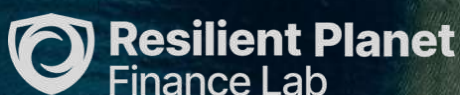




GLOBAL
CENTER ON
ADAPTATION

Financing Nature- Based Solutions for Adaptation at Scale: Learning from Specialised Investment Managers and Nature Funds



Environmental Change Institute



AUTHORS & ACKNOWLEDGEMENTS

This report was developed by

Dorian van Raalte and Nicola Ranger
Environmental Change Institute
University of Oxford

Citation

Van Raalte, D. and Ranger, N. (2023). *Financing Nature-Based Solutions for Adaptation at Scale: Learning from Specialised Investment Managers and Nature Funds*. Global Center on Adaptation and Environmental Change Institute, University of Oxford.



ABOUT THE GLOBAL CENTER ON ADAPTATION

The Global Center on Adaptation (GCA) is an international organization that works as a solutions broker to accelerate action and support for adaptation solutions, from the international to the local, in partnership with the public and private sectors. Founded in 2018, GCA operates from its headquarters in the largest floating office in the world, located in Rotterdam, the Netherlands. GCA has a worldwide network of regional offices in Abidjan, Cote d'Ivoire; Dhaka, Bangladesh, and Beijing, China.

Environmental Change Institute



ABOUT THE ENVIRONMENTAL CHANGE INSTITUTE

The Environmental Change Institute at the University of Oxford was established in 1991. Its aim is to organise and promote interdisciplinary research on the nature, causes and impact of environmental change and to contribute to the development of management strategies for coping with future environmental change.



The Resilient Planet Finance Lab was established in 2023 as a collaborative research and innovation programme hosted within the Environmental Change Institute, in partnership with the United Nations Office for Disaster Risk Reduction (UNDRR) and the Insurance Development Forum (IDF), to work with financial institutions, governments, civil society organisations and development finance institutions to deliver evidence and common metrics, toolkits, frameworks and guidance to accelerate the mobilisation of finance for resilience and nature.



ACKNOWLEDGEMENTS

This report was developed by Dr Nicola Ranger (Director, Resilient Planet Finance Lab) and Dorian van Raalte (Research Associate) of the Environmental Change Institute, University of Oxford with the Global Center on Adaptation for the "Global Tools to Unlock Capital for Investments in Nature-Based Solutions" initiative as part of the Resilient Planet Finance Lab at the Environmental Change Institute, University of Oxford with support from UK International Development under the Bangladesh Climate and Environment Program (BCEP). The Global Center on Adaptation (GCA) in partnership with the University of Oxford conducted research that supports the broad goal of scaling up investments in Nature-Based Solutions (NBS) as a key strategy for delivering resilient infrastructure systems and services. This report is a contribution to the initiative. We wish to thank Ana Gonzalez Guerrero for data collection and construction of the initial nature funds database and Mathias Weidinger for research assistance. The views expressed in the report, however, do not necessarily reflect the policies of our funding partner.

TABLE OF CONTENTS

- Authors & Acknowledgements 2
- Table of Contents 3
- Abbreviations 1
- Executive Summary 4
 - Global findings for mobilising private finance for NbS for adaptation 4
 - Charting NbS Investment Pathways for Bangladesh 5
- 1. Introduction 6
- 2. State of Nature Finance 7
 - 2.1 Background: Nature Capital, Ecosystem Services and Nature-Based Solutions 7
 - 2.2 Required Investment 7
 - 2.3 Sources of Investment 8
 - 2.4 Sectors and Revenue Streams 9
 - 2.4.1 Examples of Key Actors and Supply Chains 10
 - 2.5 Types of Investors 12
 - 2.6 Types of Investment Instruments 13
 - 2.7 Key Barriers to Mobilising Private Capital 14
 - 2.8 The Role of Blended Finance 15
 - 2.9 The Role of Development Financial Institutions 16
 - 2.9.1 Overview of European DFI Portfolios 16
 - 2.10 The Role of Specialists 17
- 3. Nature-Funds Database: Methods & Analysis 18
 - 3.1 New Nature Funds Database: Methodology 18
 - 3.2 Characteristics of Specialist Investment Managers 18
 - 3.2.1 Key Features of Specialist Investment Managers and Nature Funds 20
 - 3.3 Characteristics of Nature Funds 22
- 4. Case Studies 25
 - 4.1.1 The &Green Fund 25
 - 4.1.2 Climate Investor Two 34
 - 4.1.3 Aqua-Spark 39
- 5. Discussion and Implications 42
- References 43
- Appendices 49
 - Appendix A: Investment Manager and Nature Fund Database 49
 - Appendix B: Ecosystem Services 57
 - Appendix C: Overview of the &Green Fund and Sail Ventures 58

ABBREVIATIONS

Acronyms	Definitions
ABCDs	Archer Daniels, Bunge, Cargills, and Luis Dreyfuss
ADB	Asian Development Bank
AfDB	African Development Bank Group
APG	Algemene Pensioen Groep NV; a Dutch Pension Fund
AUM	Assets Under Management
BBP	Bronkhorstspruit Biogas Plant
BE	Banking Exchange
BEIS	UK Department for Business, Energy, and Industrial Strategy
C2F	Canadian Climate Fund for the Private Sector in the Americas
CAFI	Central African Forest Initiative
CAM	Climate Asset Management
CFM	Climate Fund Managers
CI2	Climate Investor 2
CPP	Canada Pension Plan Investments
DEG	Deutsche Investitions- und Entwicklungsgesellschaft Investment Corporation, KfW
DSNG	Dharma Satya Nusantara Group
DFCD	Dutch Fund for Climate and Development
DF	Development Fund
DFC	United States Development Finance Corporation
DFI	Development Financial Institution
E&S	Environmental and Social
EDFI	European Development Finance Institutions
EIB	European Investment Bank
ESAP	Environmental and Social Action Plan
ESG	Environmental, Social and Governance
ESMS	Environmental and Social Management System
EU	European Union
F&B	Forest and Biodiversity
FAO	Food and Agricultural Organisation of the UN
FGV	FGV Holdings Bhd
FMO	Nederlandse Financierings-Maatschappij voor Ontwikkelingslanden

FS	FS Agrisolutions Indústria de Combustíveis Ltda.
FSC	Forest Stewardship Council
FTE	Full-Time Equivalent
GAR	Golden Agri Resources Ltd
GCF	Green Climate Fund
GDP	Gross Domestic Product
GEF	Global Environmental Facility
GFW	Global Forest Watch
GHG	Global Greenhouse Gas
HCV	High Conservation Value
HDL	PT Hilton Duta Lestari
HSBC	Hongkong and Shanghai Banking Corporation, Ltd
HSJ	Agropecuaria Bambusa S.A.
IDB	Inter-American Development Bank
IDH	Initiatief Duurzame Handel; Dutch Sustainable Trade Initiative
IFC	International Finance Corporation
IFC PS	International Finance Corporation's Performance Standards on Environmental and Social Sustainability
IM	Investment Managers
IPCC	Intergovernmental Panel on Climate Change
IUCN	International Union for Conservation of Nature
JBS	JBS S.A.
KfW	Kreditanstalt für Wiederaufbau; German state-owned development bank
KLP	Kommunal Landspensjonskasse; a Norwegian Pension Fund
KPIs	Key Performance Indicators
LDN	Land Degradation Neutrality Fund
LPP	Landscape Protection Plan
MDB	Multilateral Development Bank
MFF	UK Mobilising Finance for Forests
MSW	Municipal Solid Waste
NbS	Nature Based Solution
NDPE	No Deforestation, No Peat, No Exploitation
NF	Nature Funds
NGO	Non-Governmental Organisation
NICFI	Norway's International Climate and Forest Initiative

OECD	Organisation for Economic Cooperation and Development
OFC	Oceans Finance Company
PES	Payment for Ecosystem Services
PIDG	Private Infrastructure Development Group
RLU	PT Royal Lestari Utama
RRI	Rights and Resources Initiative
RSPO	Roundtable on Sustainable Palm Oil
S&P	Standard and Poor's
SDGs	UN Sustainable Development Goals
SFDR	EU Sustainable Finance Disclosure Regulation
SME	Small and Medium-sized Enterprise
SPOTT	Sustainability Policy Transparency Toolkit (Zoological Society of London)
TAF	Technical Assistance Facility
TNFD	Taskforce on Nature-Related Disclosure
UN	United Nations
UNDRR	United Nations Office for Disaster Risk Reduction
UNEP	UN Environmental Programme
UNESCO	UN Educational, Scientific, and Cultural Organisation
USAID	United States Agency for International Development
WEF	World Economic Forum

EXECUTIVE SUMMARY

Scaling funding to effective nature-based solutions (NbS) for adaptation is key to tackle climate change and support sustainable development. NbS can play a crucial role in adaptation and investments deliver multi-dimensional benefits for climate mitigation, resilience, people and livelihoods as well as the protection, maintenance, or enhancement of biodiversity. UNEP estimates that approximately \$11tn of investment in NbS is required between 2022 to 2050, equating to over \$500bn of annual investment by 2030. This means that investment into NbS needs to be quickly and drastically scaled from its current levels of around \$200bn per year.

This report is a first output from the project “Global Tools to Unlock Capital for Investments in Nature-Based Solutions” of the Global Center on Adaptation in partnership with the Environmental Change Institute (ECI) at the University of Oxford. This first output, completed by the Resilient Planet Finance Lab at the ECI, reviews the status of nature finance globally, to learn from the role played by nature-focussed funds and their investment managers, understand what works, and draw conclusions for how we might mobilise more financing for nature-based solutions for adaptation. This knowledge will inform a roadmap and toolkit for identifying viable investment modalities in Bangladesh. Our focus is on exploring opportunities to overcome the barriers that hold back finance and action for NbS at scale. These common barriers can include: (i) the novelty, relatively long-time scales (and so risk), (ii) local specificity (and so low replicability) and small-scale of these investments versus (iii) the relatively small commercial returns, linked to inability to monetise the full benefits of NbS, as well as (iv) difficulties in quantifying results. The lack of a conducive policy environment, both in terms of regulations and incentives, and appropriate sustainable finance frameworks, particularly in emerging and developing markets, can also be a barrier. To better understand and learn from what works, we generate and analyse a new database of the activities of 25 nature funds and their investment managers, based on publicly available data and analyse case studies.

While this report focusses on opportunities to scale up private finance, it is important to note that given the public good nature of many NbS investments for adaptation, public finance will also play an important role; this can include, for example, green (nature) bonds, debt for nature-swaps and sovereign nature-linked financing. Such instruments mobilise private finance at the national level and in parallel can play a key role in building confidence and approaches that can help build wider corporate and project financing markets over time.

Global findings for mobilising private finance for NbS for adaptation

Firstly, not all NbS are equal from a finance perspective; most existing nature-related investments are in established economic sectors that deliver well understood and attractive commercial returns. NbS investments include a broad range of activities and the barriers, risks and opportunities are very different for each. For example, a large part of NbS is about sustainable or improved practices within established economic sectors, such as agriculture and forestry (e.g., forestry, agriculture, aquaculture, tourism). These businesses usually have clear traditional revenue streams such as sale of commodities (timber, crops, fish, etc.) or services (bed nights, recreational activities, etc.) as well as strengthening the resilience of communities and global supply chains. More innovative NbS projects such as green infrastructure (e.g., green buildings, green water management, natural hazard protection through restoration of mangroves and corals) are growing but continue to face challenges in fully monetising the substantial social and economic benefits that they deliver for adaptation (UNEP 2023). A final category of nature-based investments is more traditional conservation (e.g., protecting and enhancing nature). Solutions are demonstrated for each category, from leveraging blended finance to market-based solutions.

Secondly, the lack of ability to monetise adaptation-related benefits does mean that projects are skewed toward those that deliver either traditional commercial revenues or carbon-related returns. There are signs that non-commercial benefits, such as social and biodiversity gains, can already secure demand and a premium from investors, however finance flows towards those investments with greatest returns vs. risk. As a result, overall, we find that more than half of the nature funds we studied focus in the agriculture and forestry sectors. Efforts to value to adaptation benefits of projects and provide standardised metrics can help in building demand for these investments, and over time could lead to new market-based innovations that could enable monetization. This will require investment in data, tools and approaches to value benefits robustly and consistently. To build markets, reduce risks and improve information, we also recommend greater disclosure by investors, particularly on financial performance and impacts, to demonstrate the commerciality of investing in nature-based solutions.

Thirdly, NbS investments are typically more complex and tailored than other investments and generally require more active management and this creates a barrier to scale; greater standardisation can help but there will continue to be a (expanding) role for blended finance and specialised actors. The Nature Funds (NFs) studied

make use of a wide array of financial instruments (equity, loans, mezzanine loans, bonds, etc.) with sophisticated environmental, social and governance (“ESG”) and impact features such as ESG covenants, interest-rate step ups and downs based on impact performance, and carbon-based dividends among others. Transactions are mainly executed in private markets and are highly structured to the investment opportunity. This makes them more specialised and difficult to replicate. They are typically illiquid with investment periods of over five years. Impact and ESG requirements and outcomes are integrated into investments and require close and technical monitoring and verification. Post-investment management tends to be active and hands-on with investors taking board seats, sitting on ESG advisory boards, and maintaining regular contact with investees and other stakeholders. Investments for the study funds tend to be in the range of 5 – 50 million, with very few larger investments. Creating more standardised structures and metrics could play a role in scaling up financing.

Fourth, our analysis underlines the important role played by development finance institutions (DFIs), public finance, and various blended finance modalities in de-risking and catalysing investments. The NFs studied rely on a combination of risk mitigation strategies at both the fund and investment (i.e., blended finance) level. At the fund level, financial guarantees, first loss or subordinate capital and preferred returns serve to alter the risk and return profile for different groups of investors. At the investment level different mechanisms include those seeking to de-risk the overall project (e.g., technical assistance, stakeholder collaboration, offtake agreements) and those targeted at managing the downside risk of investments (e.g., seniority, collateral, financial guarantees). Many NFs have dedicated technical assistance facilities that provide grants to investees to support pre- and post-investment activities. Development finance institutions play a critical role in providing public concessional finance. DFIs also typically have a deeper understanding of the local context than global investors so act as an important bridge between the global and the local and can act as aggregators of projects to give investable scale. DFIs will similarly need to play a critical role in mobilising private finance for NbS for adaptation, and potentially be equipped to deploy greater concessional finance given the strong resilience public goods that are not monetised currently.

Fifth, we show that private sector investment managers and funds that specialise in nature finance offer an important complimentary tool to DFIs to deploy targeted high-impact capital in new areas. DFIs have a broad sectoral and geographical mandate and the barriers to investment in NbS (particularly for adaptation) are complex, requiring specialised skills and resources to overcome. Working with specialists has enabled DFIs to leverage their influence and empower other actors to focus on more niche and novel solutions that may generate outsized impact. We find that while these actors have been slow to scale and have raised limited private capital on commercial terms, they have a demonstrated important role in the ecosystem of actors in driving positive impact through structuring landmark transactions, executing replicable transactions, and creating a public knowledge base that paves the way for other investors in nature finance. We suggest that such specialised investment managers and funds could play a critical role in the building of pipelines of viable and impactful NbS for adaptation projects and linking projects to global capital. Supporting them to innovate in this area, through incentives or targeted blended finance arrangements, could help build markets for the long term.

Finally, our analysis points to the growing opportunity. We find clear signs of change in the market with growing investor demand and scale, suggesting new opportunities for NbS for adaptation. Our analysis also supports the importance of ongoing efforts to implement regulations, policies, incentives and standards that encourage and support the integration of nature into core business and catalyse nature positive investment. To truly achieve scale in NbS, policy and regulation will play a key role through integrating nature at the core of our economies.

Charting NbS Investment Pathways for Bangladesh

This study draws insights from global nature funds for financing NbS for adaptation to inform and shape pathways to scale NbS investments in Bangladesh. Globally, around 10% of financial flows to protected areas has gone to Asia and this is in the low billions, whereas financial flows in trillions are needed (UNEP 2022). The analysis highlights how scaling financing for NbS in Bangladesh will require both investing in a supportive enabling environment while also structuring investment projects that leverage nature funds and attract concessional finance. Specific recommendations include:

- i. **Develop analytical tools that can identify and map opportunities for nature-based solutions (NbS) projects and co-create and provide a common set of metrics that can capture and quantify (with sufficient robustness) the benefits for adaptation and wider benefits (carbon, biodiversity, social benefits).** Such tools can enable both investors and government to identify and prioritise investments, as well as identify where they can deliver a viable commercial return and measurable social benefits. See, for example, <https://resilient-planet-data.org/planet/natural-assets-and-capital>

- ii. **Establish a typology of NbS investments to underpin a national investment plan**, including identifying the characteristics of different project types, including the potential revenue generation, to identify where private finance could play a role and how public finance can be best strategically deployed.
- iii. **Invest in building the enabling environment for finance to flow to nature-based solutions**, including by setting clear targets and investment plans at national and regional level, investing in standards, open data and frameworks (e.g. taxonomies and bond standards), creating space to test new market-based approaches (e.g. biodiversity or adaptation credits) and deploying (concessional) public finance strategically to crowd-in private investment (blended finance) and deliver public goods for adaptation.
- iv. **Strategically work across scales to mobilise private finance**. For example, locally, working with local banks to raise capital and deploy this in lending to sectors with more traditional revenue (e.g. agriculture, fisheries etc.), regionally working with national development finance institutions and international DFIs, and at a national level, mobilise private finance at scale through sovereign green (nature) bonds or new sustainability-linked financial instruments for nature. Private investment directly in projects is growing but remains relatively small; whereas finance could be mobilised at scale, to protect whole landscapes, through new forms of sovereign financing instruments linked to adaptation and nature.
- v. **Put in place appropriate mechanisms to ensure that nature-related risks and opportunities for adaptation are factored into policy and financial decisions at all levels, including internationally**. This includes building toward mandatory disclosures of climate risks and opportunities and advocating for the adoption of nature-related standards and frameworks, such as that of the Taskforce on Nature-Related Financial Disclosures, internationally. It also means influencing local business through better regulation on environmental policies, particularly in sectors such as agriculture, tourism, and fisheries.
- vi. **Collaborate internationally to build new metrics and markets for NbS for adaptation**. International collaboration across public and private sectors to develop common metrics can help reduce transaction costs and risks for investors, value an ‘adaptation dividend’ on projects and well as build the foundations to develop new markets for adaptation and resilience over time. Collaborate through international processes, such as the G20 sustainable finance working group and international platform on sustainable finance, to explore new modalities and market-based approaches for financing adaptation.

These recommendations will be deepened in the second phase of research due in 2024. See also our interactive case study: <https://resilient-planet-data.org/planet/natural-assets-and-capital>

1. INTRODUCTION

Scaling funding to effective nature-based solutions (NbS) for adaptation is key to tackle climate change and support sustainable development. NbS play a crucial role in adaptation and investments deliver multi-dimensional benefits for climate mitigation, resilience, people and livelihoods as well as the protection, maintenance, or enhancement of biodiversity. Nature Based Solutions (“NbS”), 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”* (UNEP, 2022b), offer a tool to address a wide spectrum of societal issues, such as climate change, while fostering sustainable economic growth. The Intergovernmental Panel on Climate Change (IPCC) and others have noted the important role that NbS can play in climate change adaptation, and more broadly in contributing to the United Nation’s (UN) Sustainable Development Goals, or SDGs (IPCC, 2022a, 2022b, 2023; Seddon, Daniels, et al., 2020; UNEP, 2022a; World Economic Forum, 2020). However, as highlighted by UNEP’s State of Finance for Nature report, there is a large NbS funding gap, and the scaling of private sector investment is critical (UNEP, 2022a).

This paper is the first output of the project **“Global Tools to Unlock Capital for Investments in Nature-Based Solutions in Bangladesh”** from the Global Center on Adaptation in partnership with the Environmental Change Institute (ECI) at the University of Oxford. The Global Center on Adaptation, with the support of the UK International Development, entered a partnership with the University of Oxford to conduct research that supports the broad goal of scaling up investments in Nature-Based Solutions (NBS) as a key strategy for delivering resilient infrastructure systems and services. It addresses key data gaps to i) identify the distribution of natural assets and climate hazards (with a focus on identifying ecosystems with potential flood mitigation benefits); ii) assess

and price climate risk for infrastructure systems; iii) quantify the value of existing nature-based assets in protecting these systems; and iv) use this data to identify and evaluate NBS investment options. Parts (i) to (iii) of the project use geospatial methodologies to identify climate risks to infrastructure and opportunities for NBS to enhance infrastructure resilience. This report contributes to part (iv), which consists of two phases. The first phase of the project, documented in this report and completed by the Resilient Planet Finance Lab at the Environmental Change Institute, seeks to develop principles and recommendations for unlocking capital for investment in nature-based solutions through reviewing lessons from nature financing mechanisms globally, including developing a novel database of 30 nature funds and analysing case studies. The framework developed forms the basis for the second phase, which seeks to develop a roadmap and tools to assess viable financing options for nature-based solutions in Bangladesh specifically.

The following section provides a review of the state of nature finance globally, including the needs and sources of nature finance, the actors and the types of financial instruments deployed. Section 3 then develops and analyses the database of nature funds and specialists, and Section 4 provides deep dive case studies.

2. STATE OF NATURE FINANCE

2.1 Background: Nature Capital, Ecosystem Services and Nature-Based Solutions

Natural capital encompasses the world's stocks of geology, soil, air, water, and living organisms (Schumacher, 1973). From this natural capital, humans derive a wide range of services known as ecosystem services (Ehrlich & Ehrlich, 1981). This includes services like flood and storm protection, that are essential for climate adaptation, but also the maintenance of air and water quality, livelihoods and health, all contributing to societal resilience. Estimates indicate that more than half of the world's GDP, equal to US\$ 40 trillion, is moderately or highly dependent on nature and its services (World Economic Forum, 2020). The erosion of this natural capital can undermine resilience and adaptive capacity (IPCC, 2022c, 2023).

Investing in expanding natural capital, in the form of nature-based solutions for adaptation (NbS) such as new green infrastructure, green spaces in cities, and more sustainable forms of agriculture can be a critical adaptation to climate change, as well as delivering wider benefits to people and biodiversity. NbS describe a diverse range of actions that leverage natural features and processes aimed at achieving positive environmental, social and economic outcomes (NbS Initiative, 2023a). NbS can be implemented in a variety of economic sectors, such as forestry, agriculture, aquaculture and tourism, as well as in infrastructure, through strategically created natural and semi-natural areas in both rural and urban settings. For example, restoring and protecting forests and wetlands in catchments to secure and regulate water supplies (NbS Initiative, 2023b). While NbS is largely perceived as a cost-effective means to achieve climate, biodiversity, and land restoration targets, a key question is how to scale up the implementation of NbS globally and channel required levels of investment (UNEP, 2022a).

