

# GCBC Private Sector Study Factsheet

## Introduction

Stantec have been appointed by Royal Botanic Gardens Kew (RBGK), acting as the Strategic Science Lead for the Global Centre on Biodiversity for Climate (GCBC), to research the global green finance private investment community.

## Purpose of fact sheet

This paper presents research findings and a synthesis of a wide range of evidence on the Biodiversity/Nature Based Solutions (NbS) private sector investment market and the technologies and data used.

The key questions covered are as follows:

### Study area

The study relates to the ‘Global South’: Sub-Saharan Africa, Latin America, South East Asia and the Pacific excluding Australia and New Zealand) but including some Small Island Developing States (SIDS).

### Nature of the market

Who is investing in NbS? How do NbS investors measure success? What are the key issues and barriers that if addressed could help unlock greater levels of private sector investment into NbS projects.

### Data and information

What technologies (Nature Tech) are available and used by the NbS investment community to monitor and report on nature related metrics? What are the sources of information and data sought by investors? Are there any issues collecting this information? Which Nature Tech solutions are seen as the most effective and what issues exist in terms of capturing robust and reliable data that could be acted upon in future strategies.

## Method

### Literature review

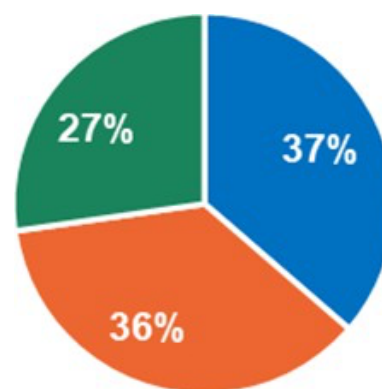
An extensive body of literature was reviewed, covering a broad selection of documents:

Research studies	Journalistic articles
Investor strategies	Interview / podcasts
Consultations	Guidance documents
Multilateral Organisation Reports	

### Stakeholder engagement

Through survey and interviews, Stantec engaged with a wide range of NbS stakeholders, including Nature Tech Firms, Interest Groups, Investors and Academics. Stantec contacted over 100 stakeholders in NbS.

The respondents and interviewees together provided a balanced coverage of knowledge for the Global South NbS market.



Latin America
South East Asia and Oceania
Sub-Saharan Africa

**Figure 1:** Stakeholder Global South NbS market knowledge coverage  
**Source:** Stantec

## 1 Biodiversity Market information

This section provides an overview of the global green finance investment market.

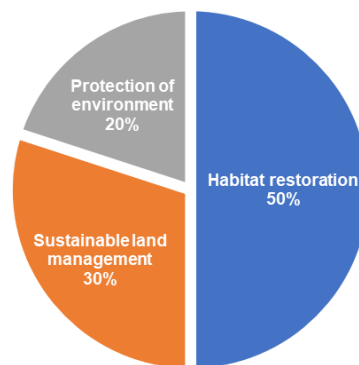
### 1.1 Green finance

The climate crisis has become the definitive and existential global issue, necessitating major, large-scale interventions. Green finance describes investments that support environmental sustainability goals and the protection and enhancement of biodiversity. The term gained popularity in 2015 with the introduction of the UN Sustainable Development Goals (UNSDGs) and the Paris Agreement on Climate Change.

### 1.2 Market size

**Global biodiversity need = £680bn pa**

The world's total annual biodiversity investment need is estimated by the UN to be approximately \$850 billion USD (c. £680 billion GBP) p.a. In addition, it is estimated by the World Economic Forum (WEF, 2020) that 50% of global GDP is moderately or highly dependent on biodiversity. Global need can be segmented into the following three groups of NbS projects; habitat restoration, sustainable land management, and protection of environment. According to the UN State of Finance for Nature report these NbS activity types will most cost-effectively address the biodiversity and climate crises (i.e. keep global warming under 1.5°C, land degradation neutrality and 30% habitat protection).



**Figure 2:** Types of NbS projects required to address Biodiversity and Climate Crisis

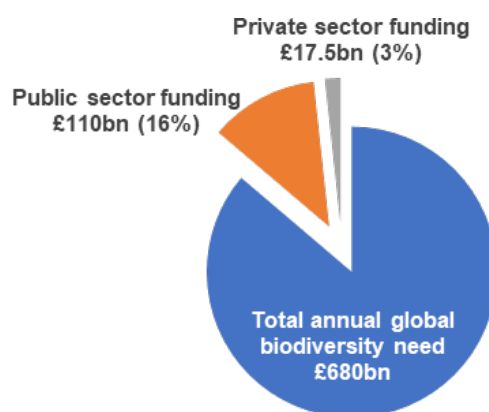
**Source:** [UN State of Finance for Nature \(2022\)](#)

**Note:** Sustainable land management is expected to increase in importance by 2050 and make up c45% of global need.

### 1.3 Current market spending

**Global biodiversity spend  
≈ £127.5bn p.a.**

In contrast to the need for investment, current global annual public spending on NbS is estimated to be around \$135 billion USD (approximately £110 billion GBP). Of that, private sector funding is only around 15% of total spend or \$20-25 billion USD (approximately £15-20 billion GBP), together only meeting 19% of total biodiversity/NbS need.



