, 23 SIDS received less than US$ 10 million each over five years, including a host of countries which received nothing: four that received less than US$ 10 000 (i.e. Grenada, Tonga, Nauru, Cabo Verde), and a further four that received less than US$ 100 000 (i.e. Saint Vincent and the Grenadines, Antigua and Barbuda, Marshall Islands and Tuvalu). No finance for NbS-like activities was reported for Bahamas, Barbados, Bahrain, Niue, Saint Kitts and Nevis, Singapore, or Trinidad and Tobago.

Figure 5a. Finance for NbS-like activities for climate change in SIDS, 2016 to 2020

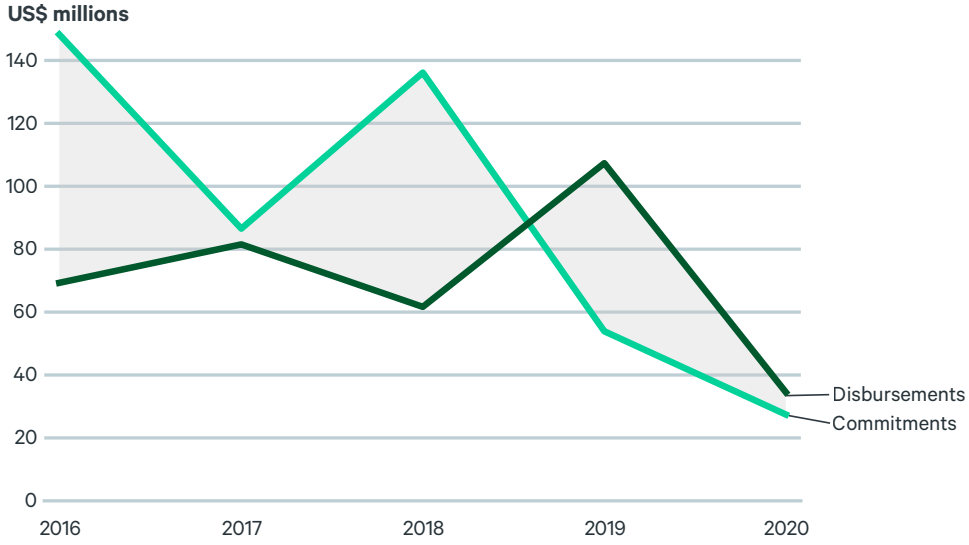
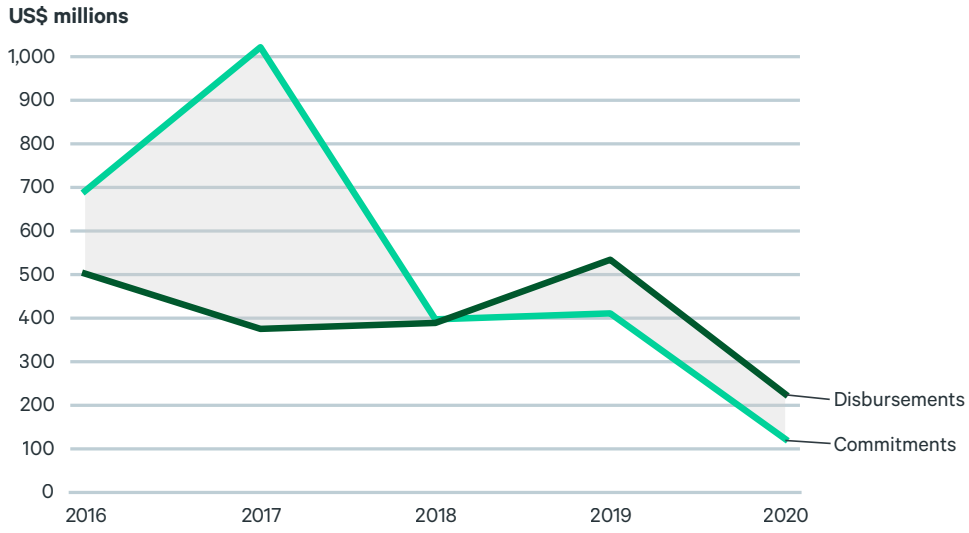


Figure 5b. Finance for NbS-like activities for climate change in LDCs, 2016 to 2020



9 The combined total of commitments to the Oceania region represented in the Sankey figures is US$ 187 million. This is less than the total of US$ 244 million because, in the OECD data, transactions to Timor Leste are coded to the Far East Asia region rather than to Oceania. Timor Leste is, however, a Pacific SIDS.