2.2 Required Investment

UNEP estimates that annual investment in NbS must almost triple to \$542 billion by 2030, from \$200 billion today, to reach the Rio Targets, including limiting global warming to 1.5°C in line with the Paris Agreement (UNEP, 2022a). This means that investment into NbS needs to be quickly and drastically scaled (Figure 1). Figure 1 shows that investment is required across various areas including for natural area enhancement (reforestation, peatland restoration, etc.) and transitioning to sustainable food production models (agroforestry, cover crops, etc.; see Figure 1). In addition, increased investment is needed in marine NbS, which currently receives significantly less funding despite the vital role of oceans in climate mitigation and adaptation, food security and biodiversity conservation (O'Leary et al., 2023; UNEP, 2022a). Figure 2 shows the estimated investment needs per region.

Additional annual investment needs to reach Rio targets, \$ billion (2023 US\$)

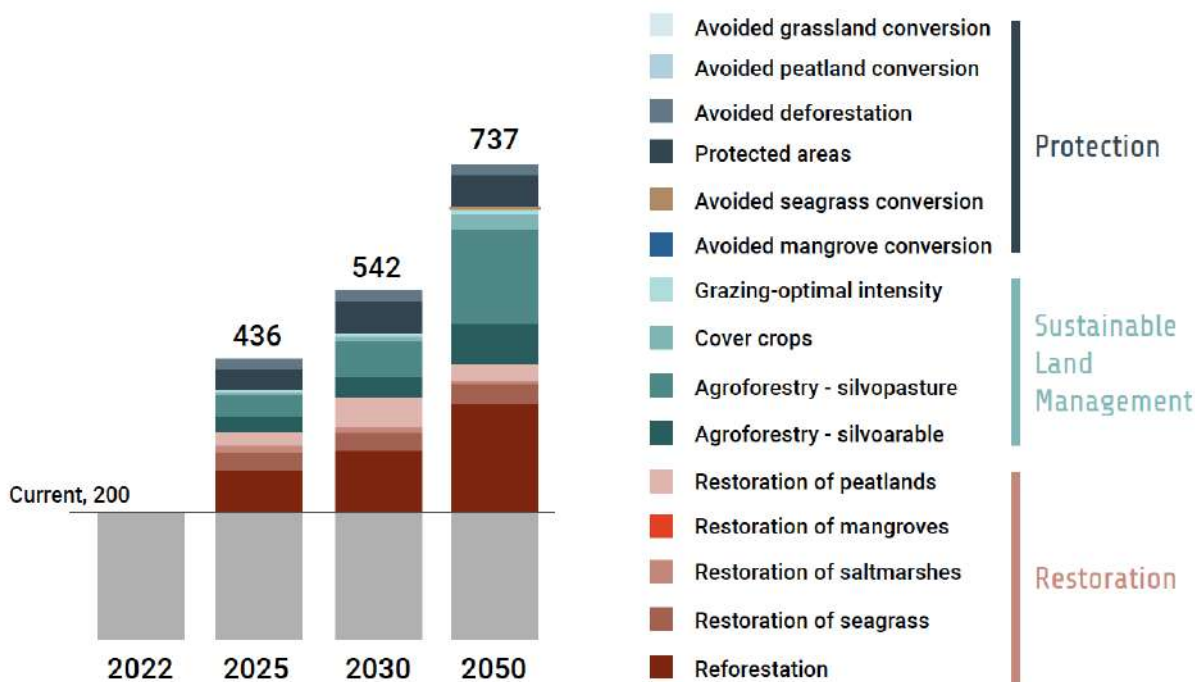


Figure 1: Annual current (2022) and required NbS investment to reach Rio Targets, including limiting climate change to below 1.5°C, halt biodiversity loss and achieve land degradation neutrality. Source: UNEP (2023b).

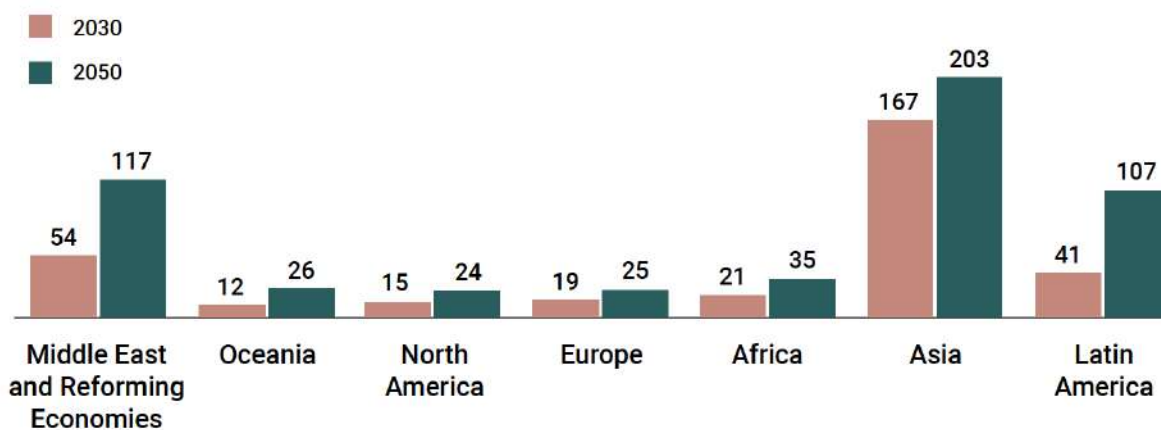


Figure 2: Additional NbS investment needs per year by region, Rio-aligned, \$ billion (2023 US\$). Source: UNEP (2023b).

2.3 Sources of Investment

The landscape of investors in NbS is diverse, including a variety of public, private and quasi-private sector actors. These actors invest in a range of sectors and make use of many different financial instruments. According to UNEP (2023b), public financing makes up 82% (\$165bn) of annual investment into NbS, most of it directed to biodiversity and landscape protection (\$76bn), followed by sustainable agriculture, forestry and fishing (\$41bn; see Figure 3). In contrast, private financial flows only make up 18% (\$35bn) of total NbS finance with the bulk of investment going to sustainable supply chains (\$9bn), biodiversity offsets (\$12bn) and payments for ecosystem services (“PES”; \$4bn). Private capital channelled through impact investment amounts to only around \$5bn annually, NGOs and philanthropy to \$4bn, carbon markets to \$2bn and multilateral development banks and

bilateral cooperation to \$1bn (UNEP, 2022a). Thus, despite "net zero" and "deforestation-free" commitments from various private companies (e.g., (Nestlé, 2023b, 2023a; Unilever, 2023a, 2023b)), private sector investment in NbS remains low (Rijk et al., 2020).

Public and private finance flows to NbS in 2022, \$ billion (2023 US\$)



Figure 3: Total public and private investment in NbS covering both terrestrial and marine. Source: UNEP (2023b).

2.4 Sectors and Revenue Streams

Broadly speaking, NbS investments can relate to establish economic sectors (forestry, agriculture, aquaculture, tourism), infrastructure (e.g., green buildings, green water management, natural hazard protection), and conservation (e.g., protecting and enhancing nature, pollution reduction) as summarised in Table 1 (EIB, 2018; UNEP, 2022a, NbS Initiative, 2023b). Investment in businesses typically supports practices that contribute to the protection, maintenance, or enhancement of biodiversity as well as societal resilience. These businesses usually have clear traditional revenue streams such as sale of commodities (timber, crops, fish, etc.) or services (bed nights, recreational activities, etc.). Businesses also have the potential to generate additional revenue through the sale of carbon credits as well as potential gains through reduced input costs and increased productivity. Infrastructure investment entails the strategic creation of natural and semi-natural areas, designed and managed to allow nature to deliver a range of valuable ecosystem services, in both rural and urban settings. These projects have potential to generate revenue through the sale of products such as fresh water and through PES; there are also multiple cost saving benefits. Conservation projects usually encompass activities where the primary motive is to protect, maintain or enhance nature. These activities often have no revenue stream or rely predominately on less traditional, "artificial" revenue streams such as carbon credits and PES. They are consequently more difficult to finance with private sources of capital (Miltenberger et al., 2021).

Table 1: Different areas of NbS initiatives and examples of revenue and costs benefits. Source: Adapted from the European Investment Bank's report entitled Investing in Nature: Financing Conservation and Nature-Based Solutions (EIB, 2018).

Sector	Examples of NbS	Examples of Revenue and Cost Benefits
Forestry	Combining commercial production with safeguarding of the environmental value and services forests provide. For example, managing invasive species, adopting silvicultural practices and protecting riverine areas	<ul style="list-style-type: none"> Revenue: Sale of timber or other forest products, sale carbon/biodiversity credits and PES. Potential revenue benefits from premium prices, increased yields and market access Costs: Reduced use of artificial materials or inputs (fuel, fertilisers, etc.)
Agriculture	Practices that increase biodiversity, enrich soils, improve watersheds, enhance ecosystem services as well as build resilience. For example, using techniques such as cover cropping, crop rotation, buffer areas and no tillage practices	<ul style="list-style-type: none"> Revenue: Sale of crops or other products, sale of carbon/biodiversity credits. Potential revenue benefits from premium prices increased yields and market access Costs: Reduced use of artificial materials or inputs (fuel, fertilisers, etc.)
Aquaculture & Fisheries	Implementation of aquacultural practices that support or enhance biodiversity or climate adaptation. For example, integrated multi-trophic	<ul style="list-style-type: none"> Revenue: Sale of fish and other products. Potential revenue benefits from premium prices and increased yields

Sector	Examples of NbS	Examples of Revenue and Cost Benefits
	aquaculture, habitat enhancement, organic feed, community-based businesses, managing invasive species, limiting catch limits and monitoring species populations	<ul style="list-style-type: none"> Costs: Reduced use of artificial materials or inputs (fuel, fertilisers, etc.)
Tourism	Providing tourism services in natural areas that conserves the environment and improves the well-being of local people. For example, limiting disturbance of natural areas, stakeholder engagement, conservation fees, waste management, responsible photography, nature educational activities and employing local guides	<ul style="list-style-type: none"> Revenue: Tourism (bed nights, use of equipment, etc.), secondary activities (e.g., sale of secondary products and services), sale of carbon/ biodiversity credits. Potential revenue benefits from premium prices Costs: Reduced costs to protect nature (e.g., anti-poaching)
Infrastructure	Green buildings. For example, green roofs and walls system that uses vegetation as the surface of the roof/wall covering instead of artificial materials	<ul style="list-style-type: none"> Costs: Reduced heating/ cooling by improving the thermal properties of the roof, increased lifespan of the waterproof, increased insulation, decreased damage of exterior from weather
	Green water management. For example, ecosystem-based rainwater collection and water re-use systems using plants and other components of ecosystem as natural filters	<ul style="list-style-type: none"> Revenue: Sale of water or water rights Costs: Reduced water purchases, reduced impacts of storm run-off and flooding and reduced need for chemical inputs into water systems
	Natural hazard protection. For example, restoring, modifying or using natural landscapes to reduce or mitigate the impacts of flooding	<ul style="list-style-type: none"> Revenue: PES Costs: Reduced need for artificial flood defences, reduced impact of natural hazards and removal costs of sediment
	Erosion control. For example, creating or modifying infrastructure to reduce the effects of erosion, including from anthropogenic activities	<ul style="list-style-type: none"> Revenue: PES Costs: Reduced artificial erosion control techniques, reduced sediment flows and associated sediment removal costs (roads, drainage infrastructure, etc.)
Conservation	Protecting and enhancing nature. For example, protecting, enhancing or establishing new forest, and maintaining and enhancing native biodiversity (incl. terrestrial, freshwater and marine)	<ul style="list-style-type: none"> Revenue: Sale of carbon/ biodiversity credits, PES, subsidies, biodiversity offset mechanisms. Potential revenue benefits from increased functioning of ecosystem services (e.g., pollination supporting agriculture)
	Pollution reduction. For example, reduction of artificial materials and chemicals introduced into the environment	<ul style="list-style-type: none"> Revenue: PES. Potential revenue benefits to core operations from premium prices and increased yields Costs: Substitution of artificial materials for natural or biodegradable ones

2.4.1 Examples of Key Actors and Supply Chains

While there are many different types of investors and financial instruments, ultimately finance flows down to actors on the ground (farmers, local fishermen, timberland companies, nature park managers, indigenous people, etc.) that interact directly with nature through their activities. Some businesses and individuals manage relatively large areas of land, however most supply chains are highly fragmented. For example, while Sime Darby Plantation Bhd (“Sime Darby”) manages over 627,000 hectares of palm oil, - more than eight times the size of Singapore (SPOTT, 2022) - smallholders manage over 6 million hectares of planted palm in Indonesia (Bagja et al., 2022). In addition, land ownership across the world is highly diverse and complex (Rights and Resources Initiative, 2015) with much of the world’s land in public hands, untitled or considered common areas (e.g., indigenous communities land, oceans, etc.). This makes sustainable management of nature challenging, especially in countries where public policy or enforcement is weak. Nonetheless, within certain sectors there are key actors that manage large areas of land and/or act as aggregators with the ability and resources to influence upstream activities either directly or by working with suppliers (Zu Ermgassen et al., 2021). Below are examples of key actors within relevant sectors:

Grains – Soft Commodity Traders

The ABCDs (Archer Daniels, Bunge, Cargills, and Louis Dreyfuss) are significant actors in global agricultural markets (Figure 4). Together, they control 90% of the global grain trade, as well as considerable parts of the food processing chain (World Bio Market Insights, 2023). The ABCDs have millions of direct and indirect suppliers, and thus improving supply chain traceability and working with upstream suppliers is imperative to improving land use management, as well as working with larger landowners.

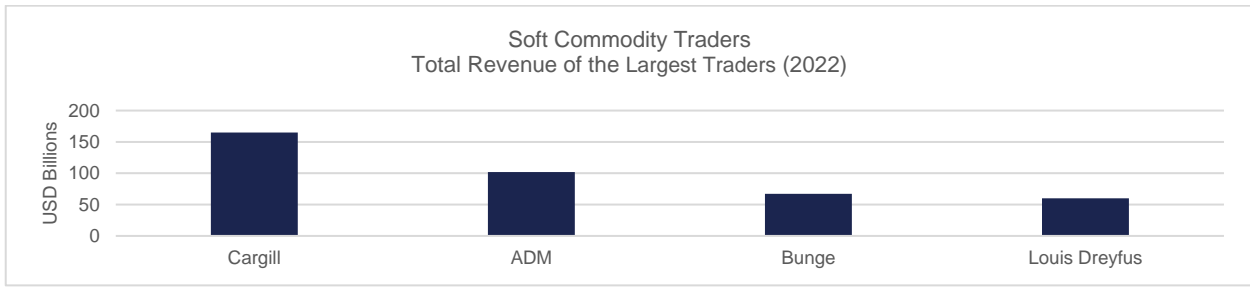


Figure 4: Revenue of largest agri-traders. Source: S&P (2023).

Livestock – Meatpackers

The beef and dairy sectors are key drivers of global GHG emissions and of deforestation, particularly in Brazil (FAO, 2022; Ritchie et al., 2022). Deforestation can undermine local and global resilience. While upstream production is largely fragmented, the mid-stream production of meat is concentrated among the five largest international meatpackers, namely Cargill Inc (“Cargill”), JBS SA (“JBS”), Marfrig Global Foods SA (“Marfrig”), Minerva SA (“Minerva”) and Tyson Foods Inc (“Tyson”). These actors have significant processing capacity (Figure 5) and interact with both direct and indirect suppliers (Gibbs et al., 2016; Sabuco et al., 2022).

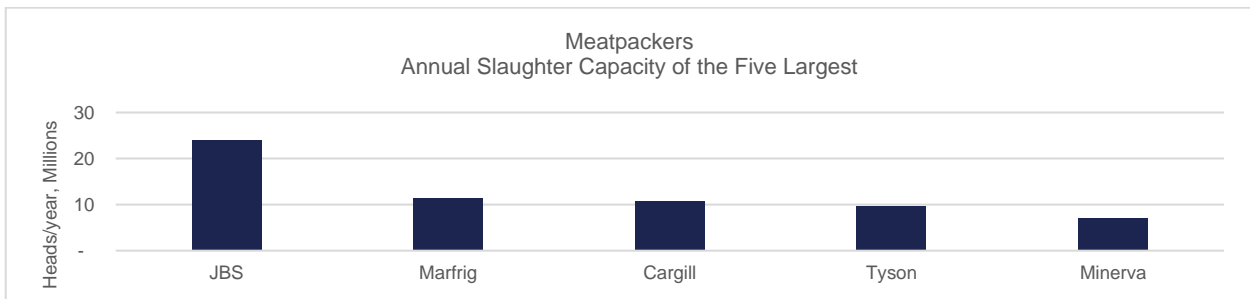


Figure 5: Production capacity of largest global meatpackers. Source: The Spatial Finance Initiative (Sabuco et al., 2022).

Palm Oil – Integrated Companies

The palm oil sector is a key driver of deforestation, particularly in countries in Southeast Asia, such as Indonesia and Malaysia, and in some African countries including those located in the Congo Basin (Jayathilake et al., 2021). The upstream production of palm oil consists of a mix of smallholder farmers and large palm oil companies (Bagja et al., 2022). Palm oil companies, such as Sime Derby, Golden Agri Resources Ltd (GAR) and FGV Holdings Bhd (FGV), directly manage large areas of land (Figure 6) and source from large numbers of smallholders.

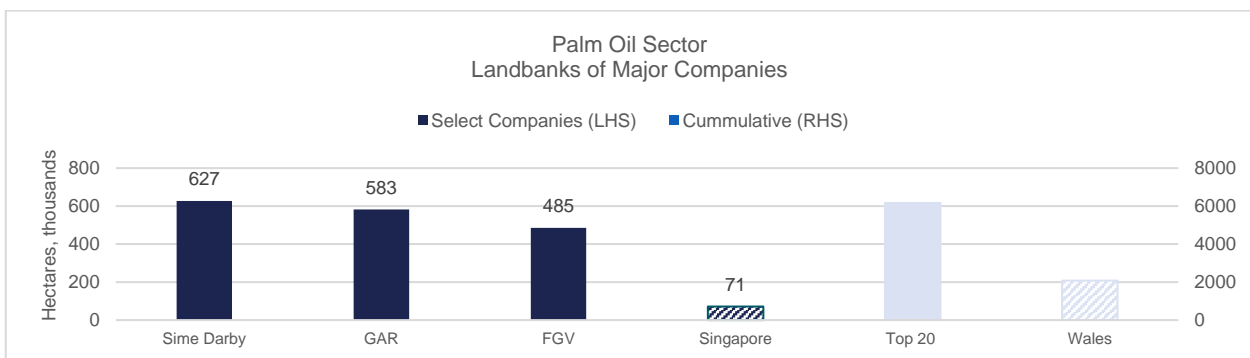


Figure 6 : Landbank of large palm oil companies and benchmarks. Source: SPOTT (2022).

Forestry, Wood, Pulp and Paper – Integrated Companies

Forestry companies operate in the upper and midstream parts of the value chain across the globe and control large amounts of resources and land areas in biodiverse landscapes (Whiteman et al., 2015) as can be seen in Figure 7. Improved traceability and land use management within the sector is key to ensure that wood is produced and sourced sustainably. The sector can also play an important part in reforestation and conservation efforts.

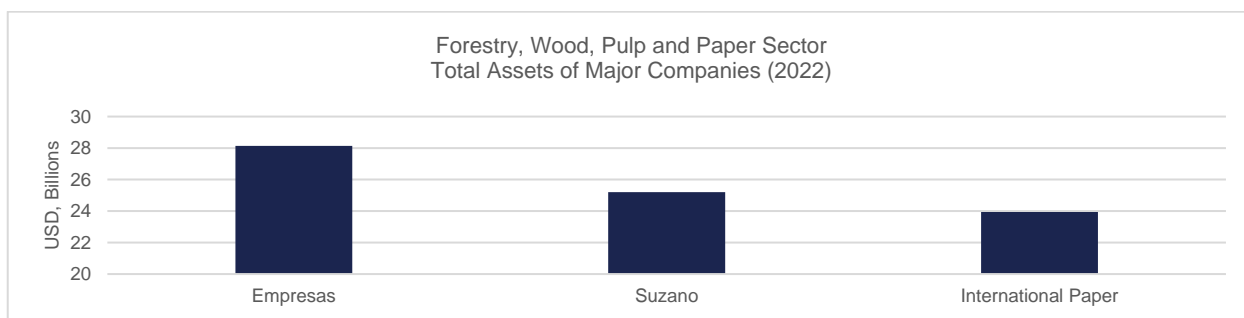


Figure 7 : Total asset value of three of the largest companies operating in the forestry sector. Source: S&P (2023).

2.5 Types of Investors

The landscape of investors in NbS is diverse, including a variety of public, private and quasi-private sector actors with differing characteristics and motives, and varying degrees of separation between investments and on the ground actions. Although there is overlap, one can group investors based on similar characteristics (e.g., ownership, sources of funding, mandate, etc.) into the following categories: governments and municipalities, development agencies and multi-donor funds, MDBs and DFIs, foundations and NGOs, impact investors, commercial investors and businesses (Table 2). While categorisation is helpful to draw general conclusions, investors within categories may differ significantly and entities may have multiple strategies with different mandates and profit/impact motives.

Table 2: Different types of investors in NbS. Source: Produced by the author drawing from various reports (Convergence, 2022; Earth Security, 2021; EIB, 2023; Flammer et al., 2023; UNEP, 2022a).