**Figure 3:** Global funding public / private split

**Source:** [UN State of Finance for Nature \(2022\)](#)

### 1.4 NbS funding gap

**Funding gap ≈ £500bn pa**

To help address the c£500bn p.a. funding gap, significantly greater amounts of private sector investment are required; given that the public sector currently outspends the private sector by approximately six times. However, global capital markets are currently worth an estimated \$230 trillion USD (SIFMA, 2023); making the \$700bn biodiversity funding worth only 0.3% of the value of global capital markets. Given that 50% of global GDP is estimated to be dependent on nature, this suggests a significant ‘market failure’ that requires a major change.

### 1.5 Investor types

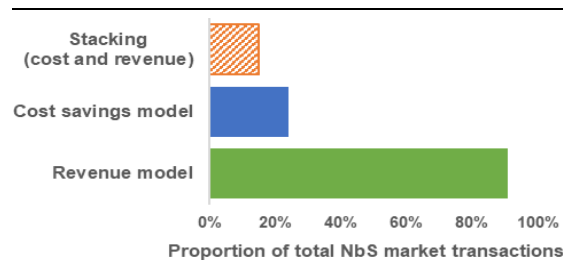
While it is difficult to establish a precise market share as half of NbS/biodiversity transactions use blended finance (i.e. a mix of public, philanthropic, and private sector investment), an approximate split of investor types is presented below:

<b>70%</b>	<b>Institutional Investors</b>
	e.g. Banks, private equity investors, impact funds offering equity and debt.
<b>70%</b>	<b>Corporates</b>
	e.g. Water companies, consumer goods and raw material producers.
<b>+</b>	<b>Venture capitalists and high net worth individuals / family offices</b>
<i>Source: Finance Earth (2021)</i>	

### 1.6 Investment models

There are two main types of NbS investment models. These are the revenue model (91% of NbS market transactions) and cost savings model (24% of NbS market transactions). Investors often combine these investment models through stacking (15% of NbS market transactions), which is why the revenue and cost savings models equal more than 100% (i.e. 91% +24%).

Revenue models, typically adopted by institutional investors, seek Return on Investment (ROI), e.g. through selling carbon credits, sustainable timber etc. cost savings models, typically adopted by firms, invest in projects to reduce their operational costs or to address their sustainability obligations, e.g. flood mitigation, better water quality etc. Figure 4 presents the split between revenue and cost saving models.



**Figure 4:** Investment Models  
*Source: Finance Earth (2021)*

### 1.7 Investment types

In 2022, the UN recorded \$26 billion USD (c.£20bn) of private sector investments, split as follows:

<b>30%</b>	<b>Sustainable supply chains (\$8bn)</b>
<b>23%</b>	<b>Biodiversity offsets (\$6bn)</b>
<b>12%</b>	<b>Payments for ecosystem services (\$3bn)</b> i.e. Voluntary financial flows between service users and providers conditional on agreed rules of resource management for offsite services.
<b>12%</b>	<b>Impact investors (\$3bn)</b>
<b>8%</b>	<b>Conservation NGOs (\$2bn)</b>
<b>7%</b>	<b>Carbon markets (\$2bn)</b>
<b>7%</b>	<b>Philanthropy (\$2bn)</b>
<b>4%</b>	<b>UN multilateral funds (\$2bn)</b> Multilateral funds led by UN but inc. private investment e.g. Green Climate Fund, Global Environment Facility, and Blended Finance.

*Source: UN State of Finance for Nature (2022)*

## 1.8 Geographical distribution

The European private finance market leads the world for investing in NbS, accounting for c59% of global investment, however only approximately 20% of NbS projects are based in Europe. For the Global South, this situation is reversed, accounting for 63% of all investments. Latin America leads in projects, which is likely to be linked to the impact potential of investing in projects in the Amazon rainforest.