For all LDCs combined, just over US$ 2.44 billion was targeted for NbS-like activities (Figure 5b), making up 17% of total NbS finance globally. Again, the amounts for individual LDCs vary greatly. At the upper end, Ethiopia received roughly US$ 350 million in commitments over the five years, Burkina Faso US$ 202 million and Senegal US$ 189 million. In total, nine LDCs received over US$ 100 million for the five years. At the lower end, 14 LDCs received less than US$ 10 million for NbS-like activities over the five years, and three (i.e. Tuvalu, Eritrea, and Kiribati) received commitments of less than US$ 1 million.

Figures 5a and 5b show that, for both SIDS and LDCs, total financial support for NbS-like activities was lower in 2019 and 2020 than in previous years, suggesting a declining trend over time – which mirrors the broader trends above.

4. Moving on: from quantifying flows to understanding impact

What do we know about whether financing for NbS-like approaches delivers benefits for natural ecosystems?

Quantifying flows of finance provides some helpful insight into how NbS is being used by funders and recipients to tackle climate change, especially when we consider trends over time. But given the methodological challenges in codifying finance for NbS, it is difficult to conclude how funders and project developers internalize the NbS concept in practice. Yet it is crucial to know whether projects are being designed to generate benefits for both people and biodiversity (Barquet et al., 2021; Boyland et al., 2022). For this, we need to understand more about the character of these funded activities.

We briefly reviewed a small selection of available project design documents (accessed from funders' websites) from the projects included in our NbS data. The projects we selected for closer examination[10] were all in SIDS or LDCs. They vary in size and source of funding, from around US$ 3 million (the EU-funded Supporting Climate Change Adaptation for the Samoan Water Sector) up to US$ 88 million (the US-funded Feed the Future North, in Haiti) and US$ 210 million (the World Bank-funded Investing in Forests and Protected Areas for Climate-Smart Development Project, in Uganda). While our review is limited in scale, it does suggest that documentation for projects tagged in the OECD data as targeting both climate and biodiversity objectives rarely defines the benefits for biodiversity in any detail. We note that some project documents do not describe changes to ecosystem outcomes resulting from their project activities (for instance, in their M&E frameworks). Nor even, in some cases, do they define the specific ecosystems in which these projects are working.

Several of the projects we examined focus on reforestation. Still, based on available project documentation, it is difficult to ascertain the nature of the reforestation activities or the extent to which they are designed to generate natural ecological complexity (as opposed to homogeneous plantations, for instance, highlighted elsewhere as a biodiversity risk (Seddon et al., 2020). Overall, based on the available project data and our limited sample, we could not ascertain that climate finance commitments coded as targeting biodiversity objectives can be consistently linked with tangible benefits for biodiversity. This is partly because project documentation and reporting practices currently do not sufficiently describe and justify interventions against the needs of biodiversity. Biodiversity often appears among project objectives but is not meaningfully integrated into project design.