Investor Type	Description	Type	Profit Motive	Examples
Governments/ Municipalities	Various governmental bodies and organizations across levels responsible for governing and providing public services to citizens	Public Sector	Typically, low	Indonesian Government; Jambi (Indonesia) Provincial Government; Dutch Ministry of Economic Affairs and Climate Policy; UK's Department for Business, Energy & Industrial Strategy; Surrey County Council
Development Agencies/ Multi-Donor Funds	Entities with pooled resources from multiple countries to support development initiatives and projects in various regions or sectors	Public/ Quasi-Public Sector	Typically, low to medium	Private Infrastructure Development Group (PIDG), Green Climate Fund (GCF); Canadian Climate Fund for the Private Sector in the Americas (C2F); Clean Technology Fund (CTF); United States Agency for International Development (USAID); Global Environment Facility (GEF)
Multilateral Development Bank/ Development Financial Institutions	MDBs are internationally chartered financial institutions, supported by multiple countries, aimed at fostering economic development in less affluent nations, whereas DFIs are government or quasi-government entities that invest in low- and middle-income countries.	Public/ Quasi-Public Sector	Varies but typically medium	The International Finance Corporation (IFC); The Nederlandse Financierings-Maatschappij voor Ontwikkelingslanden N.V. (FMO); Inter-American Development Bank (IDB Invest); U.S. International Development Finance Corporation (DFC)
Foundations/ NGOs	Private/third sector non-profit entities that work towards addressing social and humanitarian issues through charitable activities and projects.	Private/ Third Sector	Typically, low	Shell Foundation; David & Lucile Packard Foundation; The Rockefeller Foundation; Conservation International; Omidyar Network; Engineers Without Borders Canada; Global Partnerships; Good Energies Foundation; Grantham Foundation;
Impact Investors	Private sector organisations or individuals that seeks to invest in projects or companies with the	Private Sector	Varies from low to high	Ceniarth LLC; Calvert Impact Capital; Global Energy Efficiency & Renewable Energy Fund; Land

Investor Type	Description	Type	Profit Motive	Examples
	intention of generating positive social or environmental impacts alongside financial return			Degradation Neutrality Fund; responsAbility Investments AG; Oikocredit; Acumen; Builders Vision
Commercial Investors	Private sector entities such as private equity and venture capital firms, institutional investors, financial institutions, and asset managers that invest capital in businesses and projects for potential financial returns	Private Sector	Typically, high	Blackrock; Algemene Pensioen Groep (APG); Barclays; Rabobank; Canada Pension Plan Investments (CPP); The Hongkong and Shanghai Banking Corporation Limited (HSBC); Lombard Odier Investment Managers
Businesses	Private sector entities involved in various industries and sectors, providing goods and services to customers	Private Sector	Typically, high	Shell; Unilever; Marfrig Group; Mondy; Bunge; Cargill; Golden Agri Resources (GAR); Apple; Microsoft

2.6 Types of Investment Instruments

A diverse range of grant, debt, equity and derivative-based investment instruments are utilised to direct financial resources towards sustainable activities (Table 3). Investments may be executed and traded on both public and private markets. Given the complex and non-standardised nature of many of these instruments, there can be significant variations between and within instrument categories. As a consequence, the level of control an investor holds, and the level of impact an investment might have, depend on factors such as the type of instrument, the specific negotiated investment terms, and the relationship between counterparties (i.e., direct or indirect). The suitability and available options for these instruments depend on factors like the characteristics of the investor (retail/institutional, investment size, duration, return expectations, etc.) and the entity seeking capital (government, municipality, small/large business, NGO, project, etc.). Additionally, the nature of the underlying investment plays a crucial role (corporate, project-based, revenue-generating, reforestation, etc.).

Table 3: Different types of financial instruments used to finance NbS. Source: Produced by authors.

Category	Subcategory	Description	Private or Public Market	Financial Return for Investor	Liquidity	Investor Control Over Investee
Grant-Based	Grant	Non-repayable funds typically provided by governments, foundations, or organizations to support sustainable projects and initiatives.	Private	NA	Low	Typically, low (as no ownership or repayment requirement)
	Redeemable Grant	A grant to support sustainable projects and initiatives that may need to be repaid if certain conditions are not met or objectives are not achieved, or simply repaid after a certain period.	Private	Principal	Low	Typically, low-medium (as no ownership)
Debt-Based	Private Loans	Funds borrowed from a lender, to be repaid with interest over an agreed period. Loan agreements can include customised E&S conditions.	Private	Interest and principal	Low	Typically, high (as direct relationship)
	Mezzanine Loans	Funds borrowed from a lender, to be repaid with interest over an agreed period and some form of equity participation (e.g., profit share). Loan agreements can include customised E&S conditions.	Private	Interest, principal and other	Low	Typically, high (as direct relationship)
	Private Notes	Debt instruments issued by entities to raise capital from investors, often with a specified interest rate and maturity date. Notes can include customised E&S conditions.	Private	Interest and principal	Low	Typically, medium (as usually many noteholders)

Category	Subcategory	Description	Private or Public Market	Financial Return for Investor	Liquidity	Investor Control Over Investee
	Green Bonds	Debt securities with a defined use of proceeds issued explicitly to finance or refinance projects or activities with positive environmental impacts.	Private or Public	Interest and principal	Low	Typically, low (as indirect relationship)
	Social Bonds	Debt securities with a defined use of proceeds issued explicitly to finance or refinance social projects or activities that achieve positive social outcomes and/or address a social issue.	Private or Public	Interest and principal	Low	Typically, low (as indirect relationship)
	Sustainability Bonds	Debt securities with conditions that are structurally linked to the issuer's achievement of climate or broader SDG goals, such as through a covenant linking the coupon of a bond.	Private or Public	Interest and principal	Low	Typically, low (as indirect relationship)
	Sustainability Linked Bonds	Debt securities with a defined use of proceeds issued explicitly to finance or re-finance a combination of green and social projects or activities.	Private or Public	Interest and principal	Low	Typically, low (as indirect relationship)
	Blue Bond	Debt security to raise capital to finance marine and ocean-based projects that have positive environmental, economic and climate benefits.	Private or Public	Interest and principal	Low	Typically, low (as indirect relationship)
Equity-Based	Private Equity	Investments in private companies or projects in exchange for ownership stakes and potential returns on investment.	Private	Dividends and value appreciation	Low	Typically, high (depends on ownership level)
	Public Equity	Ownership shares in publicly traded companies, providing investors with ownership and potential dividends.	Public	Dividends and value appreciation	High	Typically, low (depends on ownership level)
	ESG ETFs	Exchange-traded funds that focus on companies or projects meeting ESG criteria.	Public	Dividends and value appreciation	High	Typically, low (as indirect relationship)
Derivative-Based	Carbon Credits	Tradable units representing reductions in GHG, incentivizing emission reduction efforts. Typically sold over the counter on the voluntary carbon market.	Private or Public	Value appreciation	Low to medium	Typically, low to medium (as may have no direct contractual relationship)
Other	Debt-for-Nature Swap	An arrangement where a country's debt is exchanged for funding for environmental conservation or sustainability initiatives.	Private	Depends	Low	Typically, low to medium (as debt is forgiven and at sovereign level)

2.7 Key Barriers to Mobilising Private Capital

The heavy reliance on public finance flows to NbS is due to diverse factors, among which the following appear to be most common and important:

- **NbS is still a relatively new concept.** Though "ecosystem services" was termed in the 1980s (Ehrlich & Ehrlich, 1981) and "NbS" defined by IUCN in 2009 (IUCN, 2009), knowledge of NbS beyond academia and the environmental community is limited, and awareness and understanding among investors and stakeholders remains low (López-Portillo Purata et al., 2022). Moreover, many NbS approaches are still novel, localised or have been implemented on small scale (NbS Initiative, 2023a).
- **NbS require long investment times and involve high risks.** Projects often require large upfront investments with payoff profiles in the medium to long-term. Investments tend to be illiquid, and projects are typically in higher risk sectors and locations with exposure to commodity fluctuations, land tenure issues as well as foreign currency, political and reputation risk (EIB, 2023).

- **The return on investment on NbS is not yet evident.** Projects often generate multiple co-benefits and positive externalities, however the commercial return on investment often does not warrant the high transaction costs and risks (Knight et al., 2022). While some sectors have clear revenue streams (e.g., agriculture, forestry, and fisheries), projects may not generate income in the traditional sense (e.g., mangrove reforestation). Voluntary carbon markets and PES offer mechanisms for revenue generation, however, these markets are nascent and are consequently, small, unstructured and characterised by significant uncertainties in price, regulations and policy (Miltenberger et al., 2021). Transactions also usually take place in private markets making it challenging to find data on financial performance (EIB, 2023).
- **NbS are typically location and environment specific.** Projects are typically highly tailored to the local environment (e.g., indigenous plants or animals) which increases complexity and makes replicating and scaling of projects difficult (Knight et al., 2022; Seddon, Chausson, et al., 2020). It also increases transaction costs and requires a higher level of specialised expertise.
- **Quantifying and disseminating results is complex.** Evaluating the effectiveness of projects is difficult due to the complex interplay of ecological and societal factors (EIB, 2023). Quantifying the impact on biodiversity, carbon sequestration, and other ecosystem services requires sophisticated assessment methods and significant resources. Communicating these results in a clear and compelling manner to investors and stakeholders is challenging, in part due to a lack of standardisation (López-Portillo Purata et al., 2022).
- **Lack of supportive policy.** Governments play a crucial role in incentivising private sector investment in NbS projects through policies, regulations, and financial incentives. However, the lack of clear policies, regulations and incentives, along with the absence of a well-established taxonomy for NbS, creates confusion and uncertainty which hinders private sector investment (Knight et al., 2022; Leach et al., 2019). The European Union's introduction of the Sustainable Finance Disclosure Regulation (SFDR) and EU Taxonomy (European Union, 2019) is a step in the right direction; however, it covers a subset of the market, and its implementation will take time.

2.8 The Role of Blended Finance

Blended finance is the strategic use of capital from public or philanthropic sources to mobilise private sector investment in developing countries, with the aim of advancing the SDGs and climate objectives (OECD, n.d.). This approach enables diverse organisations with varying goals to invest alongside each other while pursuing their individual objectives, whether they prioritise financial returns, social impact, or a combination of both. Blended finance primarily addresses two key obstacles encountered by private investors: the perceived and actual high levels of risk and the relatively poor returns when compared to similar investments. By doing so, blended finance creates investable opportunities within developing nations to amplify development impact. It's important to note that blended finance is not an investment approach, instrument, or final solution; rather, it is a structuring approach (Convergence, 2022).

Concessional capital and guarantees or risk insurance are used by the public or philanthropic sector to shape an investment opportunity that aligns with the risk-return requirements of the private sector. This involves either reducing the investment's risk or enhancing its risk-return profile to bring it in line with market standards for capital. Concessional funding may involve the public or philanthropic funder accepting a higher risk profile in exchange for the same or lower rate of return. Design-stage grants do not constitute direct investments in the capital structure but instead increase the likelihood of a transaction achieving bankability and financial closure. Likewise, technical assistance funds operate independently of the capital structure to enhance a project's viability and improve impact measurement (Convergence, 2022).

Box 1: Typical Blended Finance Mechanics and Structures

Figure 8 below illustrates four common structures employed in blended finance that were identified in Convergence’s State of Blended Finance report (2022):

1. Public or philanthropic investors provide funds at below-market rates within the capital structure, effectively reducing the overall cost of capital or adding an extra layer of protection for private investors.
2. Public or philanthropic investors offer credit enhancements through guarantees or insurance at below-market rates.
3. Transactions may be associated with a grant-funded technical assistance facility, which can be utilised either before or after the investment to improve the commercial viability and developmental impact.
4. Grant funding is used for transaction design or preparation, including grants for project preparation or design stages.

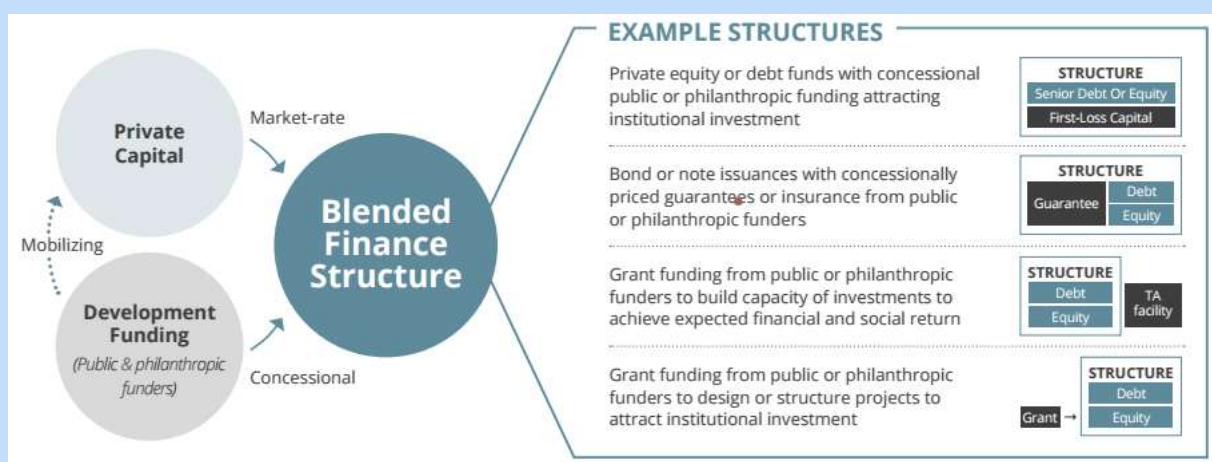


Figure 8: Typical Blended Finance Mechanics and Structures. Source: Convergence State of Blended Finance 2022 Report (Convergence, 2022).

2.9 The Role of Development Financial Institutions

DFIs play a crucial and increasing role in overcoming barriers and channelling investment across various sectors in low and middle-income countries, while ensuring investees meet international standards and best practices (de Velde, 2011). This extends to nature finance where DFIs are considered critical in proactively supporting private sector actors that are implementing NbS within sectors such as agriculture, forestry and infrastructure (Eschaliere et al., 2015). However, DFIs have a broad sectorial and geographical mandate and the barriers to investment in NbS are complex, requiring specialised skills and resources to overcome. In addition, the magnitude of investment required to be channelled to NbS is immense and DFIs are stretched (Attridge et al. (eds), 2019). These factors, among others, drive DFIs to be increasingly supportive of Specialists, either as early investors in Specialists’ strategies or, in some cases, playing a direct role in the establishment of new investment managers and strategies. This enables DFIs to leverage their influence and empower other actors to focus on more niche and novel solutions that may generate outsized impact. It also offers an avenue to channel funding to NbS indirectly through Specialists or directly by co-investing in projects.

2.9.1 Overview of European DFI Portfolios

As of 2022, the consolidated portfolio of the 15 European Development Finance Institutions (“EDFI”) members was EUR 51.2bn, consisting of 6,383 investments with an average investment size of EUR 8mln. DFIs’ portfolios cover many sectors relevant to NbS such as agriculture, forestry and infrastructure (EDFI, 2023) as indicated in Figures 9-11. EDFI member institutions’ investment activity has increased at a rate of almost 10% per year over the last decade and in 2022, the total value of new investments was EUR 8.7bn in 772 investments (EDFI, 2023).

For example, FMO’s total assets has grown from EUR1.84bn to 9.9bn from 2004 to 2022 (Figure 12). In part this has been due to its ability to raise capital from private sector investors through public and private placements (e.g., through the issue of sustainability bonds), which means that DFIs are able to mobilise private sector investment both indirectly through capital raising and directly at a project level by for example taking a riskier subordinated position in an investment structure.

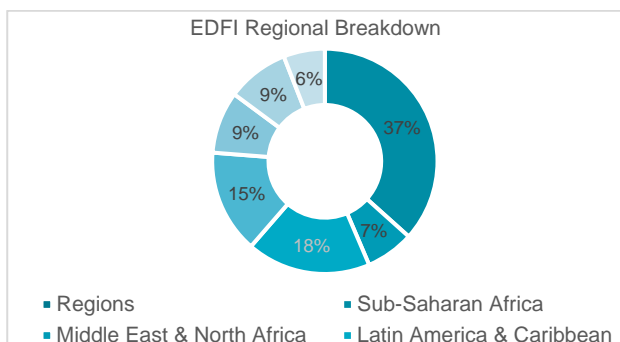


Figure 9 : Regional exposure of the consolidated portfolio of the 15 DFI members of EDFI. Source: Adapted from EDFI Website (EDFI, 2023).

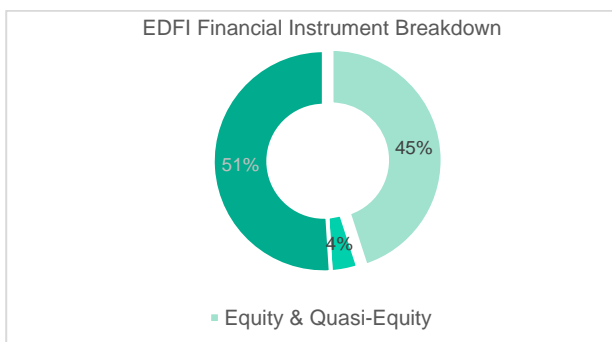


Figure 10: Breakdown of different financial instruments in the consolidated portfolio of the 15 DFI members of EDFI. Source: Adapted from EDFI Website (EDFI, 2023).

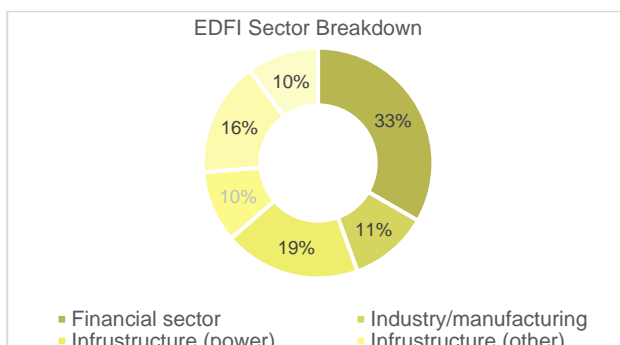


Figure 11: Sector exposure of the consolidated portfolio of the 15 DFI members of EDFI. Source: Adapted from EDFI Website (EDFI, 2023).

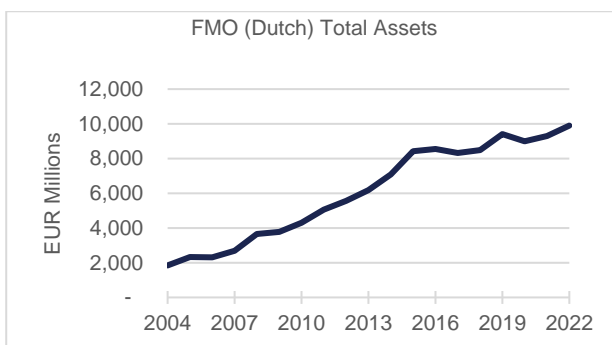


Figure 12: Growth in total assets of FMO from 2004 to 2022. Source: multiple (EDFI, 2023; S&P, 2023).

2.10 The Role of Specialists

The term Specialists is used to capture a range of actors including investment managers specialising in nature finance (“Investment Managers” or “IMs”) as well as nature orientated funds (“Nature Funds” or “NFs”) with various legal structures (e.g., companies, unit trusts, limited partnerships, etc.). In this report, IMs refer to businesses that specialise in nature finance and manage various strategies dedicated to nature positive investing. NFs may have been established by IMs or by other actors (e.g., governments or DFIs) and their legal structure influences the level of control and liability of different stakeholders, as well as who bears fiduciary duty. Despite varying legal structures, the investment manager typically leads the investment process. Specialists thus distinguish themselves from DFIs which are usually majority owned by national governments and are more akin to banks. Analysis of the role of specialists is included in the following section.

Over the past decade, a range of specialised investment managers and strategies (e.g., funds; “Specialists”) have emerged with a focus on nature-positive investment (Convergence, 2022). Considering the nascent and complex nature of NbS, and that NbS are often location and environment specific (Knight et al., 2022; López-Portillo Purata et al., 2022), Specialists appear well-suited to structuring tailored investments into effective NbS projects and can complement the activities of DFIs. However, there is limited information available on the performance of these Specialists due to the opaque nature of private markets and a general lack of disclosure, and their assets under management (AUMs) are currently small, so private funds will likely need to be complemented by public support.

3. NATURE-FUNDS DATABASE: METHODS & ANALYSIS

This section provides insight into the characteristics of current nature funding vehicles through a review of 25 Nature Funds and their Investment Managers operating in different regions and sectors. This database includes all NbS, not just those specific for adaptation (albeit most will derive some adaptation co-benefits). Analysing this wider universe of NbS is important to understand how finance for NbS for adaptation can be scaled.

3.1 New Nature Funds Database: Methodology

A desktop review of publicly available material on 25 NFs and their IMs was undertaken and information collated about the characteristics of each Specialist. The obtained sample is not intended to be exhaustive but rather provide a snapshot of leading investment funds and firms operating in the NbS space globally. The sample of NFs was obtained through the following process: (1) a review of online impact fund databases, reports and papers was undertaken to identify nature-focused funds and firms, (2) a screen was applied to identify NFs to determine eligible candidates, finally (3) the largest 25 NFs based on assets under management (“AUM”) were selected. A NF was considered eligible if it had secured at least a first round of funding, its regional focus covered the Global South, and it possessed an IM from the Global North. The selection process was designed to identify a sample of NFs that are established and possess an emerging market focus. It was decided to select NFs with a Global North IM as these actors are more likely to be subject to a similar standard of laws and regulations. All selected entities position themselves or identify their strategy as being nature positive. The level and quality of disclosure relating to Specialists varied, and sometimes conflicted, consequently, although an effort was made to ensure accurate and current information, inaccuracies may be present. Based on an analysis of the information collated, descriptive characteristics were derived of both IMs and NFs to form a baseline understanding.

3.2 Characteristics of Specialist Investment Managers

From the analysis it was established that IMs differ in shape and form, however in general firms have the following strategic and operational characteristics:

Focused and purpose-built: IMs tend to be standalone investment firms or in some cases linked to larger institutional asset managers (e.g., Mirova is a part of NATIX Investment Managers and CFM is a joint venture between FMO/Sanlam). These actors typically operate as boutique asset managers focused on private markets and are thus akin to traditional alternative investment managers but differ in that impact and ESG is considered a central component to their modus operandi and a ‘unique selling proposition’ underpinning their business models. IMs tend to focus only on a few investment mandates within similar themes such as agriculture (Sail Ventures), forestry (Criterion Africa Partners), aquaculture (Aqua-Spark Management) and infrastructure (Climate Fund Managers) and seek to differentiate themselves as experts through purpose-built teams, regional offices in key locations and relationships across public, private and third sectors. Although this appears strategic, it may also partly be due to IMs being relatively newly established.

Limited track record: Many IMs are newly established and thus face challenges raising capital from commercial investors due to their limited track record (over three quarters have less than 15 years track record and two thirds less than US\$1bn AUM). However, often founding partners are senior with extensive experience and connections to draw upon. In addition, some firms have been formed in partnership with more established actors, for example Climate Asset Management was formed by Pollination and HSBC (Climate Asset Management, 2023), which provides resources to leverage and credibility towards other investors.

Integrated and diverse teams: Investment teams appear to be larger than traditional asset managers¹, likely due to strategies requiring a high degree of active management and multidisciplinary expertise given the multifaceted nature of investments. Teams generally possess a mix of skills, backgrounds and qualifications with experience in financial, social, environmental, governance and more technical backgrounds, and appear to be more diverse in areas such as gender, race and nationality (Banking Exchange, 2023). These factors likely increase the operational costs of IMs and consequently management fees charged to investors which could reduce the attractiveness of NFs to private sector investors.

¹ On a full-time equivalent (FTE) per dollar of assets under management (AUM) basis.

Box 2: Role of DFIs in channelling capital to NbS

Founded in 1970, FMO is a public-private development bank. The Dutch government is the major shareholder, holding a 51% stake. Other shareholders include large Dutch banks (42%) and employers' associations, trade unions and individual investors (7%). FMO funds itself in public markets and through private placements (FMO, n.d.). It is also an 'Accredited Entity' of GCF enabling it to funnel GCF funding to investees (EDFI, 2023; Green Climate Fund, 2023b).

FMO is playing a pivotal role in channelling capital to actors engaged with NbS on the ground. In addition to direct investments in businesses across the Global South, FMO has played a role in establishing new asset managers such as Climate Fund Managers, a joint venture institutional asset manager Sanlam (Green Climate Fund, 2023b), and through supporting new blended finance funds such as &Green and Climate Investor 2 ("CI2") with direct investments, facilitating GCF funding and providing technical assistance at the fund level. Funding provided by FMO has also assisted these actors in establishing dedicated technical assistance facilities to support investees (Climate Fund Managers, 2022b, p. 2, 2022e; &Green, 2022a; Sail Ventures, 2023b). Through these connections and investments, private sector capital is being mobilised at various different levels into NbS activities.

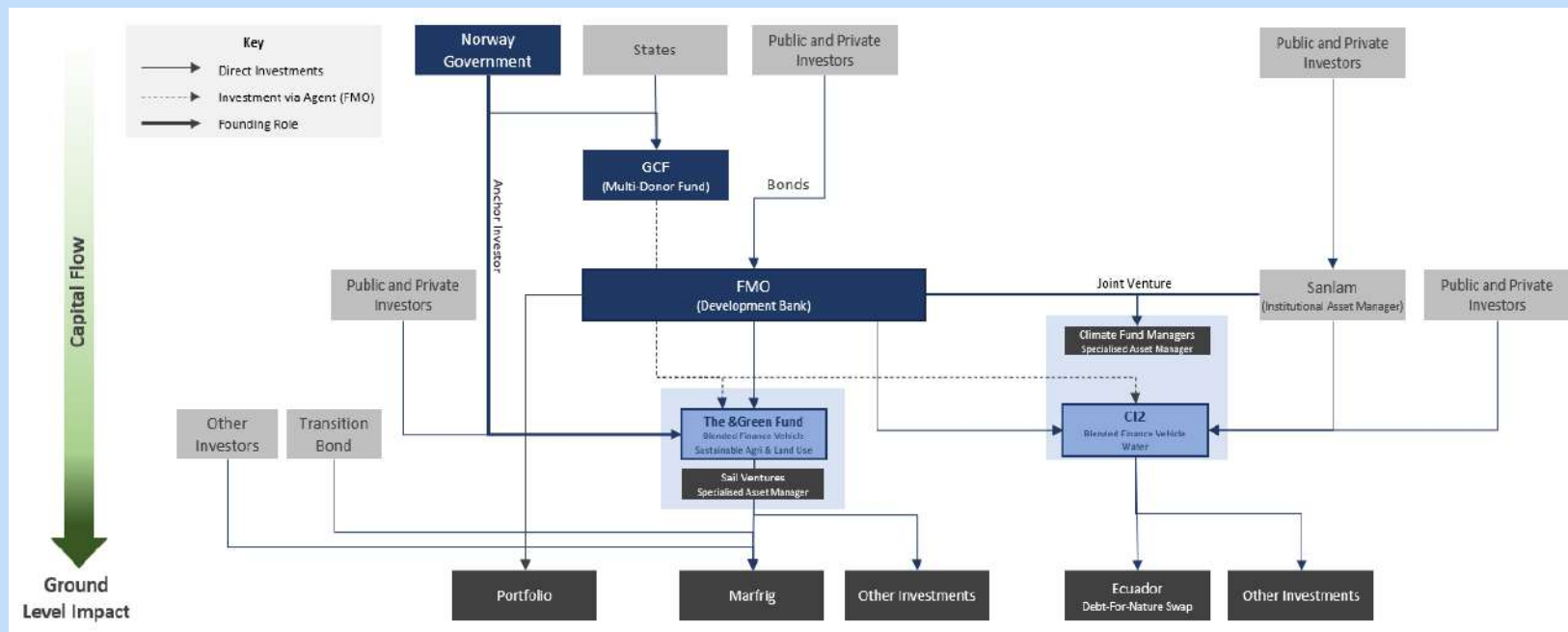


Figure 13: Interplay of governments, DFIs and specialised blended finance vehicles in financing actors involved in NbS. Source: Internally produced based on public information (Climate Fund Managers, 2022b, p. 2, 2022c, 2022e; &Green, 2022a)

The below charts provide an overview of the 25 NFs on which the qualitative analysis was undertaken.

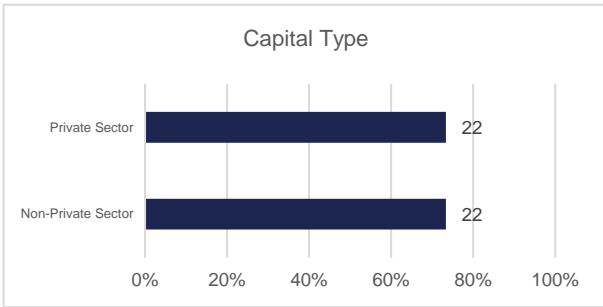


Figure 15 : Proportion of NFs with each type of capital committed.

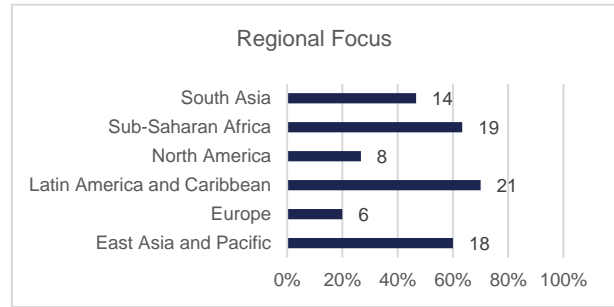


Figure 16: Proportion of NFs focused on each region.

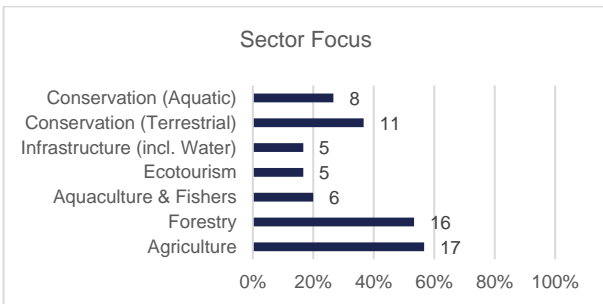


Figure 17: Proportion of NFs focused on each sector.

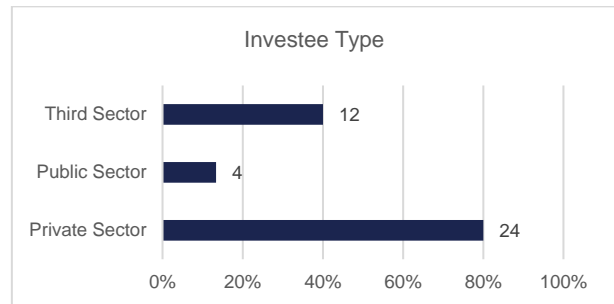


Figure 18: Proportion of NFs funding each investor type.

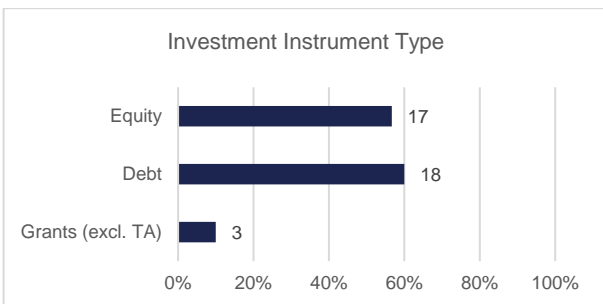


Figure 19: Proportion of NFs using each type of investment instrument.

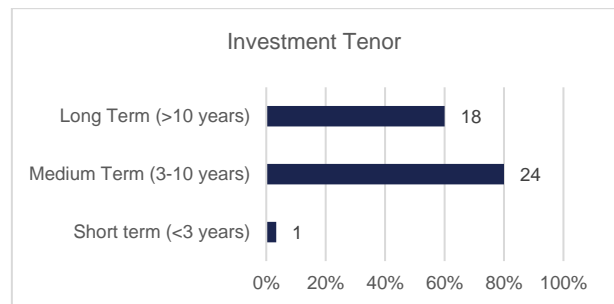


Figure 20: Proportion of NFs providing capital over each duration period.

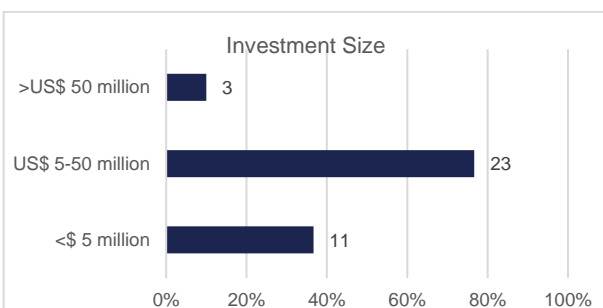


Figure 21: Proportion of NFs making investments in each category of investment size.

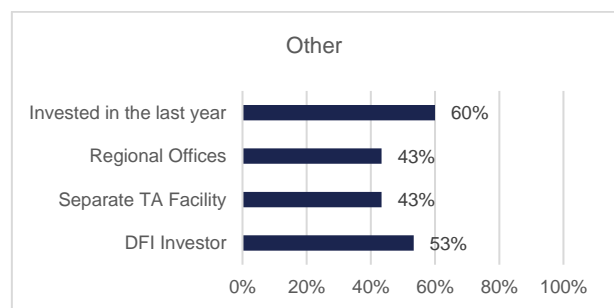


Figure 22: Proportion of NFs that have (1) made an investment in the last year, (2) regional offices, (3) a separate technical assistance facility and (4) at least one DFI as an investor.

3.3 Characteristics of Nature Funds

NFs are highly tailored with different features and mandates. Broadly speaking the following themes are apparent:

Narrow focus but broad mandates: Despite a relatively tight thematic focus, NFs have wide scope to invest in different regions, sectors, counterparties and financial instruments. For example, the Land Degradation Neutrality Fund (“LDN Fund”) focuses primarily on sustainable agriculture and forestry, and makes private equity and debt investments across Asia, Africa and Latin America within coffee, cocoa, timber, citrus and other sectors (Mirova, 2022).

Complex and tailored investments: NFs make use of a wide array of financial instruments (equity, loans, mezzanine loans, bonds, etc.) with sophisticated environmental, social and governance (“ESG”) and impact features such as ESG covenants, interest-rate step ups and downs based on impact performance, and carbon-based dividends among others. Transactions are mainly executed in private markets and are highly structured to the investment opportunity. They are typically illiquid with investment periods of over five years. Impact and ESG requirements and outcomes are integrated into investments and require close and technical monitoring and verification. Post-investment management tends to be active and hands-on with investors taking board seats, sitting on ESG advisory boards and maintaining regular contact with investees and other stakeholders.

Box 3: Institutional Actors Entering Nature Finance

In recent years, larger institutional investment managers have begun to venture into active management investment strategies focused on NbS through the launch of new strategies, joint-ventures, and acquisitions of existing strategies.

Below are some examples:

Table 4: Some institutional actors in nature finance. Source: Public company disclosures (Blue Orchard Finance Ltd, 2019; Climate Asset Management, 2020; Climate Fund Managers, 2022d; Just Climate, 2023; Lombard Odier, 2023; NATIX Investment Managers, 2017).

Institutional Asset Manager	AUM	Action
Generations Investment Management	\$42bn	Set to announce a Nature Strategy in Q3/Q4 2023
Lombard Odier	\$204bn	Launched HoliStiQ (nature-focused investment firm) in 2023 which is a joint venture between Lombard Odier and Systemiq
HSBC	\$595bn	launched Climate Asset Managers (nature-focused investment firm) in 2020 which is a joint venture between HSBC and Pollination
NATIX Investment Managers	\$1.2tn	Mirova (subsidiary) acquired Althelia (nature-focused investment firm) in 2017
Sanlam	\$70bn	Launched Climate Fund Managers (nature-focused investment firm) in 2015 which is a joint venture between FMO/Sanlam
Schroders	\$737.5bn	Acquired BlueOrchard (microfinance impact investor) in 2019

Reliance on various risk-mitigants : NFs rely on a combination of risk mitigation strategies at both the fund and investment level (Table 5). At the fund level, financial guarantees, first loss or subordinate capital and preferred returns serve to alter the risk and return profile for different groups of investors assisting in raising capital from actors with differing return motives and risk tolerance. Other strategies such as insurance and hedging shift risk from the fund to third parties, while co-investment by IMs and compensation mechanisms serve to incentivise performance and align interests. At the investment level different mechanisms include those seeking to de-risk the overall project (e.g., technical assistance, stakeholder collaboration, offtake agreements) and those targeted at managing the downside risk of investments (e.g., seniority, collateral, financial guarantees). Many NFs have dedicated technical assistance facilities that provide grants to investees to support pre- and post-investment activities.

Small and limited success in scaling: The majority of NFs reviewed have AUMs less than \$250m and have been slow to scale over the last decade with many NFs underperforming their fundraising targets at launch². Larger NFs tend to focus on traditional asset sectors such as agriculture, forestry and infrastructure, while NFs tilted more toward nature conservation projects tend to be small (less than < \$100m). Larger NFs tend to favour investees that mostly rely on traditional revenue streams (e.g., sale of agricultural produce or timber) while new revenue streams, including the sale of carbon credits and PES are often seen as secondary revenue sources, likely due to the nascent nature of these markets.

Limited commercial capital mobilised: While many NFs employ blended finance structures, few have been able to raise a significant level of private sector funds on commercial terms. Most blended finance structures have raised capital predominantly from governments, development agencies, multi-donor funds, MDBs and DFI actors, as well as relatively smaller investments from foundations, NGOs and impact investors. The few investments from institutional investors and businesses have often come from less commercial pockets and budgets. Examples of NFs that have been able to access commercial private are the LDN Fund (agriculture) Aqua-Spark (aquaculture) and CI2 (water infrastructure), perhaps due to strategic partnerships, sectorial focus, and IM skill.

Diverse standards and impact metrics: Most European domiciled NFs are subject to SFDR and are classified as article 9 under the EU taxonomy or align with SFDR if they fall outside the scope (e.g., &Green). Most NFs have public ESG policies and make use of sustainability frameworks such as the International Finance Corporation Performance Standards ("IFC PS") in addition to requiring sector specific certifications such as Forest Stewardship Council ("FSC") or Roundtable on Sustainable Palm Oil ("RSPO"). Various impact metrics are tracked and reported, such as forest conserved, fish feed saved, investment catalysed, avoided emissions, and there is a lack of uniformity. However, actors appear to acknowledge the need for improved reporting and disclosure, and there is interest in and participation by NFs in initiatives such as the Taskforce on Nature-related Financial Disclosures ("TNFD").

Table 5: Different de-risking mechanisms in NbS. Source: the author drawing from various reports (Convergence, 2022; Earth Security, 2021; EIB, 2023; Flammer et al., 2023; UNEP, 2022a) and insight from research into IMs and NFs.

Mechanism	Description	Typical Barriers or Risks it Can Address
Fund level de-risking mechanisms		
<i>Mechanisms to reduce risk of the overall portfolio or reduce risk/ improve returns for certain investors to mobilise investment into the vehicle</i>		
Financial Guarantees	Third-party agrees to step in to cover the vehicle's financial obligations in adverse scenarios	Can assist in raising capital (and potentially reduce pricing/ interest margin), overcome lack of track history, novelty of concert or other risks (including lack of financial experience of the investment manager)
First Loss or Subordinate Capital	Subordinate capital layer in a fund acting as "buffer" for a portfolio	Having layers in a fund structure (with differentiated risk and return expectations instead of on equal terms) can help to increase access to risk-adverse investors

² For example, &Green targeted raising \$400m by 2020 at launch (IDH, 2017) and only reached this target after an investment by GCF's in 2023 (Sail Ventures, 2023). Similarly, CI2 initially targeted raising \$1bn (CFM, 2021a) and closed its second round of fundraising with \$855m committed (CFM, 2022(a))

Mechanism	Description	Typical Barriers or Risks it Can Address
Preferred Returns	Providing higher returns to certain investors in a vehicle or making payments to certain investors ahead of others	Having higher or preferred returns in a fund structure (with differentiated risk and return expectations instead of on equal terms) can help to increase access to risk-adverse investors
Insurance and Hedging	Standard or bespoke finance solutions to protect against specific risks or fluctuations (e.g., commodity prices, FX) at a portfolio level	Can reduce exposure to certain movements/events thereby mitigating overall portfolio risk and de-risk the vehicle
Investment Manager Co-investment	Co-investment by the investment manager in the vehicle or investments	Can serve to align interests between investors and the investment manager
Compensation Mechanisms	Provisions to incentivise through compensation certain behaviour by the investment managers (e.g., impact targets)	Can serve to incentivise the investment managers to achieve the desired outcomes of the investors
Investment level de-risking mechanisms		
<i>Mechanisms to reduce the risk of an investment or the risk profile of the client</i>		
Due Diligence	Activities and procedures pre-investment to understand the risk and return profile of the investment to inform decision making (e.g., whether to invest and under what terms)	Can identify and avoid poor investment opportunities as well as inform investors on key risks and opportunities to consider when engaging in project and investment risk mitigation
Project Risk Mitigation		
<ul style="list-style-type: none"> Technical Assistance 	Support programmes for capacity building or the implementation of strategic projects (typically grants)	Support from external professionals (including mentoring, board advisors, consultants) or strengthening internal skills and capability to overcome lack of financial or project development experience. Provide investees with funds to pursue strategic projects or undertake studies that could reduce overall risk
<ul style="list-style-type: none"> Additional Equity 	Raising more capital from new and/or existing shareholders	Lack of equity overall or high financial leverage (e.g., relatively high debt compared to balance sheet size, potential risk that cash flows will not be sufficient to service debt)
<ul style="list-style-type: none"> Concessional Finance 	The investee raising grants or cheap financing from third parties to fund activities	Can serve to strengthen the balance sheet of an investor, increasing the ability of the investor to access financing
<ul style="list-style-type: none"> Off-Take Agreements or Sales Contracts 	Entering into contractual arrangements with future buyers of products	Can help to improve credit profile and reduce demand risk (increase visibility and predictability of sales and cash flows)
<ul style="list-style-type: none"> Stakeholder Engagement and Collaboration 	Various forms of formal and informal engagement with stakeholders (e.g., meetings, surveys, community forums), collaboration and partnerships with local organisations, communities, businesses and other stakeholders	Can improve acceptance of project and activities. Can improve chances of success through support, bringing to light new information and avoiding disputes with stakeholders
<ul style="list-style-type: none"> Results-Based Incentives 	Contractual arrangements offering financial reward based on achievement of performance criteria	Additional (conditional) revenue stream by identifying partners willing to pay for impact or performance, which can strengthen credit profile and improve predictability of cash flows. Incentive mechanism (e.g., interest rate step-down) which rewards the investee for certain performance that may improve the risk profile of the investee
<ul style="list-style-type: none"> Insurance and Hedging (by the investee or investor) 	Standard or bespoke solutions to protect against specific risks or fluctuations (e.g., commodity prices, FX) at a project/ investment level. These solutions could be taken by the investee to reduce business related risks or the investor to reduce investment risks	Can act to improve access to financing and potentially improve pricing / interest margin as certain risks are transferred to other parties. Adds complexity and costs. Standard "business as usual" insurance tends to be a requirement by lenders. Can reduce certain risks for the investor such as foreign currency, timing or commodity risk
Investment Risk Mitigation		

Mechanism	Description	Typical Barriers or Risks it Can Address
<ul style="list-style-type: none"> Seniority 	Structuring financial exposure legally or structurally senior to other lenders to allow for capital to be returned ahead of other investors	Can act to reduce the overall risk of an investment to encourage investment
<ul style="list-style-type: none"> Financial Guarantees 	Third-party or related party (e.g., shareholder, group company, external entity) that agrees to cover financial obligations of the investee in adverse scenarios	Can reduce the risk of an investment as in adverse situations recourse can be sought from other parties
<ul style="list-style-type: none"> Collateral 	Pledging security for the payment of loans in a default situation	Can reduce the risk of an investment as in adverse situations losses can be recovered through the liquidation of collateral
<ul style="list-style-type: none"> Credit Enhancements 	Contract provisions such as prepaid interest reserve or other arrangements/provisions	Can reduce the risk of an investment through for example by ring-fencing certain pockets of capital to be used to pay the investor (e.g., prepaid interest reserve account)

4. CASE STUDIES

This section deep dives into case studies for nature-based solutions. The goal in this section is again to take a broad view of NbS for adaptation, including NbS where adaptation is a co-benefit rather than a primary goal, in order to learn lessons for how countries can scale up financing for NbS for adaptation.

4.1.1 The &Green Fund

4.1.1.1 Fund Characteristics

Established in 2017, the &Green Fund (“&Green” or “the Fund”) is a blended finance vehicle structured as a Dutch foundation (*Stichting*) with an aim to finance the transformation of large-scale commodity production in tropical forest regions into a climate-resilient, deforestation-free and socially inclusive model (Appendix C). The Fund seeks to identify frontrunning companies that can act as change-agents within sectors linked to high emissions and biodiversity damage (beef, palm oil, soy, etc.) and support them with purpose-built long-term capital, advice, and reputational support to scale sustainable and inclusive models (&Green, n.d.-a, 2022b). &Green invests in actors throughout the supply chain, including financial institutions, and has a high degree of flexibility in structuring its investments which embed environmental and social conditions (e.g., no deforestation) within contracts (&Green, 2020). The Fund was established by Norway’s International Climate and Forest Initiative (“NICFI”) and IDH Sustainable Trade Initiative and has benefitted from direct and indirect investments from FMO (&Green, 2022b).

&Green has raised capital in the form of grants, redeemable grants and concessional loans from a variety of different types of investors including the Norwegian government (via NICFI), the UK government (via the UK governmental Department for Business, Energy, and Industrial Strategy (“BEIS”)), FMO, the Global Environment Facility (“GEF”), the Ford Foundation, Unilever, GCF, Central African Forest Initiative (“CAFI”) and others (Figure 23). NICFI’s initial investment acts as first-loss capital which has enabled &Green to raise additional capital from other actors. In addition, grants by certain investors (e.g., NICFI) have funded the establishment of a separate technical assistance facility (“TAF”) in partnership with IDH to assist &Green’s (prospective) clients in preparing for, and realising, the environmental and social impact required by the Fund. The TAF is able to provide grants and redeemable grants to (prospective) clients for pre- and post-investment activities. While &Green has raised various forms of capital, including from some private sector actors (e.g., a redeemable grant from Unilever), it has not yet raised private sector capital on commercial terms (&Green, 2022a). Potential factors may include investor concerns around the macroenvironment, a limited track record, a small fund size, a suboptimal risk/return profile, potential reputation risk (e.g., palm oil and cattle) and its structure (stitching). Nonetheless, following recent investment by CAFI (\$47mIn) and GCF (\$189mIn), &Green has significant capital to grow its portfolio while continuing fundraising to reach a target portfolio size of \$1bn within this decade (&Green, 2022a; Sail Ventures, 2023b).