10 Project documents reviewed related to the following projects: Supporting Climate Change Adaptation for the Samoan Water Sector, Samoa (EU, roughly US$ 3 million); Climate Smart Agricultural Research and Innovation Support for Dairy Value Chains in Eritrea (EU, roughly US$ 4.2 million); Climate Adaptation and Mitigation Program for the Aral Sea Basin (World Bank and GCF, US$ 60 million); ALBIÄ - Chad Local Development and Adaptation Project, Chad (World Bank, US$ 50 million); Natural Resources Management in a Changing Climate Project, Mali (World Bank, US$ 8.4 million); Investing in Forests and Protected Areas for Climate-Smart Development Project, Uganda (World Bank, US$ 210 million); Adaptation to Climate Change in the Coastal Zone in Vanuatu – Phase II (VCAP II) (GEF, US$ 63.2 million); COVID-19 ProValAB/ Agricultural Valorization of Small Dams in Burkina Faso (Sweden, roughly US$ 8.8 million); Feed the Future North, Haiti (US, US$ 87.8 million); Haiti Reforestation Project (US, US$ 39.3 million); Mainstreaming biodiversity into the management of the coastal zone in the Republic of Mauritius (UNDP/GEF, US$ 21.8 million)

5. Conclusions

We urgently need to know better how nature-based solutions are being financed and how the concept is being translated into practice.

Currently available estimates of finance for NbS, including ours, are not robust because of methodological difficulties and should be treated as unreliable for decision-making. Nevertheless, our observations of declining trends in climate finance also targeting biodiversity (i.e. for NbS-like activities) provided to developing countries over recent years is a worrying sign for those interested in the protection of nature and in reversing ongoing biodiversity loss globally. Further, the low level of finance we find for NbS-like activities in SIDS and LDCs is also particularly worrying, not least because these countries – especially SIDS (several of whom are LDCs) – carry responsibility for managing large areas of marine ecosystems that are vital for global biodiversity and, at the same time, are under increasing pressure for the extraction of fish and other resources. The Marshall Islands, for instance, is a custodian of a marine area of more than 2 million square kilometres (of which just 0.27% is protected).[11] This is larger than the land area of Mexico, yet received less than US$ 100 000 over five years towards NbS for climate change.

The very low levels of NbS-like finance directed to some SIDS and LDCs may reflect the preferences of funders but are probably also, if not more so, the result of country governments and developers not giving NbS approaches priority over alternative uses for the limited available funding for climate change. This may be perpetuated by the lack of clearly defined metrics and timescales to evaluate NbS successes and weigh them against alternative interventions (Barquet et al., 2021). There are also suggestions in previous literature of limited technical capacity to integrate NbS into ongoing adaptation plans (Barquet et al., 2021; Swann et al., 2021).

While the NbS concept may resonate in academic circles and the rhetoric of international organizations, our observation of a declining trend over recent years could suggest that the discourse is not trickling down to practice nor being translated into financial decisions. In the cases where there is finance, it is nearly impossible to assess the impact at a macro level. Our findings suggest that, although between 15–30% of development finance targeting climate change has been tagged by funders as also targeting biodiversity, the intended benefits of these projects for natural ecosystems and other species are, at best, difficult to verify.

Thus, we need a robust evaluation of how NbS interventions are being designed and implemented on the ground. Our small, qualitative review of project documents reinforces the conclusions of an earlier study which looked at how extensively international climate adaptation finance was targeting the needs of ecosystems and biodiversity in the face of climate risks: that study concluded that only a tiny fraction of adaptation finance has been designed to include some aspect of natural ecosystems or biodiversity and, worryingly, that most of these activities are designed to manage climate risks for people rather than for biodiversity itself (Atteridge & Tenggren, 2019).

With any finance estimate for specific objectives, it is necessary to put these figures in the context of broader financial flows. There are estimates that, globally "*annual governmental expenditures on activities harmful to biodiversity in the form of agricultural, forestry, and fisheries subsidies – US$ 274–542 billion per year in 2019 – are two to four times higher than annual capital flows toward biodiversity conservation*" (Deutz et al., 2020, p. 12). These figures are some 100 to 200 times greater in magnitude than our estimate of NbS-like finance for climate change in the same year (around US$ 2.5 billion in 2019).

Finally, we require better data on how financial support is targeted to properly assess the use of the NbS concept in practice. This includes a more transparent explanation by funders about how projects tagged as targeting biodiversity deliver benefits for our natural ecosystems or species and what outcomes might be evaluated as a measure of success.

11 https://pipap.sprep.org/country/mh

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