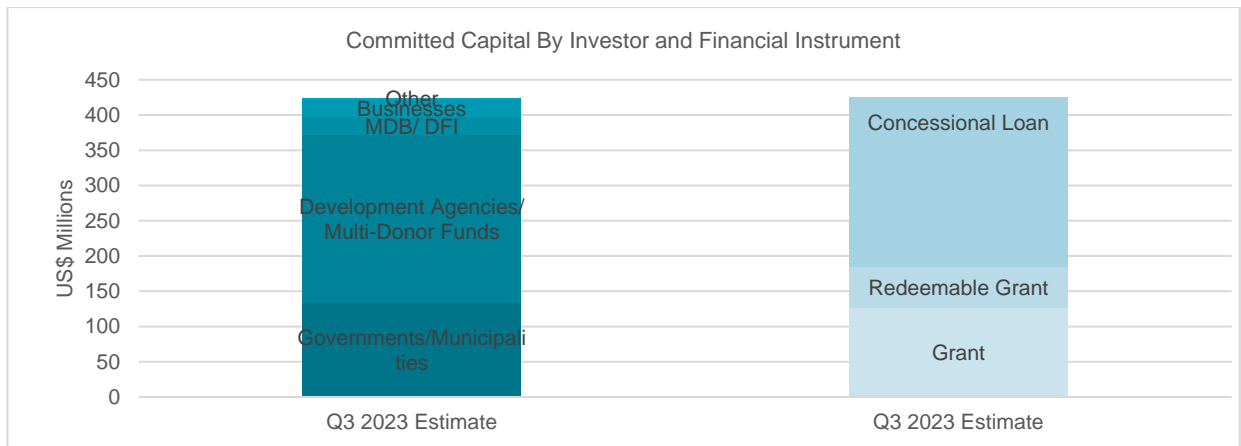


Figure 23: Capital Structure of &Green. Capital represents committed capital which may be conditional. Source: Produced from public information (&Green, 2022a; Sail Ventures, 2023a)

Box 4: Restructuring Process

In an effort to raise further commercial capital, &Green is currently undertaking a process to restructure the Fund based on engagements with commercial investors and its legal counsel. GCF's funding supports this restructuring process, and a portion of its committed capital (US\$100mln) is conditional on &Green raising commercial capital. Below is a diagram of the envisioned restructured vehicle.

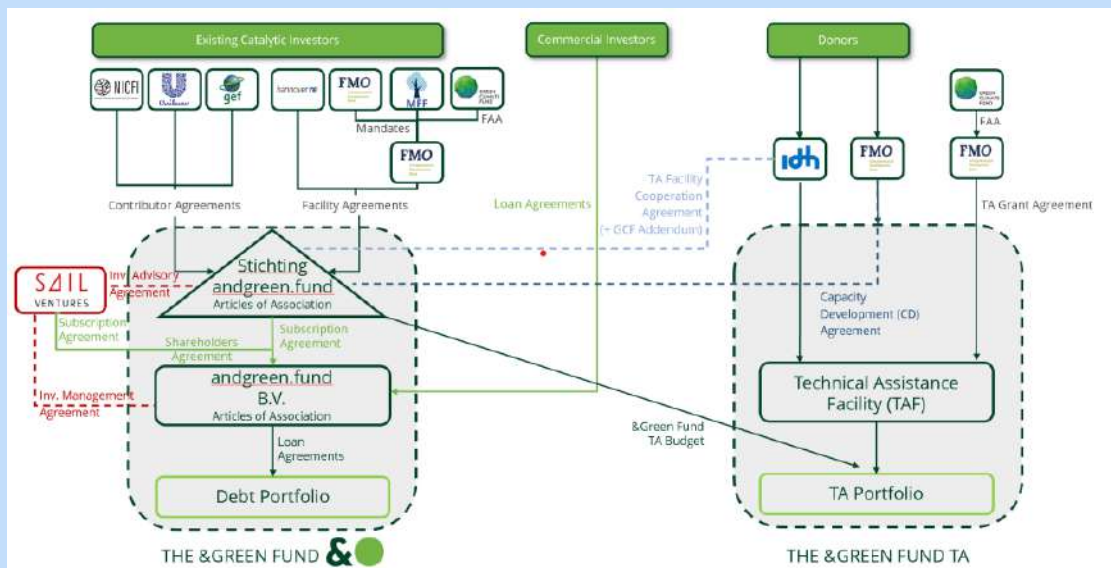


Figure 24: Scalable investment vehicle and TAF structure. Source: GCF Funding Report (Green Climate Fund, 2023a).

4.1.1.2 Investment Manager

Sail Ventures manages &Green, its only mandate. Founded in 2017, the investment firm is wholly owned by management and has built a diverse team with extensive experience in private market investing as well as ESG

expertise. Sail Ventures has approximately fifteen employees and regional offices in Brazil and Singapore (Sail Ventures, 2023a).

Table 6: Overview of Sail Ventures.

Fund Manager Overview			
Manager Name	Sail Ventures	Estimated AUM	US\$ 410mIn (Q2 2023)
Parent Company	Management Owned	Number of Funds	1
Incorporation Date	2017	Managed Nature Fund(s)	The &Green Fund
Head Office	The Netherlands	Team Size	15
Regional Offices	Brazil	ESG Specialists	Yes, integrated into investment team
Sector Focus	Sustainable Agriculture		

4.1.1.3 ESG & Impact Approach

&Green is a thematic investor that invests according to its ‘Theory of Change’ which aims to delink deforestation from major commodity supply chains. The Fund has fully integrated ESG and impact into its investment process through an Environmental and Social Management System (“ESMS”) designed to identify, manage and report on E&S aspects as well as potential impacts of &Green’s investments (Figure 25).

Its approach has several components, firstly, the Fund follows a jurisdictional approach in which its Advisory Board approves investable countries or regions that have appropriate public policy and are committed to addressing deforestation. Secondly, clients must make a commitment to No Deforestation, No Development of Peatlands, and No Exploitation (“NDPE”) and agree to implement an Environmental and Social Action Plan (ESAP) to address gaps with the IFC PS and any E&S risks identified. Finally, clients also agree to develop and implement a sustainable land use and management plan, called a Landscape Protection Plan (“LPP”), which quantitatively sets out how impact will be generated during the investment period. &Green monitors clients through internal capabilities (e.g., satellite monitoring) and through external audits. &Green monitors its impact by tracking various financial, environment and social indicators (&Green, 2020a, 2022a) including forest protected (ha), climate benefits (tCO₂e), ecosystems with improved resilience (ha), people with increased resilience (#), people benefitting (#) and capital mobilised (US\$ Millions).

Although the EU taxonomy is not mandatory for &Green, the Fund seeks to align its practices with the taxonomy. The Fund has also developed a Forest & Biodiversity Framework and plans to expand its methodology for climate adaptation objectives in 2023. &Green is also the first impact fund to pilot the TNFD beta framework to manage and disclose nature-related risks and opportunities in our investments.

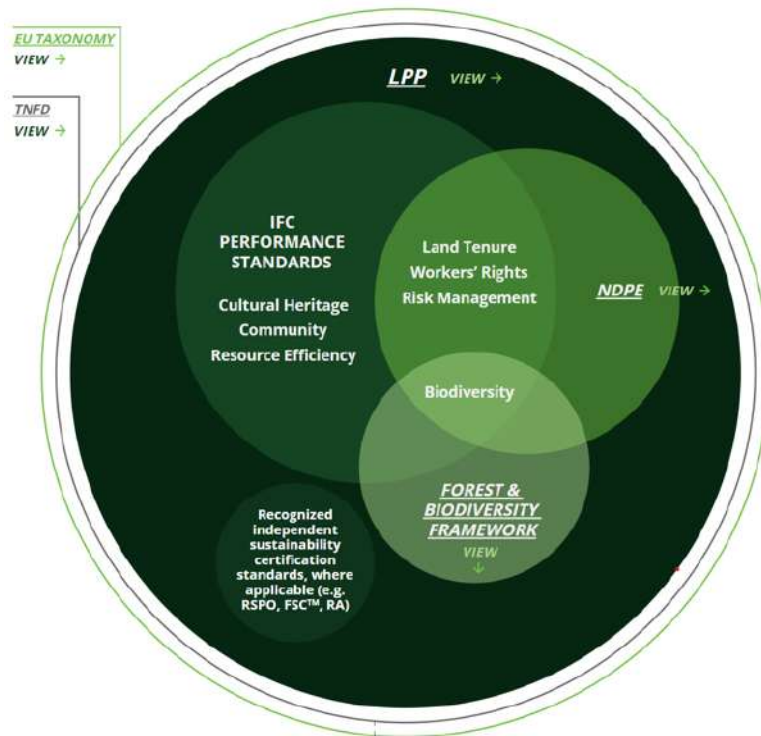


Figure 25: Elements of &Green's ESMS. Source: &Green Annual Report (&Green, 2022a).

Box 5: Standard-Related Elements of &Green's Environmental and Social Management System

Below are extracts from &Green's latest annual report (2022) providing insight into the different components of the ESMS (&Green, 2022a).

The Landscape Protection Plan

The LPP is a comprehensive, long-term land use and management plan jointly developed by the prospective client, &Green, and key stakeholders. The LLP assesses the client's operational baseline and evaluates the potential impact of the proposed transaction. In addition, the LPP plays a crucial role as part of &Green's impact driven approach. The LPP sets impact targets and milestones for the loan duration, outlined in an ESAP that ensures compliance with IFC PS (and sustainable supply chain standards).

The LPP act as the 'overarching plan' for clients to fulfil the NDPE, the Forest & Biodiversity Framework, E&S compliance and other sustainable supply chain standards. Client LPP and ESAP commitments are published on the &Green website and rigorously monitored. These requirements mitigate risks and enhance long-term sustainability for investors and clients alike.

The No Deforestation, No development of Peatlands, and No Exploitation

NDPE is a public commitment made by our clients to ensure that their operations are sustainable. This commitment ensures that there is no deforestation, peatland destruction, or exploitation of Indigenous People within their business operations and supply chains.

A combined investment approach risk-and impact-based approach completes the NDPE policy:

- The risk-based approach ensures clients are aligned with &Green's vision within the approved jurisdictions and throughout their global operations.
- The impact-based approach, looks forward, and delivers impact for both the client and sector. The building blocks include the financial and sustainability requirements applied to all transactions within &Green's eligible jurisdictions.

Forest and Biodiversity Framework

To ensure and demonstrate that the Fund's investments lead to measurable net positive forest and biodiversity outcomes over time, &Green uses its proprietary Forest & Biodiversity Framework (The F&B Framework). The F&B Framework embeds the IFC PS 6 – which covers how biodiversity should not be negatively impacted by investments – within &Green's ESMS, providing an industry-leading approach to mainstreaming biodiversity into investment decision making.

By applying the F&B Framework, every potential transaction entering &Green's pipeline will undergo standardized risk screening for both past and future biodiversity risks. For example, the conversion of natural or critically important habitats and business management capacity to mitigate biodiversity risks. The screening is informed by leading global datasets, capturing the extent, conditions, and significance of biodiversity-related findings. &Green enhanced its Geographic Information System (GIS) assessment and monitoring system in 2022 with new information layers. New layers allow a detailed spatial land cover analysis and land use historical series as well as numerous biodiversity features. This crucial initial risk assessment step guides the focus of third-party due diligence, enabling us to zoom in on the specific landscape features of interest.

The F&B Framework builds on identified risks to establish and action process that ensures the delivery of creditable and tangible impacts for biodiversity protection and compensation impacts. This process operationalizes &Green's NDPE policy, aligning with IFC PS and leading sustainable supply chain frameworks. &Green only invests if biodiversity No Net Loss or, ideally, a Net Gain can be realized. The biodiversity-related commitments are reflected in the LPP and ESAP.

The F&B Framework, featuring standard templates and checklists, ensures high-quality due diligence outputs and nature-positive outcomes across &Green's portfolio. By adopting the F&B Framework, &Green operationalizes best-in-class standards for biodiversity management, and we establish ourselves as a leader in nature-positive investing.

EU Taxonomy

The EU taxonomy establishes a classification system for environmentally sustainable economic activities based on their contribution to meet environmental objectives. Although not mandatory for &Green, the Fund continually improves its environmental and social management practices to align with this taxonomy. &Green successfully developed the Forest & Biodiversity Framework and plans to expand its methodology for climate adaptation objectives in 2023 to enable robust reporting on Principal Adverse Impacts and showcase best practices within &Green's ESMS.

Taskforce on Nature-Related Disclosure

&Green is the first impact fund to pilot the TNFD beta framework to manage and disclose nature-related risks and opportunities in our investments. The TNFD is a global, market-led initiative, established to develop and deliver a risk management and disclosure framework for organisations to report and act on evolving nature-related risks. The mission of the TNFD is aligned with the &Green Fund: to support a shift in global financial flows away from nature-negative outcomes and toward nature-positive outcomes.

4.1.1.4 Portfolio & Performance

Since launch, &Green has made seven investments, grown its portfolio to over \$128m³ and raised \$410m³ of capital³ (&Green, 2022a; Sail Ventures, 2023b) as described in Table 6 & Figure 26. The Fund turned profitable in 2019 and has continued to report profits since (&Green, 2019, 2022a). The growth of &Green, shown in Figure 27, demonstrates that it has been able to successfully deploy capital and raise additional capital from investors. However, the Fund's growth has been slower than anticipated with an initial target to raise \$400m³ by 2020 (IDH, 2017).

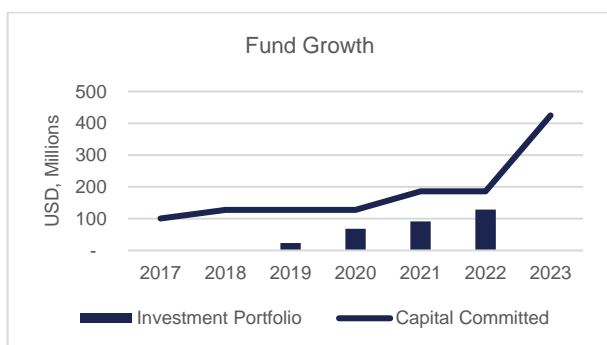


Figure 26: Growth in &Green's capital since launch. Source: Produced from information disclosed in &Green's annual reports and press releases (&Green, 2018, 2019, 2020a, 2021a, 2022a; Sail Ventures, 2023b).

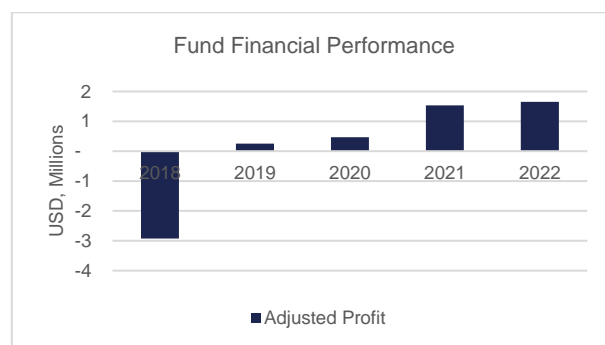


Figure 27: &Green's profits since launch adjust for irrelevant non-cash amounts. Source: Produced from information disclosed in &Green's annual reports (&Green, 2018, 2019, 2020a, 2021a, 2022a).

&Green has executed several investments that have the potential to highly impact key global sectors and could be replicated by other investors. It is working with largescale global aggregators such as Marfig (beef), Mercon (coffee), DSNG (palm oil), FS (grains) to address issues around supply chain traceability and deforestation. It is also working with actors to develop and scale more sustainable production models. For example, &Green is supporting Roncador, one of largest Brazilian farms with over 150,000 hectares of land under management, to scale a system that integrates livestock and crops enabling it to more than double its stocking rates, thereby materially increasing its production on the same farming area. As of 2022, &Green reported that its portfolio collectively achieved 3.6 million hectares of forest protected, 6.6 tCO₂e of climate benefits, 3.7 million hectares of ecosystem with improved resilience while increasing the resilience 54 thousand people and mobilising over US\$ 8.5 billion (&Green, 2022a).

³ The portfolio value figure is as reported for the yearend 2022. Capital committed is estimated as of Q3 2023.

Box 6: Marfrig Investment

In 2021 &Green provided a \$30mIn loan with a 10-year tenor to global meatpacker, Marfrig, to enable it to implement a NDPE requirement across its entire supply chain in the Amazon and Cerrado biomes (&Green, n.d.-b, 2021b). This is significant as the beef and dairy industry account for approximately 17.4% (Ritchie et al., 2022) of GHG emissions and 38.5% of deforestation globally (FAO, 2022). In Brazil, Land conversion for cattle grazing is a key driver of deforestation and it is difficult to address given the fragmented upstream supply chain and issues surrounding traceability of cattle (Skidmore et al., 2021) summarised in Figures 28-29. Through the investment, &Green was able to contractually commit Marfrig to achieve a fully deforestation-free supply chain; encompassing around 30,000 direct suppliers and between 60,000 and 90,000 indirect suppliers in the Amazon and Cerrado. Marfrig’s commitments are described in a detailed public roadmap and its progress is being monitored by &Green through reporting requirements, satellite monitoring and external audits (&Green, 2020b, 2020c).

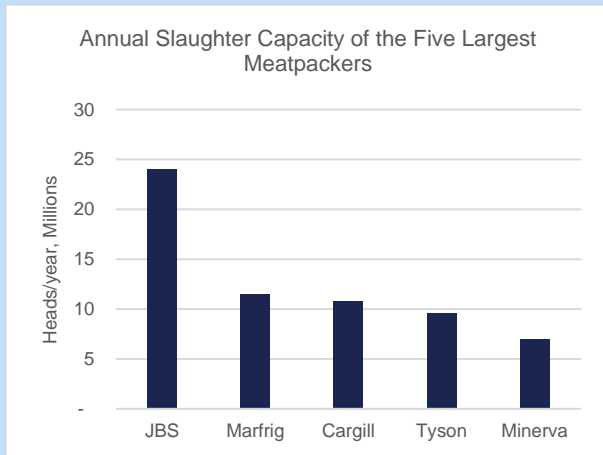


Figure 28: Production capacity of the largest global meat packers Source: The Spatial Finance Initiative (Sabuco et al, 2022).

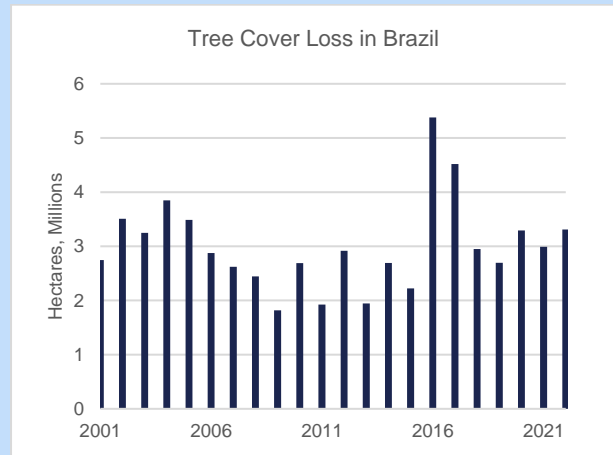


Figure 29: Tree cover loss (>30% canopy) in Brazil from 2001 to 2022. Source: Global Forest Watch (2022).

Table 7: &Green portfolio breakdown and reported impact KPIs. Source: &Green website (&Green, n.d.-b) and Annual Report (&Green, 2022a).

&Green Portfolio													
Name	Country	Supply Chain	Company Stage	Relevance	Investment	Tenor	Year	Forest Protected (ha)	Climate Benefits (tCO2e)	Ecosystem with Improved Resilience (ha)	People with Increased Resilience (#)	People Benefitting (#)	Capital Mobilized (US\$ Mlns)
New Investments													
Mercon	Vietnam	Coffee	Mature	Leading vertically integrated global green coffee supplier	US\$ 20 mln	8 years	2023						
Portfolio as of 2022 Year End								Impact Figures as per 2022 Annual Report					
FS	Brazil	Grains (Biofuels)	Growth	4 th Largest ethanol producer in Brazil	US\$ 30 mln	8 years	2022	779,292	1,300,559	783,331	931	931	568
HDL	Indonesia	Palm Oil (Food/Biofuels)	Growth	Development of replicable sourcing model	US\$ 12 mln	8 years	2022	721	544	6,109	27,170	27,385	1***
Marfrig	Brazil	Cattle (Beef)	Mature	2 nd Largest Global Meatpacker	US\$ 7.7 mln	12 years	2021	2,774,229	5,328,493	2,774,229	5,761	5,761	7,153**
HSJ	Colombia	Cattle (Beef)	Growth	Scaling of sustainable management model	US\$ 7.7 mln	12 years	2021	1,697	10,466	6,057	885	885	1
DSNG	Indonesia	Palm Oil (Food/Biofuels)	Mature	Top 20 largest Indonesian	US\$ 30 mln	10 years	2020	10,693	46,323	86,951	19,171	19,171	607
Roncador	Brazil	Cattle (Beef)/ Soy	Mature	One of Brazil's largest farms	US\$ 10 mln	8 years	2020	63,465	-56,800*	121,957	429	429	120
Total								3,630,097	6,629,585	3,778,633	54,347	54,562	8,448
Inactive													
RLU (Michelin)	Indonesia	Rubber	Growth	One of the world's largest natural rubber plantations	US\$ 23.75 mln	13 years	2019						

* In 2022, there was a fire that affected ca.800 ha of forest at the farm, resulting in the GHG emission rate higher than the sequestration rate.

** Equity calculated on a controlling basis

*** Includes shareholder loan

&Green Definitions:

FOREST PROTECTED: Threatened species and biodiversity protection, particularly in high conservation value (HCV) forests near transactions. The Net Gain Framework (developed by IFC) serves as a progressive framework for biodiversity preservation.

CLIMATE BENEFITS: Mitigation benefits in tCO₂e from: (1) Emission reductions generated from changes in farm management practices and (2) Emission sequestration from regrowth and densification in degraded forests

ECOSYSTEMS WITH IMPROVED RESILIENCE: Rehabilitation, restoration and protection of forests, regenerative agriculture, silvo-pastoral and agroforestry provide improved resilience of livelihoods to individuals.

PEOPLE WITH INCREASED RESILIENCE: Individuals for whom a stable (ongoing) benefit or service is provided or made possible to improve their livelihoods.

PEOPLE BENEFITTING: Producers reached, individuals benefiting from secured land tenure agreements & jobs supported.

CAPITAL MOBILIZED: Capital that is catalysed by &Green's investments & additional funding from banks and funds.

4.1.2 Climate Investor Two

4.1.2.1 Fund Characteristics

CI2 is Climate Fund Managers' ("CFM") second blended finance facility, with a focus on facilitating water, sanitation, and oceans infrastructure projects in emerging markets. CI2 is a follow on from Climate Investor One (CI1) which is an US\$850mln blended finance fund primarily focused on renewable energy investments. CI2 aims to reach a Final Close of US\$1bn, and it achieved a second close in December 2022, securing US\$855mln in commitments (Climate Fund Managers, 2022e). CI2 is supported by the Government of the Netherlands, including the Ministry of Foreign Affairs through the Dutch Fund for Climate and Development, and has various actors servicing as cornerstone investors including commercial investors (KLP, IMAS Foundation, Sanlam, Aegon), Dutch public sector bank BNG Bank, Donors (European Commission and Nordic Development Fund), as well as FMO (Climate Fund Managers, 2021b, 2022e). CI2 provides financing throughout the entire project lifecycle, starting from the design and construction phases, and extending into operations through post-construction refinancing (Climate Fund Managers, 2022a).

Box 7: CI2 Blended Finance Structure

To facilitate the financing of a project throughout the entire lifecycle, CI2 comprises three distinct funds, each tailored to a specific project stage: the Development Fund (US\$90mln), the Construction Equity Fund (US\$1bn), and the Refinancing Fund (US\$1bn). The three distinct funds enable CI2 to combine resources from the public and private sectors, along with commitments from DFIs, in a mutually beneficial and complementary manner. During the project development stage, public-sector donors play a crucial role by funding projects that are typically challenging to finance solely through private-sector investments. These donors also contribute significantly to mobilizing private-sector capital during the construction phase when risks are better understood, and financial returns become achievable (Climate Fund Managers, 2022b).

CI2 three funds, target different project stages are structured as follows:

- **Development Fund (US\$90mln target size):** Funds up to 50% of the planning and development phase of a project with the ability to provide both technical assistance and financing.
- **Construction Equity Fund (US\$1bn target size):** Funds the construction phase of a project, financing up to 75% of the construction funding requirement through equity, thereby eliminating the traditional need for debt during construction. The Fund consists of three tiers: Tier 1 Donor Capital (US\$250mln), Tier 2 Commercial Investors (US\$375mln) and Tier 3 Institutional Investors (US\$375mln).
- **Refinancing Fund (US\$1bn target size | Yet to be established):** Operates as a post-construction debt facility providing long-term senior debt to projects once fully operational.

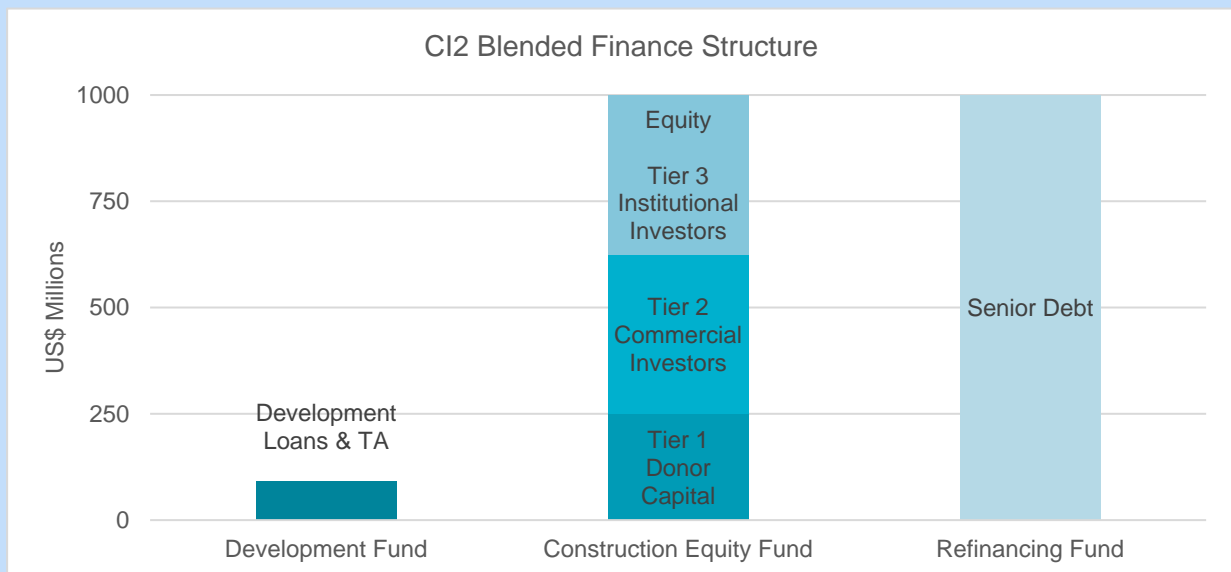


Figure 30: CI2 Blended Finance Structure. Source: CFM's website (Climate Fund Managers, 2022b).

4.1.2.2 Investment Manager

CFM is a climate-focused investment firm established in 2015 as a joint venture between the Dutch development bank FMO and Sanlam InfraWorks, a subsidiary of the Sanlam Group based in South Africa (Green Climate Fund, 2023b). CFM manages multiple funds and collaborates with partners to co-develop, build, and manage sustainable infrastructure solutions. The firm's investment activities extend across regions such as Africa, Asia, and Latin America, with its headquarters situated in The Netherlands (Climate Fund Managers, 2022d, 2022c).

Table 8: Climate Fund Managers overview.

Fund Manager Overview			
Manager Name	Climate Fund Managers	Estimated AUM	US\$ 1.7bn (Q2 2023)
Parent Company	FMO/ Sanlam	Number of Funds	4 (with additional subfunds)
Incorporation Date	2015	Managed Nature Fund(s)	Climate Investor Two
Head Office	The Netherlands	Team Size	100
Offices	South Africa, Singapore and Colombia	ESG Specialists	Yes, integrated into investment team
Sector Focus	Renewable Energy Green Infrastructure		

4.1.2.3 ESG & Impact

CFM's overarching strategies are centred on the establishment, mobilisation, and deployment of closed-end innovative funds dedicated to private investments with a primary focus on climate change mitigation and adaptation within emerging markets. Accordingly, CFM asserts that its funds, including CI2, fall within the scope of Article 9 of SFDR (Climate Fund Managers, 2021a). Similar to &Green and FMO, CFM follows the IFC PS and it has implemented an ESMS that outlines a comprehensive risk management framework, encompassing the identification, measurement, management, and ongoing monitoring of risks (Climate Fund Managers, 2022a). These risk management protocols are integrated across CFM's operations and the firm places importance on adhering to ESG standards, considering them an intrinsic component of its operational processes. Throughout the investment lifecycle, CFM accumulates and validates data sourced from projects to verify continued compliance with the requirements of CI2. Environmental and social impacts and associated risks are assessed at every phase of the investment process by CFM's well-resourced in-house ESG team (Climate Fund Managers, 2021a).

4.1.2.4 Portfolio & Performance

Since CI2 reached its first close in November 2021, it has grown its portfolio to five investments with a further two investments close to execution (Table 8). The portfolio consists mainly of project finance natured investments (construction of desalination plants, waste-to-energy plants, etc.), many still in relatively early stages (Climate Fund Managers, 2022a). CI2 also structured a debt-for-nature swap through Oceans Finance Company (OFC) in Ecuador - see box below (Climate Fund Managers, 2023). While it is still too early to assess the financial performance of the fund, its recent second close in which the fund raised a further US\$180mln from Swedfund (US\$35mln) and GCF (US\$145mln) suggests that stakeholders are satisfied with CI2's initial investments and pipeline development thus far (Climate Fund Managers, 2022e). However, notably there were no private sector investors in CI2's second close.

Box 8: Example Investment - Oceans Finance Company

Debt-for-climate conversions involve restructuring government debt for favourable terms, with the savings directed towards climate-positive actions. In 2023, Climate Fund Managers (CFM), together with Goldman Sachs, successfully concluded a debt-for-climate conversion, the largest in history, through its marine ecosystem subsidiary, Oceans Finance Company (“OFC”).

This conversion focused on safeguarding the Galapagos Islands, one of the world's most vital ecosystems and a UNESCO World Heritage Site that faces threats from overfishing, pollution, and climate change. It involved exchanging US\$1.6bn in Ecuadorian government bonds for a US\$656mIn impact loan, which CFM estimates will result in Ecuador saving US\$1.13bn by 2041. In return, Ecuador will allocate US\$323mIn by 2041 to the conservation of the Galapagos Islands and establish a US\$227mIn endowment fund to support ongoing preservation efforts. The conservation funds will protect the 60,000 km² Hermandad Marine Reserve, promoting sustainable fishing and tourism, enhancing ecosystem richness, and building climate resilience. The funding will also support community development initiatives and utilize technology like drones and satellite imagery for monitoring.

CFM played a crucial role in developing, structuring, and investing in the conversion, contributing US\$2mIn through its CI2 Fund. The Dutch Fund for Climate & Development (DFCD) and the European Commission provided risk capital through CI2's development fund, potentially adding US\$5mIn annually for conservation.

Summarised from CFM press release (Climate Fund Managers, 2023).

Table 9: CI2 portfolio breakdown. Source: CFM website (Climate Fund Managers, 2022c).

Climate Investor Two Select Investments							
#	Name	Sector	Region	Status	Business Model	Amount (US\$ Millions)	Description
1	Patong	Water	Thailand	Pre-Investment	Desalination	Contracted Development Funding: US\$2.5mln Forecasted Construction Equity Funding: US\$28.3mln	The Project proposes a seawater desalination plant with a capacity of up to 25,000 m3 per day using reverse osmosis technology. The investment will be benefiting an estimated 165,000 people, creating more than 240 jobs through the construction of a seawater desalination plant with a capacity of up to 25,000 m3 per day.
2	Damen	Green Shipping	Africa	Invested	Containerized Ballast Water Treatment	Development Funding: US\$3.4mln Forecasted Construction Funding: US\$25mln	Under a development funding agreement, CI2's Development Fund has approved an investment of up to US\$ 3.4mln, to finance the start of this project with Damen Financial Services, the newly founded department within Damen Shipyards Group. The Damen "Invasave" solution is a port-based containerized system that can treat the discharge of ballast water from vessels while in port. In addition, the solution can supplement a vessels' existing built-in systems, or provide mitigation in the event that a vessels' built-in ballast water treatment system fails. At the time of approval, Damen's Invasave System is currently the only technology certified by the International Marine Organization and therefore enjoys a head start in this service.
3	Oceans Finance Company	Debt for Nature Conservation	Ecuador	Invested	Marine Protection	Development Funding: US\$3.5mln Forecasted Construction Funding: US\$94mln	DF2 has approved funding to strengthen the internal capacity of the project company, and to aid the development of the intellectual property related to executing a series of debt for nature conversion, and secure rights for CI2 to participate in any future pipeline across the Global Pipeline. CI2 in collaboration with OFC is supporting the largest ever Debt for Nature Conversion at time of close. The transaction sets a precedent of the power that blended finance in partnerships can play in not only promoting conservation, addressing climate change, but also providing commercial opportunities for investors in climate impact strategies and projects. The transaction in essence creates a perpetual conservation fund for the Galapagos Islands.
4	Spectainer	Green Shipping	Vietnam, Thailand	Invested	Collapsible Shipping Containers	Development Funding: US\$2mln Forecasted Construction Funding: US\$75mln	The investment opportunity involves CI2 playing a critical role in the final development of a technology that has the potential to catalyze industry adoption of collapsible shipping containers, with the overall objective of reducing the carbon intensity of global cargo transport. Widespread adoption of collapsible shipping containers has the potential to substantially reduce GHG emissions in the trucking, handling, and shipping of empty containers. Successful development also stands to create between 200 to 400 new manufacturing jobs in the Mekong Delta – a DFCD priority landscape – and 450 new jobs at South East Asian ports.
5	Solar Water Solutions	Solar Desalination	Kenya	Invested	Solar Desalination	Development Fund funding: US\$1.9mln	The project has started development, including some initial pilots. DF2 will participate in the next phase of development which shall focus on demonstrating the technical, commercial and socio-environmental viability of the program. This phase includes piloting 8 additional systems – 5 funded by CI2 DF and 3 by SWS. The investment will be benefiting 400,000 people, including more than 50% women and ca. 30% children. The project is co-developed with the Dutch Fund for Climate and Development (DFCD) – Origination Fund through SNV that is investing US\$ 108,000 in the early development stage focused on market-analysis and ESG screening.
6	BIO2WATT	Sanitation	South Africa	Pre-Investment	Waste-to-Energy	Development Fund Contracted: US\$ 5.7mln	Bio2Watt Ltd is the leading industrial-scale biogas waste-to-energy company in South Africa. The Firm developed and operates the Bronkhorstspruit Biogas Plant (BBP), the first industrial-scale waste-to-energy

Climate Investor Two | Select Investments

#	Name	Sector	Region	Status	Business Model	Amount (US\$ Millions)	Description
						Forecast Construction Funding: US\$13mln	facility in Africa. CI2 is participating in the development of the Bio2Watt waste-to-energy pipeline. The biogas plants will provide treatment of waste, which in turn supplies power and hot water.
7	AZUR	Sanitation	Thailand	Invested	Waste-to-Energy	Development Funding: US\$5.8mln	The project is currently in early-stage development, over the next period the developer will procure extensive feasibility studies, package the project for Ministry of Interior Approval as well as secure all outstanding waste. The project will have significant environmental benefits including: (1) the reduction of the volume of untreated water that drains through MSW into groundwater and surface water supplies which could be in the form of toxic leachate, (2) the reduction in the emission of Methane gas which is a far more potent greenhouse gas than carbon dioxide through the reduction of MSW landfills in Thailand.

4.1.3 Aqua-Spark

4.1.3.1 Fund Characteristics

Aqua-Spark (the “Fund”) is a Dutch alternative investment fund structured as an open-ended investment company in accordance with the Dutch Financial Supervision Act. The Fund was launched in 2015 with a primary purpose to make equity and quasi-equity investments in for-profit small and mid-size ventures in the sustainable aquaculture value chain around the globe. Aqua-Spark works closely with its portfolio companies, investors and ecosystem of industry partners to grow its portfolio company’s businesses and create positive impact (Aqua-Spark, 2023).

4.1.3.2 Investment Manager

Aqua-Spark Management B.V. is the fund manager of Aqua-Spark, its only mandate. It was co-founded in 2013 by entrepreneurs Mike Velings and Amy Novogratzis as a registered light manager (*light-beheerder*) under the Dutch Authority for Financial Markets’ registration regime. The team consists of over thirty people possessing experience in various areas including the finance and aquaculture industries, media, startups, retail, impact and NGO space (Aqua-Spark, 2022b).

Table 10: Aqua-Spark Management overview.

Fund Manager Overview			
Manager Name	Aqua-Spark Management	Estimated AUM	US\$ 450mln (Q4 2022)
Parent Company	Management Owned	Number of Funds	1
Incorporation Date	2013	Managed Nature Fund(s)	Aqua-Spark
Head Office	The Netherlands	Team Size	50
Offices	NA	ESG Specialists	Yes, integrated into investment team
Sector Focus	Sustainable Aquaculture & Fisheries		

4.1.3.3 ESG & Impact

Aqua-Spark is considered an article 9 fund under SDFR (Novogratz et al., 2023).

4.1.3.4 Portfolio & Performance

Aqua-Spark has raised US\$450 in total capital from over 300 investors and has invested in 26 aquaculture companies between 2015 and 2022 growing its portfolio to over US\$ 250 since launch (Table 10 & Figure 32). Its investments span across the aquaculture value chain including companies engaged in farm management technologies (66%), feed ingredients (16%), farm operations (11%), health and disease (4%), consumer products and distribution (2%) and financial infrastructure (1%; see Figure 31). Portfolio companies are located globally, across countries in Europe, North America, Sub-Saharan Africa, East Asia and Pacific, Latin America and Caribbean and South Asia (Novogratz et al., 2023).

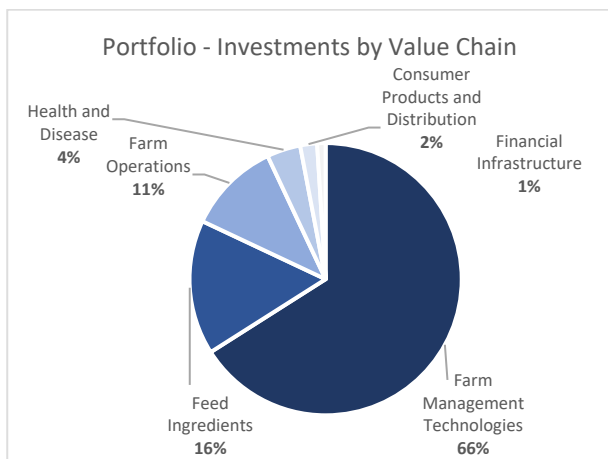


Figure 31: Composition of Aqua-Spark's portfolio across the value chain. Source: Impact Report 2023 (Novogratz et al., 2023).

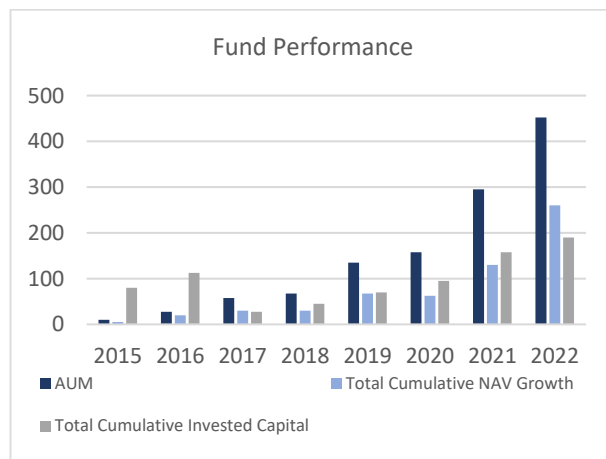


Figure 32: Aqua-Spark's portfolio growth and performance since inception. Source: Impact Report 2023 (Novogratz et al., 2023).

Box 9: Chicoa Fish Farm Investment

Chicoa Fish Farm ("Chicoa") is an aquacultural business built on Lake Cahora Bassa in Mozambique, that addresses the protein deficit in sub-Saharan Africa through producing Tilapia fish for market sales. Aqua-Spark provide growth equity to Chicoa in 2015 to support it in scaling its model which offers a profitable, sustainable and saleable solution for Africa's protein deficit: both through low-cost direct production, as well as acting as an industry catalyst for small scale farmers in Mozambique. Investors and stakeholders include AfDB, IDH Sustainable Trade Initiative, Farmit Fund, Goodwell, KfW (DEG) and others (Chicoa Fish Farm, 2023a).

Chicoa designed its smallholder business model in partnership with IDH Sustainable Trade Initiative. The business acts as an anchor farm for the smallholder aquaculture industry of Mozambique seeking to build an industry of smallholders. It ensures that smallholders have access to excellent feed, high quality fingerlings and ongoing technical assistance. Chicoa has trained over 300 smallholders and provides permeant employment to around 150 people (Chicoa Fish Farm, 2023b). This model is potentially replicable in many other areas of the world, such as Bangladesh and Indonesia, however this will depend on the profitability of the model which is difficult to ascertain from the current level of disclosure.

Below are examples of companies in Aqua-Spark's portfolio involved in aquaculture production. Each of companies are revenue generating businesses that hold sustainability at the core of their business model. Lake Harvest Group (Africa) has developed into the largest Tilapia operation in Africa, while Chicoa Fish Farm (Mozambique) and Indian Ocean Trepang (Madagascar) provide examples of productive models that incorporate local small-scale farmers and fisherman.

Table 11: Aqua-Spark portfolio breakdown. Source: Aqua-Spark investment disclosure (Aqua-Spark, 2022a).

Aqua-Spark Portfolio Select Investments								
#	Investment Name	Sector	Activity	Region	Type	Type(s)	Amount (US\$ Millions)	Description
1	Chicoa Fish Farm	Aquaculture	Production (Fish)	Mozambique	Private Equity	Operating Business	Undisclosed	Chicoa Fish Farm is an aquacultural business built on Lake Cahora Bassa in Mozambique, that addresses the protein deficit in sub-Saharan Africa through producing Tilapia fish for market sales. It offers a profitable, sustainable and saleable solution for Africa's protein deficit: both through low-cost direct production, as well as acting as an industry catalyst for small scale farmers in Mozambique.
2	Energaia	Aquaculture	Production (Microalgae)	Thailand	Private Equity	Operating Business	Undisclosed	EnerGaia was incorporated in Thailand in April 2009 after years of research looking into the best methods to utilize microalgae to capture industrial CO2 from power plant flue gas. EnerGaia's systems enable mass production of the ancient micro algae Spirulina for the production of various food products.
3	Fisher Piscicultura	Aquaculture	Production (Fish)	Brazil	Private Equity	Operating Business	Undisclosed	Fisher Piscicultura is a Brazilian aquacultural business that produces and sells fish products using an innovative cage system to farm tilapia designed to optimize animal welfare and production.
4	Indian Trepang	Ocean Aquaculture	Production (Sea Cucumbers)	Madagascar	Private Equity	Operating Business	Undisclosed	Indian Ocean Trepang grows, processes and sells dried sea cucumbers to consumers worldwide, using a unique low-tech environmentally-sound model, for which a portion of its production is subcontracted to low-income fishermen giving them access to a growing and lucrative global market. IOT partners with local fishing villages, to return sea cucumber farming back to its natural spot, in the sea, and away from expensive facilities.
5	Lake Harvest Group	Aquaculture	Production (Fish)	Africa	Private Equity	Operating Business	Undisclosed	Lake Harvest is part of the African Century Foods Group. It was established in 1997 and has freshwater fish farm is based at Lake Kariba (Zimbabwe) and Lake Victoria (Uganda), where it houses the largest integrated Tilapia operation in Africa. Lake Harvest's Nile Tilapia (also known as BREAM) is sustainably farmed with state-of-the-art equipment and products are sold across the region including Zambia, Malawi, South Africa, Botswana and the DRC.
6	Matorka	Aquaculture	Production (Fish)	Iceland	Private Equity	Operating Business	Undisclosed	Matorka operates a land-based, geothermal powered fish farm producing Arctic Char, the northernmost freshwater fish on earth.
7	Sea6 Energy	Aquaculture	Production (Seaweed)	India	Private Equity	Operating Business	Undisclosed	Sea6 cultivates and harvests seaweed at scale, and engineers innovative byproducts supporting the greater food production systems.
8	Oceano Fresco	Acquaculture	Production (Clams)	Portugal	Private Equity	Operating Business	Undisclosed	Oceano Fresco is a Portuguese clam producer and distributor that is changing the traditional clam farming industry, into a highly professional, data and science-driven industry.
9	Shiok Meats	Alternatives	Production (Crustacean)	Singapore	Private Equity	Operating Business	Undisclosed	Shiok produces crustacean products from stem cells.

5. DISCUSSION AND IMPLICATIONS

This report has completed a review of 25 existing nature funds and specialists globally in order to draw lessons that can inform phase two of the project, on developing recommendations for Bangladesh and a toolkit to identify viable financing modalities for nature-based solutions for adaptation. From this analysis, we draw the following global conclusions and recommendations for private financing of NbS.

Firstly, the analysis clearly shows that viable models for financing NbS exist, albeit at scale an order of magnitude smaller than needed. The structural models for investment and delivery channels for blended finance are proven, and there are clear indications of growing demand from investors.

Secondly, however, the analysis also points to the significant barriers to mobilising private sector investment into NbS which are often location specific and have a relatively unattractive risk-return profiles. While mechanisms like carbon credits and PES can modify the risk-return dynamics of NbS projects, these markets remain small and underdeveloped. In addition, currently the benefits of projects for adaptation are not fully valued or monetized and this can arguably skew investment away from projects that deliver adaptation benefits and toward those that deliver monetizable benefits (e.g. Carbon). Innovation is needed in methods and tools to value adaptation benefits, and explore potential market-based mechanisms for monetizing these benefits that could attract private investment.

Thirdly, DFIs and specialised financial entities will play a crucial role in building markets and directing targeted private investments towards nature but this is likely to require a significant scale-up in (concessional) public financing. This is even more the case for NbS for adaptation than wider nature finance, given the difficulties in monetizing benefits, and means that this area will require greater concessional support. To overcome wider barriers, such as the complexity, higher transaction costs and location-specific nature of NbS investments, specialised entities can play a key role. For wider nature investments, specialist funds and investment managers, despite their small size, have delivered outsized impact. They could, alongside DFIs, play a larger role in helping to structure viable projects for adaptation, developing new approaches and demonstrating the feasibility of new models. Their presence can pave the way for larger institutional investment managers to enter the realm of nature finance.

While this report has focussed on private finance modalities, it is important to note that public finance will continue to play an important role. Public funding sources often remain more fitting for many NbS initiatives aimed at preserving common resources (e.g., tropical forests, oceans) and delivering public goods (protecting communities) with limited or no revenue streams. Pioneering transactions, like the \$1.1bn debt-for-nature swap in 2023 to safeguard the biodiversity surrounding the Galapagos Islands, can serve as models for other investors and countries in scaling NbS for adaptation.

This study has drawn insights from global nature funds for financing NbS for adaptation to inform and shape pathways to scale NbS investments in Bangladesh. Globally, around 10% of financial flows to protected areas has gone to Asia and this is in the low billions, when financial flows in trillions are needed (UNEP 2022). The analysis highlights how scaling financing for NbS in Bangladesh will require both investing in a supportive enabling environment while also structuring investment projects that leverage nature funds and attract concessional finance. Specific recommendations include:

- i. **Develop analytical tools that can identify and map opportunities for nature-based solutions (NbS) projects and co-create and provide a common set of metrics that can capture and quantify (with sufficient robustness) the benefits for adaptation and wider benefits** (carbon, biodiversity, social benefits). Such tools can enable both investors and government to identify and prioritise investments, as well as identify where they can deliver a viable commercial return and measurable social benefits. See, for example, <https://resilient-planet-data.org/planet/natural-assets-and-capital>
- ii. **Establish a typology of NbS investments to underpin a national investment plan**, including identifying the characteristics of different project types, including the potential revenue generation, to identify where private finance could play a role and how public finance can be best strategically deployed.
- iii. **Invest in building the enabling environment for finance to flow to nature-based solutions**, including by setting clear targets and investment plans at national and regional level, investing

in standards, open data and frameworks (e.g. taxonomies and bond standards), creating space to test new market-based approaches (e.g. biodiversity or adaptation credits) and deploying (concessional) public finance strategically to crowd-in private investment (blended finance) and deliver public goods for adaptation.

- iv. **Strategically work across scales to mobilise private finance.** For example, locally, working with local banks to raise capital and deploy this in lending to sectors with more traditional revenue (e.g. agriculture, fisheries etc.), regionally working with national development finance institutions and international DFIs, and at a national level, mobilise private finance at scale through sovereign green (nature) bonds or new sustainability-linked financial instruments for nature. Private investment directly in projects is growing but remains relatively small; whereas finance could be mobilised at scale, to protect whole landscapes, through new forms of sovereign financing instruments linked to adaptation and nature.
- v. **Put in place appropriate mechanisms to ensure that nature-related risks and opportunities for adaptation are factored into policy and financial decisions at all levels, including internationally.** This includes building toward mandatory disclosures of climate risks and opportunities and advocating for the adoption of nature-related standards and frameworks, such as that of the Taskforce on Nature-Related Financial Disclosures, internationally. It also means influencing local business through better regulation on environmental policies, particularly in sectors such as agriculture, tourism, and fisheries.
- vi. **Collaborate internationally to build new metrics and markets for NbS for adaptation.** International collaboration across public and private sectors to develop common metrics can help reduce transaction costs and risks for investors, value an 'adaptation dividend' on projects and well as build the foundations to develop new markets for adaptation and resilience over time. Collaborate through international processes, such as the G20 sustainable finance working group and international platform on sustainable finance, to explore new modalities and market-based approaches for financing adaptation.

The work will continue to develop, with the publication of additional tools and findings in 2024. For early insights on our work on data-driven investment approaches, see: <https://resilient-planet-data.org/planet/natural-assets-and-capital>

REFERENCES

- &Green. (n.d.-a). *About us*. Retrieved 12 August 2023, from <https://www.andgreen.fund/about-us/>
- &Green. (n.d.-b). *Portfolio Archive*. Retrieved 12 August 2023, from <https://www.andgreen.fund/portfolio/>
- &Green. (2018). *Annual Report*. <https://annual-report.andgreen.fund/year/2018/>
- &Green. (2019). *Annual Report*. <https://annual-report.andgreen.fund/year/2019/>
- &Green. (2020a). *Annual Report*. <https://annual-report.andgreen.fund/year/2020/>
- &Green. (2020b). *Marfrig: Environmental and Social Action Plan*. https://www.andgreen.fund/wp-content/uploads/2021/12/Marfrig_ES-Action-Plan_Public.pdf
- &Green. (2020c). *Marfrig: Landscape Protection Plan*. https://www.andgreen.fund/wp-content/uploads/2021/12/Marfrig_LPP_Final-Version_Sept2020.pdf
- &Green. (2021a). *Annual Report*. <https://annual-report.andgreen.fund/year/2021/>
- &Green. (2021b). *&Green Fund invests in Marfrig to expand reach of cattle tracking in the Amazon and Cerrado*. https://www.andgreen.fund/wp-content/uploads/2021/02/Joint-Press-Release_Marfrig-IDH-Green_compressed-1.pdf
- &Green. (2022a). *Annual Report*. <https://annual-report.andgreen.fund/year/2022/>
- &Green. (2022b). *Stichting ANDGREEN.FUND Investment Principles*. <https://www.andgreen.fund/wp-content/uploads/2023/03/AndGreen-Investment-Principles-final.pdf>

Aqua-Spark. (2023). *Key Information Document*. Aqua-Spark. <https://aqua-spark.nl/app/uploads/2023/02/Key-Information-Document-Aqua-Spark-Cooperatieve-U.A.-Feb-2023-ENG-FINAL.pdf>

Aqua-Spark. (2022a). *Portfolio*. <https://aqua-spark.nl/portfolio/>

Aqua-Spark. (2022b). *Team*. <https://aqua-spark.nl/team/>

Attridge, S., te Velde, D. W., & Peter Andreasen, S. (Eds.). (2019). *Impact of development finance institutions on sustainable development: An essay series* [ODI Report]. Overseas Development Institute. <https://www.econstor.eu/bitstream/10419/206750/1/12892.pdf>

Bagja, B., Anjani, S., Jati, E. S. K., Zahra, D. A., & Haniy, S. U. (2022, December 28). Responding to Global Green Call, It's Time for Indonesian Palm Oil Farmers to 'Level Up'. *World Resources Institute*. <https://wri-indonesia.org/en/insights/responding-global-green-call-its-time-indonesian-palm-oil-farmers-level>

Banking Exchange. (2023, March 28). Impact Managers Growing in Scale, Diversity: Research [Blog]. *Banking Exchange*. <https://m.bankingexchange.com/recent-articles/item/9611-impact-managers-growing-in-scale-diversity-research>

Blue Orchard Finance Ltd. (2019). *Schroders completes acquisition of majority stake in BlueOrchard*. Blue Orchard Finance Ltd. https://www.blueorchard.com/wp-content/uploads/191031_News-Release_Closing-of-Schroders-BlueOrchard-transaction-1.pdf

Chicoa Fish Farm. (2023a). *Chicoa Fish Farm*. <https://chicoa.fish/index.html>

Chicoa Fish Farm. (2023b). *Our Impact*. <https://chicoa.fish/our-impact.html>

Climate Asset Management. (2020, August 26). HSBC Asset Management & Pollination launch partnership to create world's largest Natural Capital Manager. *Press Releases*. <https://climateassetmanagement.com/insight/hsbc-global-asset-management-pollination-launch-partnership-to-create-worlds-largest-natural-capital-manager/>

Climate Asset Management. (2023). *About*. <https://climateassetmanagement.com/about/>

Climate Fund Managers. (2021a). *Frequently asked questions ('FAQ') on the European Union Sustainable Finance Disclosure Regulation ('SFDR')*. Climate Fund Managers. <https://climatefundmanagers.com/wp-content/uploads/2021/05/CFM-SFDR.pdf>

Climate Fund Managers. (2022a). *Environmental and Social Management System (ESMS) Manual*. Climate Fund Managers. <https://climatefundmanagers.com/wp-content/uploads/2022/06/CFM-ESMS-English.pdf>

Climate Fund Managers. (2021b, November 11). CFM Announces the First Close of CI2, its Second Global Climate Fund, at USD 675 Million. *Press Releases*. <https://climatefundmanagers.com/2021/11/11/ci2-first-close/>

Climate Fund Managers. (2022b). *Climate Investor 2*. Funds. <https://climatefundmanagers.com/funds/>

Climate Fund Managers. (2022c). *Investments*. <https://climatefundmanagers.com/investments/>

Climate Fund Managers. (2022d). *Shareholders*. <https://climatefundmanagers.com/shareholders/>

Climate Fund Managers. (2022e, December 2). CFM Announces the Second Close of CI2. Its Second Global Climate Fund, at USD 855 Million. *Press Releases*. <https://climatefundmanagers.com/2022/12/02/cfm-announces-the-second-close-of-ci2-its-second-global-climate-fund-at-usd-855-million/>

Climate Fund Managers. (2023, May 9). Climate Fund Managers Announces Largest Debt-for-Climate Conversion in History to Protect the Galapagos Islands. *Press Releases*. <https://climatefundmanagers.com/2023/05/09/climate-fund-managers-announces-largest-debt-for-climate-conversion-in-history-to-protect-the-galapagos-islands/>

Convergence. (2022). *State of Blended Finance 2022: Climate Edition*. Convergence. <https://www.convergence.finance/resource/state-of-blended-finance-2022/view>

Earth Security. (2021). *The Blended Finance Playbook for Nature-Based Solutions*. Earth Security.

EDFI. (2023). *Facts & Figures*. Members. <https://www.edfi.eu/members/facts-figures/>

- Ehrlich, P. R., & Ehrlich, A. H. (1981). *Extinction: The Causes and Consequences of the Disappearance of Species*. Random House.
- EIB. (2018). *Investing in Nature: Financing Conservation and Nature-Based Solutions. A Practical Guide for Europe. Including how to access support from the European Investment Bank's Dedicated Natural Capital Financing Facility*. European Investment Bank.
- EIB. (2023). *Investing in nature-based solutions: State of play and way forward for public and private financial measures in Europe*. European Investment Bank. <https://data.europa.eu/doi/10.2867/031133>
- Eschalier, C., Cochran, I., & Deheza, M. (2015). *Climate and development finance institutions: Linking climate finance, development finance and the transition to low-carbon, climate-resilient economic models* (Paper 1; I4CE). Institute for Climate Economics. https://www.i4ce.org/wp-content/uploads/2022/07/I4CE-Mainstreaming-Climate-and-LCCR-by-DFIs-Paper-1_new1-1.pdf
- European Union. (2019). *Regulation (EU) 2019/2088 of the European Parliament and of the Council of 27 November 2019 on sustainability-related disclosures in the financial services sector (Text with EEA relevance)*, OJEU L317/1 (2019). <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32019R2088>
- FAO. (2022). *FRA 2020 Remote Sensing Survey* [FAO Forestry Paper No. 186]. <https://doi.org/10.4060/cb9970en>
- Flammer, C., Giroux, T., & Heal, G. (2023). *Biodiversity Finance* (Working Paper 31022). National Bureau of Economic Research. <https://doi.org/10.3386/w31022>
- Gibbs, H. K., Munger, J., L'Roe, J., Barreto, P., Pereira, R., Christie, M., Amaral, T., & Walker, N. F. (2016). Did Ranchers and Slaughterhouses Respond to Zero-Deforestation Agreements in the Brazilian Amazon?: Brazil's zero-deforestation pacts. *Conservation Letters*, 9(1), 32–42. <https://doi.org/10.1111/conl.12175>
- Global Forest Watch. (2023). *Brazil Deforestation Rates & Statistics | GFW*. <https://www.globalforestwatch.org/dashboards/country/BRA?category=forest-change>
- Green Climate Fund. (2023a). *Green Fund: Investing in Inclusive Agriculture and Protecting Forests* (Funding Proposal B.36/05; GCF Documentation). Green Climate Fund.
- Green Climate Fund. (2023b, August 28). *Accredited Entities* [Text]. About Us - Partners; Green Climate Fund. <https://www.greenclimate.fund/about/partners/ae>
- IDH. (2017, July 18). *Fund for deforestation-free agriculture is now operational* [News Article]. IDH - the Sustainable Trade Initiative. <https://www.idhsustainabletrade.com/news/fund-deforestation-free-agriculture-now-operational/>
- IPCC. (2022a). *Climate Change 2022: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* [Pörtner, H.-O., D. C. Roberts, M.M.B. Tignor, E. S. Poloczanska, A. Alegria, M. Craig, S. Langsdorf, S. Lösckke, V. Möller, A. Olem, B. Rama (eds.)]. IPCC. <https://www.ipcc.ch/report/sixth-assessment-report-working-group-ii/>
- IPCC. (2022b). *Climate Change 2022: Impacts, Adaptation and Vulnerability. Contribution of Working Group III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* [Shukla, P. R., J. Skea, R. Slade, R. Fradera, M. Pathak, A. Al Khourdajie, M. Belkacemi, R. van Diemen, A. Hasija, G. Lisboa, S. Luz, J. Malley, D. McCollum, S. Some, and P. Vyas (eds.)]. IPCC. <https://doi.org/10.1017/9781009157926>
- IPCC. (2022c). *Global Warming of 1.5°C: IPCC Special Report on Impacts of Global Warming of 1.5°C above Pre-industrial Levels in Context of Strengthening Response to Climate Change, Sustainable Development, and Efforts to Eradicate Poverty* [Masson-Delmotte, V., P. Zhai, H.-O. Pörtner, D. Roberts, J. Skea, P.R. Shukla, A. Pirani, W. Moufouma-Okia, C. Péan, R. Pidcock, S. Connors, J.B.R. Matthews, Y. Chen, X. Zhou, M.I. Gomis, E. Lonnoy, T. Maycock, M. Tignor, and T. Waterfield (eds.)]. Cambridge University Press. <https://doi.org/10.1017/9781009157940>
- IPCC. (2023). *Climate Change 2023: Synthesis Report. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* [Core Writing Team, H. Lee and J. Romero (eds.)]. Intergovernmental Panel on Climate Change (IPCC). <https://www.ipcc.ch/report/ar6/syr/>

- IUCN. (2009). No time to lose—Make full use of nature-based solutions in the post-2012 climate change regime. *Position Paper for the Fifteenth Session of the Conference of the Parties to the United Nations Framework Convention on Climate Change (COP 15)*, 1–5. https://www.iucn.org/sites/default/files/import/downloads/iucn_position_paper_unfccc_cop_15_1.pdf
- Jayathilake, H. M., Prescott, G. W., Carrasco, L. R., Rao, M., & Symes, W. S. (2021). Drivers of deforestation and degradation for 28 tropical conservation landscapes. *Ambio*, 50(1), 215–228. <https://doi.org/10.1007/s13280-020-01325-9>
- Just Climate. (2023). *Our focus*. Just Climate. <https://www.justclimate.com/our-focus/>
- Knight, C., Stephenson, J., Chellew, T., & McFarland, W. (2022). *Nature Based Solutions—A review of current financing barriers and how to overcome these* [Public Report]. Terranomics (for WWF-UK). <https://www.wwf.org.uk/sites/default/files/2022-06/WWF-NBS-Public-Report-Final-270622.pdf>
- Leach, K., Grigg, A., O'Connor, B., Brown, C., Vause, J., Gheysens, J., Weatherdon, L., Halle, M., Burgess, N. D., Fletcher, R., Bekker, S., King, S., & Jones, M. (2019). A common framework of natural capital assets for use in public and private sector decision making. *Ecosystem Services*, 36, 100899. <https://doi.org/10.1016/j.ecoser.2019.100899>
- Lombard Odier. (2023, June 22). *Lombard Odier and Systemiq announce strategic partnership with the creation of holistiQ* Investment Partners* [Corporate Website]. Lombard Odier. <https://www.lombardodier.com/contents/corporate-news/corporate/2023/june/lombard-odier-and-systemiq-annou.html>
- López-Portillo Purata, V., Gómez, S., & Rodríguez, S. E. (2022, November 2). 5 Barriers That Hinder Green Financing [Project Update]. *World Resources Institute*. <https://www.wri.org/update/5-barriers-hinder-green-financing>
- Miltenberger, O., Jospe, C., & Pittman, J. (2021). The Good Is Never Perfect: Why the Current Flaws of Voluntary Carbon Markets Are Services, Not Barriers to Successful Climate Change Action. *Frontiers in Climate*, 3, 686516. <https://doi.org/10.3389/fclim.2021.686516>
- Mirova. (2022). *Land Degradation Neutrality Fund Impact Report 2022*. Mirova. <https://www.mirova.com/sites/default/files/2023-07/Impact-Report-LDN-2022-EN-web.pdf>
- NATIX Investment Managers. (2017, October 9). *Acquisition of Althelia Ecosphere*. <https://www.im.natix.com/en-institutional/news/02>
- NatureScot. (2023, July 11). *Ecosystem services—Nature's benefits*. NatureScot. <https://www.nature.scot/scotlands-biodiversity/scottish-biodiversity-strategy-and-cop15/ecosystem-approach/ecosystem-services-natures-benefits>
- NbS Initiative. (2023a). *Nature-based Solutions case studies*. Nature-Based Solutions Case Studies. <https://casestudies.naturebasedsolutionsinitiative.org/>
- NbS Initiative. (2023b). *Nature-based Solutions to Climate Change*. Guidelines. <https://nbsguidelines.info/>
- Nestlé. (2023a). *Deforestation-free supply chains*. Nestlé Global. <https://www.nestle.com/sustainability/nature-environment/forest-positive/deforestation-supply-chains>
- Nestlé. (2023b). *Our road to net zero*. Nestlé Global. <https://www.nestle.com/sustainability/climate-change/zero-environmental-impact>
- Novogratz, A., Corsin, F., & Beerekamp, R. (2023). *AquaSpark Impact Report 2022*. Aqua-Spark. <https://aqua-spark.nl/reports/aqua-spark-2022-impact-report/>
- OECD. (n.d.). *Blended Finance & Impact: Guidance & Principles*. Blended Finance. Retrieved 7 September 2023, from <https://www.oecd.org/dac/financing-sustainable-development/blended-finance-principles/>
- O'Leary, B. C., Fonseca, C., Cornet, C. C., De Vries, M. B., Degia, A. K., Failler, P., Furlan, E., Garrabou, J., Gil, A., Hawkins, J. P., Krause-Jensen, D., Le Roux, X., Peck, M. A., Pérez, G., Queirós, A. M., Rózyński, G., Sanchez-Arcilla, A., Simide, R., Sousa Pinto, I., ... Roberts, C. M. (2023). Embracing Nature-based

- Solutions to promote resilient marine and coastal ecosystems. *Nature-Based Solutions*, 3, 100044. <https://doi.org/10.1016/j.nbsj.2022.100044>
- Rights and Resources Initiative. (2015). *Who Owns The Land? A global baseline of formally recognized indigenous and community land rights*. RRI.
- Rijk, G., Wiggs, C., & Piotrowski, M. (2020). *FMCGs' Lagging Efforts in NDPE Execution Lead to Deforestation, USD 16-82B Reputation Risk*. Chain Reaction Research. <https://chainreactionresearch.com/wp-content/uploads/2020/07/FMCGs-Lagging-Efforts-in-NDPE-Execution-2.pdf>
- Ritchie, H., Rosado, P., & Roser, M. (2022, December 2). Environmental Impacts of Food Production. *Our World in Data*. <https://ourworldindata.org/environmental-impacts-of-food>
- Russo, A. (2020, January 19). Half of World's GDP Moderately or Highly Dependent on Nature, Says New Report. *World Economic Forum*. <https://www.weforum.org/press/2020/01/half-of-world-s-gdp-moderately-or-highly-dependent-on-nature-says-new-report/>
- Sabuco, J., Caldecott, B., Christiaen, C., Garcia Velez, L., Liu, F., & Tkachenko, N. (2022). *Spatial Finance Initiative Beef Abattoir Database Top 5 Meatpackers* [dataset]. <https://www.cgfi.ac.uk/spatial-finance-initiative/geoasset-project/beef-abattoirs/>
- Sail Ventures. (2023a). *About Us*. <https://www.sailventures.com/about-us>
- Sail Ventures. (2023b, September). *Sail Ventures*. LinkedIn. https://www.linkedin.com/posts/sail-ventures_privatedebt-finance-investment-activity-7084485450379210752-1aGf?utm_source=share&utm_medium=member_desktop
- Schumacher, E. F. (1973). *Small is Beautiful: Economics as If People Mattered*. Harper & Row.
- Seddon, N., Chausson, A., Berry, P., Girardin, C. A. J., Smith, A., & Turner, B. (2020). Understanding the value and limits of nature-based solutions to climate change and other global challenges. *Philosophical Transactions of the Royal Society B: Biological Sciences*, 375(1794), 20190120. <https://doi.org/10.1098/rstb.2019.0120>
- Seddon, N., Daniels, E., Davis, R., Chausson, A., Harris, R., Hou-Jones, X., Huq, S., Kapos, V., Mace, G. M., Rizvi, A. R., Reid, H., Roe, D., Turner, B., & Wicander, S. (2020). Global recognition of the importance of nature-based solutions to the impacts of climate change. *Global Sustainability*, 3, e15. <https://doi.org/10.1017/sus.2020.8>
- Skidmore, M. E., Moffette, F., Rausch, L., Christie, M., Munger, J., & Gibbs, H. K. (2021). Cattle ranchers and deforestation in the Brazilian Amazon: Production, location, and policies. *Global Environmental Change*, 68, 102280. <https://doi.org/10.1016/j.gloenvcha.2021.102280>
- S&P. (2023). *S&P Capital IQ*. S&P Global Market Intelligence. <https://www.capitaliq.com>
- SPOTT. (2022). *Palm oil: ESG policy transparency assessments*. SPOTT.Org. <https://www.spott.org/palm-oil/>
- te Velde, D. W. (2011). *The role of development finance institutions in tackling global challenges* [ODI Report]. Overseas Development Institute. <https://cdn.odi.org/media/documents/7310.pdf>
- United Nations Environment Programme (2023). *Nature-based Infrastructure: How natural infrastructure solutions can address sustainable development challenges and the triple planetary crisis*. Geneva.
- UNEP (2023b). *State of Finance for Nature: The Big Nature Turnaround – Repurposing \$7 trillion to combat nature loss*. Nairobi.
- UNEP. (2022a). *State of Finance for Nature. Time to act: Doubling investment by 2025 and eliminating nature-negative finance flows*. United Nations Environment Programme. <https://wedocs.unep.org/20.500.11822/41333>
- UNEP. (2022b) *Nature-based solutions for supporting sustainable development (English Version)- Resolution adopted by the United Nations Environment Assembly on 2 March 2022, UNEP/EA.5/Res.5* (2022). <https://wedocs.unep.org/xmlui/handle/20.500.11822/39864>
- Unilever. (2023a). *Climate action*. Unilever. <https://www.unilever.com/planet-and-society/climate-action/>

- Unilever. (2023b). *Solutions to deforestation in our supply chain*. Unilever. <https://www.unilever.com/planet-and-society/protect-and-regenerate-nature/deforestation-free-supply-chain/>
- Van Den Bergh, J. C. J. M., Angelsen, A., Baranzini, A., Botzen, W. J. W., Carattini, S., Drews, S., Dunlop, T., Galbraith, E., Gsottbauer, E., Howarth, R. B., Padilla, E., Roca, J., & Schmidt, R. C. (2020). A dual-track transition to global carbon pricing. *Climate Policy*, 20(9), 1057–1069. <https://doi.org/10.1080/14693062.2020.1797618>
- Whiteman, A., Wickramasinghe, A., & Piña, L. (2015). Global trends in forest ownership, public income and expenditure on forestry and forestry employment. *Forest Ecology and Management*, 352, 99–108. <https://doi.org/10.1016/j.foreco.2015.04.011>
- World Bio Market Insights. (2023, March). The ABCD agro-giants: Hidden movers in biobased scaling. *World Bio Market Insights*. <https://worldbiomarketinsights.com/the-abcd-agro-giants-hidden-movers-in-biobased-scaling/>
- World Economic Forum. (2020). *Nature Risk Rising: Why the Crisis Engulfing Nature Matters for Business and the Economy* (New Nature Economy).
- Zu Ermgassen, E. K. H. J., Lima, M. G. B., Bellfield, H., Dontenville, A., Gardner, T., Godar, J., Heilmayr, R., Indenbaum, R. A., Dos Reis, T. N. P., Ribeiro, V., Meyfroidt, P., Abu, I., & Szantoi, Z. (2021). Addressing indirect sourcing in zero deforestation commodity supply chains. *agriRxiv*, 2021, 20210399227. <https://doi.org/10.31220/agriRxiv.2021.00085>

APPENDICES

APPENDIX A: INVESTMENT MANAGER AND NATURE FUND DATABASE

A database of actors (DFIs, Nature Funds, Investment Managers, etc.) involved in nature finance was built using publicly available information. The database contains approximately 90 elements (i.e., actors) with 30 different fields of characteristics (regional focus, investment instrument, etc.) (as of October 19th 2023).

View the database here.

Database Screenshot 1: Overview of Actors involved in Nature Finance

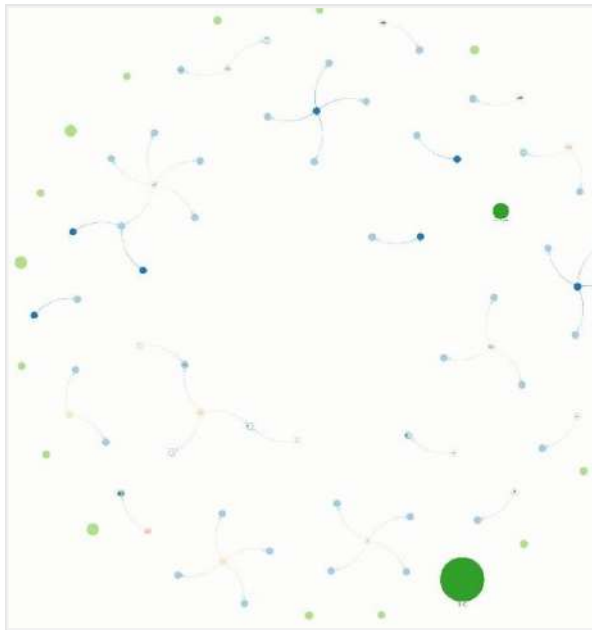


Figure 33: Overview of approximately 90 different elements (DFIs, Nature Funds, Investment Managers, etc.). Larger circle indicates greater committed capital.

Database Screenshot 2: Overview of Nature Funds and Investment Advisors

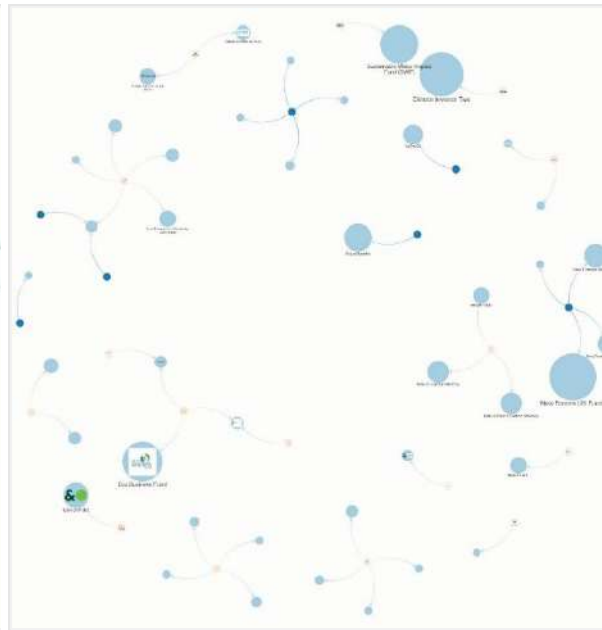


Figure 34: Overview of approximately 40 Nature Funds. Nature Funds are connected to their respective Investment Managers. Larger circle indicates greater committed capital.

Database Typology: Nature Funds

Information was collected (where possible) in the fields listed below for each NF.

Table 12: Typology of Nature Funds.

Field	First Stage	Second Stage	Input/Selection
			<i>Select</i> <i>Insert in format</i> <i>Insert free-form</i>
Overview			
Element Title	<i>[Free-form name]</i>		<i>[Free-form name]</i>
Description	<i>[Free-form introduction about the fund]</i>		<i>[Free-form introduction about the fund]</i>
Vehicle Stage	Development/ Fundraising Operational Closed		<i>Development/ Fundraising</i> <i>Operational</i> <i>Closed</i>
Last updated	<i>[DD/MM/YYYY]</i>		<i>[DD/MM/YYYY]</i>
Vehicle Characteristics			
Name of Vehicle	<i>[Free-form name]</i>		<i>[Free-form name]</i>
Location of Core Activities	<i>[City, Country]</i>		<i>[City, Country]</i>
Vehicle Duration Type	<i>Close-ended</i> <i>Evergreen</i>		<i>Close-ended</i> <i>Evergreen</i>
Target Size	<i>[US\$ Amount]</i>		<i>[US\$ Amount]</i>
Committed Capital	<i>[US\$ Amount]</i>		<i>[US\$ Amount]</i>
URL	<i>[Website address]</i>		<i>[Website address]</i>
Year of Establishment	<i>[Year]</i>		<i>[Year]</i>
Arrangers/ Anchor Investor	<i>[Name 1]</i>		<i>[Name 1; Name 2 etc.]</i>
Sources of Capital	MDB/DFI Foundation/ NGO Development Agency Commercial Investor Impact Investor		<i>MDB/DFI</i> <i>Foundation/ NGO</i> <i>Development Agency</i> <i>Commercial Investor</i> <i>Impact Investor</i>
Named Investors	<i>[Name 1; Name 2 etc.]</i>		<i>[Name 1; Name 2 etc.]</i>
Named Partners	<i>[Name 1; Name 2 etc.]</i>		<i>[Name 1; Name 2 etc.]</i>
Type of Capital	Loans Bonds Mezzanine Instruments		<i>Loans</i> <i>Bonds</i> <i>Mezzanine Instruments</i>

Field	First Stage	Second Stage	Input/Selection
	Equity investments Grants Other		<i>Equity investments</i> <i>Grants</i> <i>Other</i>
De-Risking Mechanism(s)	Yes No		<i>Yes</i> <i>No</i>
Technical Assistance Facility	Yes No		<i>Yes</i> <i>No</i>
Investment Mandate			
Regional Focus	Global East Asia and Pacific Europe and Central Asia Latin America and Caribbean Middle East and North Africa North America South Asia Sub-Saharan Africa		<i>Global</i> <i>East Asia and Pacific</i> <i>Europe and Central Asia</i> <i>Latin America and Caribbean</i> <i>Middle East and North Africa</i> <i>North America</i> <i>South Asia</i> <i>Sub-Saharan Africa</i>
Sector	Production Systems Infrastructure Pure Nature	Sustainable Agriculture Sustainable Forestry Aquaculture & Fisheries Green Infrastructure Aquatic ecosystems, Other Terrestrial ecosystems, Other Tourism	<i>Sustainable agriculture</i> <i>Sustainable Forestry</i> <i>Aquaculture & Fisheries</i> <i>Infrastructure</i> <i>Aquatic ecosystems, Other</i> <i>Terrestrial ecosystems, Other</i> <i>Tourism</i>
Ecosystem Impact	Forests Rivers and Riparian Coastal and Marine		<i>Forests</i> <i>Rivers and Riparian</i> <i>Coastal and Marine</i>
	Multiple		<i>Multiple</i>
Investment Instruments	Debt Equity Grant Other	Direct Lending Public Debt Bonds Mezzanine Finance Project Finance Private Equity Public Equity Grant Guarantees	<i>Debt</i> <i>Equity</i> <i>Grant</i> <i>Other</i>

Field	First Stage	Second Stage	Input/Selection
Investment Period	Short-term loan (repayment period under 12 months)		<i>Short-term loan (repayment period under 12 months)</i>
	Medium-term loan (repayment period 1-5 years)		<i>Medium-term loan (repayment period 1-5 years)</i>
	Long-term loan (repayment period over 5 years)		<i>Long-term loan (repayment period over 5 years)</i>
Investment Size	Less than US\$ 5 million		<i>Less than US\$ 5 million</i>
	Between US\$ 5 and US\$ 50 million		<i>Between US\$ 5 and US\$ 50 million</i>
	Greater than US\$ 50 million		<i>Greater than US\$ 50 million</i>
Investee Types	Public sector		<i>Public sector</i>
	Private sector		<i>Private sector</i>
	Third sector		<i>Third sector</i>
Investment Portfolio			
Number of Investments	[#]		[#]
Project Names	[Name 1; Name 2 etc.]		[Name 1; Name 2 etc.]
Name of Investees	[Name 1; Name 2 etc.]		[Name 1; Name 2 etc.]
Manager Name	[Name 1; Name 2 etc.]		[Name 1; Name 2 etc.]

Below is further information on the sector categorisation:

Table 13: Sector categories and their characteristics.

Sectors	Sectors	Additional Details	Project Revenue Stream	Examples
Production Systems	Sustainable Agriculture	<i>Livestock systems, crop systems, etc.</i>	<i>Commodity sales</i>	e.g., &Green/ eco.business Fund
	Sustainable Forestry	<i>Agroforestry, plantation forestry, etc.</i>	<i>Commodity sales</i>	e.g., New Forest/ Arbora / &Green/ eco.business Fund
	Aquaculture & Fisheries	<i>Fish farms, oyster farms, shrimp farms, fishing businesses, etc.</i>	<i>Commodity sales</i>	e.g., Aqua-Spark/ eco.business Fund/ Althelia Sustainable Ocean Fund
Infrastructure	Green Infrastructure	<i>Water, utilities, green ports, etc.</i>	<i>Multiple</i>	e.g., Climate Investor Two
Pure Nature	Aquatic ecosystems	<i>Marine, coastal areas, rivers and lakes (excl. aquaculture & Fisheries), etc.</i>	<i>Limited. Carbon credits/ PES/ biodiversity credits</i>	e.g., Althelia Sustainable Ocean Fund, Climate Investor Two
	Terrestrial ecosystems	<i>Tropical rainforests, grasslands, and deserts (excl. agriculture, plantation forestry or agroforestry), etc.</i>	<i>Limited. Carbon credits/ PES/ biodiversity credits</i>	e.g., Blue Forest Conservation
	Tourism	<i>Lodges, scuba diving operations, safari operations and tour businesses, etc.</i>		e.g., eco.business Fund/ &Beyond/ African Parks

Database Typology: Investment Managers

Information was collected (where possible) in the fields listed below for each IM.

Table 14: Investment Managers typology.

Field	First Stage	Second Stage	Input/Selection
			<i>Select</i> <i>Insert in format</i> <i>Insert free form</i>
Vehicle Manager			
Manager Name	[Free-form name]		[Free-form name]
Description	[Free-form introduction about the fund]	[Free-form introduction about the fund]	
Parent Company	[Free-form name]		[Free-form name]
Website	[Website address]		[Website address]
Number of Employees	Less than 20 employees		<i>Less than 20 employees</i>
	20 to 50 employees		<i>20 to 50 employees</i>
	Greater than 50 employees		<i>Greater than 50 employees</i>
ESG Specialists	Yes		<i>Yes</i>
	No		<i>No</i>
Regional Offices or Networks	Yes		<i>Yes</i>
	No		<i>No</i>
Incorporation Date	[YYYY]		[YYYY]

List of Nature Funds and Investment Managers

Below is the list of NFs and IMs included in the database. The 30 NFs and their IMs on which the qualitative analysis was undertaken was chosen from the below NFs.

Table 15: List of NFs and IMs included in the database.

Name	Type	Manager Name
Goldman Sachs	Investment Manager	NA
RRG Capital Management	Investment Manager	NA
EcoEnterprises	Investment Manager	NA
New Forests Asset Management	Investment Manager	NA
Pegasus Capital Advisors	Investment Manager	NA
CrossBoundary	Investment Manager	NA
Fount	Investment Manager	NA
Sail Ventures	Investment Manager	NA
Climate Asset Management	Investment Manager	NA
Aqua-Spark Management	Investment Manager	NA
IDH Investment Management	Investment Manager	NA
Kilter Rural	Investment Manager	NA
Cardano Development	Investment Manager	NA
Livelihoods Venture	Investment Manager	NA
Clarmondial	Investment Manager	NA
Santander Asset Management	Investment Manager	NA
Criterion Africa Partners	Investment Manager	NA
Climate Fund Managers	Investment Manager	NA
Mirova	Investment Manager	NA
AgDecCo Holdings	Investment Manager	NA
Unique Forest Investment	Investment Manager	NA
Finance in Motion	Investment Manager	NA
New Forests US Funds	Nature Fund	New Forests Asset Management
Australian Farmlands Fund	Nature Fund	Kilter Rural
Food Securities Fund	Nature Fund	Clarmondial
Climate Smart Shrimp Fund	Nature Fund	NA
Kilter Agriculture Fund	Nature Fund	Kilter Rural
New Forest AZN Funds	Nature Fund	New Forests Asset Management
Nature Based Carbon Strategy	Nature Fund	Climate Asset Management
AgDevCo	Nature Fund	AgDecCo Holdings
Restore Fund I	Nature Fund	Goldman Sachs
Latin American Green Bond Fund	Nature Fund	Finance in Motion & Santander Asset Management
New Forests Africa Funds	Nature Fund	New Forests Asset Management
Livelihoods Carbon Fund #3	Nature Fund	Livelihoods Venture
Africa Sustainable Forestry Fund I	Nature Fund	Criterion African Partners
Livelihoods Carbon Fund #1	Nature Fund	Livelihoods Venture
New Forests Asia Funds	Nature Fund	New Forests Asset Management
Eco.Business Fund	Nature Fund	Finance in Motion

Name	Type	Manager Name
EcoEnterprises Partners IV	Nature Fund	EcoEnterprises Fund
&Green Fund	Nature Fund	Sail Ventures
EcoEnterprises Partners III	Nature Fund	EcoEnterprises Fund
Aqua-Spark	Nature Fund	Aqua-Spark Management
Livelihoods Carbon Fund #2	Nature Fund	Livelihoods Venture SAS
Land Degradation Neutrality Fund	Nature Fund	Mirova
EcoEnterprises Partners II	Nature Fund	EcoEnterprises Fund
Global Fund for Coral Reefs	Nature Fund	Pegasus Capital Advisors
Restore Fund II	Nature Fund	Climate Asset Management & Goldman Sachs
Mirova Environment Acceleration Capital	Nature Fund	Mirova
Murray-Darling Basin Balanced Water Fund	Nature Fund	Kiler Rural
IDH Farmfit Fund	Nature Fund	IDH Investment Management
Fund for Nature	Nature Fund	CrossBoundary
Ocean Stewardship Fund	Nature Fund	Marine Stewardship Council
AGRI3 Fund	Nature Fund	Mirova, FOUNT & Cardano Development
Subnational Climate Fund	Nature Fund	Pegasus Capital Advisors
Athelia Sustainable Ocean Fund	Nature Fund	Mirova
Althelia Climate Fund	Nature Fund	Mirova
Natural Capital Strategy	Nature Fund	Climate Asset Management
African Sustainable Forestry Fund II	Nature Fund	Criterion Africa Partners
Livelihoods Fund for Family Farming	Nature Fund	Livelihoods Venture SAS
Arbaro Fund	Nature Fund	Finance in Motion & UNIQUE Group
Kilter Water Fund	Nature Fund	Kilter Rural
Sustainable Water Impact Fund	Nature Fund	RRG Capital Management
Climate Investor Two	Nature Fund	Climate Fund Managers
Fondo EcoEmpresas	Nature Fund	EcoEnterprises Fund

APPENDIX B: ECOSYSTEM SERVICES

Table 16: Overview of Ecosystem services, adapted from NatureScot (2023).

	Benefits from land	Benefits from the sea
Provisioning	Food and drink	Genetic resources
	Natural medicines	Sand & gravel
	Water supply	Harvestable seaweed
	Materials	Energy
	Renewable and non-renewable energy	Fish and Shellfish stocks
Regulating/ Maintaining	Clean air	Storm protection
	Carbon storage	Waste breakdown and detoxification
	Flood management	Carbon storage and climate regulation
	Erosion control	Stabilise sediment
	Water purification	
	Disease and natural pest control	
	Pollination	
Supporting	Healthy soils	Food web
	Photosynthesis	Nutrient cycling
	Nutrient cycling	Water cycling
	Space for wildlife	Larval/gamete supply
		Habitats for species
		Water currents & sediment transport
Cultural	Spiritual and religious connections	Tourism
	Inspiration	Recreation
	Sense of place	Wildlife watching
	Recreation	Science and education
	Knowledge and learning	Seascapes
	Tourism	Health and well-being
	Physical health and mental wellbeing	Creativity & art

APPENDIX C: OVERVIEW OF THE &GREEN FUND AND SAIL VENTURES

Investment Fund Overview The &Green Fund			
General		Investment Strategy	
Name of Vehicle	The &Green Fund	Regional Focus	Sub-Saharan Africa East Asia and Pacific Latin America and Caribbean
Established	2017	Sector	Sustainable Agriculture & Sustainable Forestry
Vehicle Stage	Operational	Investee Type	Private Sector Actors
Domicile	The Netherlands	Instruments	Debt & Mezzanine Instruments
Duration	Evergreen	Period	Between 5-15 years
Arranger(s)/ Anchor Investor	Norway's International Climate and Forest Initiative (NICFI) & IDH Sustainable Trade Initiative	Size	Between US\$ 5 and US\$ 30 mln
Capital		Portfolio & Impact	
Target Size	US\$ 400 mln	Portfolio Size	US\$ 140 mln (estimated as of Q3 2023)
Committed Capital	US\$ 410 mln (estimated as of Q3 2023)	Number of Investments	7
Sources of Capital	<ul style="list-style-type: none"> ▪ Governments ▪ Development Agency & Multi-Donor Funds ▪ MDB/ DFI ▪ Foundation/ NGO ▪ Commercial Investors 	Name of Investee(s)	<ul style="list-style-type: none"> ▪ Mercon B.V. (Mercon) ▪ FS Agrisolutions Indústria de Combustíveis Ltda. (FS) ▪ PT Hilton Duta Lestari (HDL) ▪ Marfrig Global Foods S.A. (Marfrig) ▪ PT Dharma Satya Nusantara Tbk (DSNG) ▪ Agropecuária Roncador Ltda. (Roncador) ▪ PT Royal Lestari Utama (RLU) ▪ Agropecuaria Bambusa S.A.S (HSJ)
Type of Capital	<ul style="list-style-type: none"> ▪ Grants & Redeemable Grants ▪ Loans ▪ Mezzanine Instruments 	Ecosystem Impact	Forests Rivers and Riparian Multiple
Select Named Investor(s)	<ul style="list-style-type: none"> ▪ Norway's International Climate and Forest Initiative (NICFI) ▪ UK Mobilising Finance for Forests (MFF) ▪ The Global Environment Facility (GEF) ▪ Central African Forest Initiative (CAFI) ▪ The Nederlandse Financierings-Maatschappij voor Ontwikkelingslanden N.V. (FMO) ▪ The Green Climate Fund (GCF) ▪ The Unilever Group ▪ The Ford Foundation ▪ Others 	Impact Metrics	Various financial, environment and social indicators. Examples include forest protected (ha), climate benefits (tCO2e), ecosystems with improved resilience (ha), people with increased resilience (#), people benefitting (#), capital mobilized (US\$ Millions)
Technical Assistance Facility	Yes, separate facility with grants available for pre-investment and post-investment activities	External Standards and Certifications	IFC PS and sector specific certifications (FSC, RSPO, etc.)



**GLOBAL
CENTER ON
ADAPTATION**

**ANTOINE PLATEKADE 1006
3072 ME ROTTERDAM
THE NETHERLANDS
+31(0)88-088-6800
WWW.GCA.ORG**