Geography	Source	Destination
Europe	70%	25%
North America	24%	13%
Central/South America	7%	32%
Africa	9%	15%
Asia	7%	13%
Oceania	2%	3%

**Figure 5:** The European and North American investment figure grouped for NbS projects (Destination).

**Source:** [UN State of Finance for Nature \(2022\)](#).

## 1.9 Maturity of different NbS markets



### Early Stage

E.g. Peatland restoration; Species protection; Marine coastal projects



### Evolving

E.g. Regenerative agriculture



### Most mature

E.g. Linked to existing commodity markets, e.g. commercial sustainable forestry, and freshwater catchment products

## 1.10 Key motivations for private investment in NbS projects

### I) Net Zero:

Meeting net zero targets within their investment portfolio. Primarily high integrity markets with Biodiversity Net Gain element.

### II) Reputation

Corporate social responsibility with added nature related disclosure. Also, assists with market competitiveness.

### III) Company Values

Investing in NbS projects can align with corporate values such as SDG commitments.

**Source:** *Stantec stakeholder engagement exercise (2024) Stakeholder view – Investors legal knowledge*

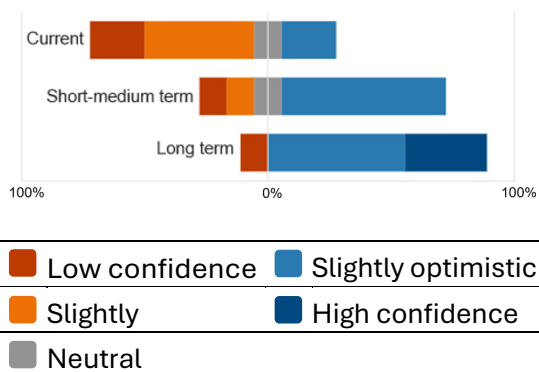
Stakeholders were asked to what extent do investors understand the legal implications of using data from NatureTech sources.

The responses suggest poor understanding in this area in the current market but there is an expectation that this will improve as the market evolves.

**1.11 Stakeholder view:  
NbS investment market  
sentiment/outlook**

The majority of stakeholders held a relatively pessimistic view on the extent that the current NbS investment market is meeting demand. This is due to a combination of factors such as the limited number of investable projects, land ownership complexities, and high costs of market entry.

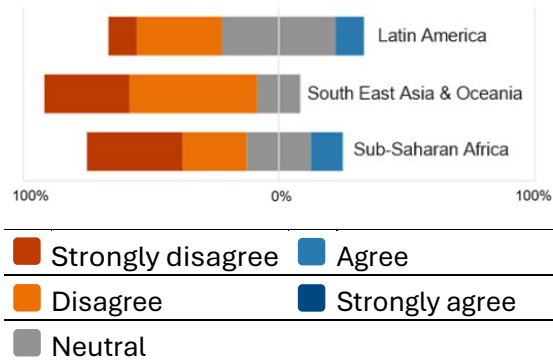
However, most investors agreed that their outlook on the market would be likely to improve over time as the market grows (and the pipeline of investable projects increases), project costs fall (due to economies of scale and technologies), and regulation evolves to support the market.



**Figure 5:** Stakeholder consultation sentiment of Global South NbS projects  
**Source:** Stantec

**1.12 Stakeholder view:  
Do policies and regulation  
support the sector?**

There was a consensus across the stakeholder group that current policies and regulation are failing to support private sector investment in NbS and biodiversity projects. One respondent cited Brazil as an example, where bureaucratic restrictions around biodiversity data and data sharing have complicated Measuring, Reporting and Valuation (MRV) (see 2.6).



**Figure 6:** Stakeholder consultation sentiment for support from policies and regulation in the Global South  
**Source:** Stantec

**1.13 Conclusion**

Based on a review of literature, data and feedback from stakeholders, it appears the NbS private sector investment market is a nascent market with many issues. However, it is growing, and most stakeholders and reports are optimistic for its future. The market is complex with many players and can seem slightly anarchic at first glance, but an ‘eco-system’ exists and is rationalising and evolving rapidly. The market has experienced challenges recently with the negative effects of the carbon markets crisis and mainly US lead populist backlash against Environment, Social, Governance (ESG) and sustainability.

However, this could be seen as an effect of market rationalisation and should help to ‘weed out’ green washing and tokenism, and improve quality. Ultimately though, significant efforts and actions will be required to expand the market to meet the funding gap.



## 2 Biodiversity Data and Metrics

This section collates the findings of research into metrics used in the global green finance market. This covers the range of metrics, platforms, disclosure processes, nature- tech solutions and outcomes that are commonly sought by the private investment market when seeking to invest in NbS/biodiversity initiatives. It explores the pros and cons of these metrics and which solutions are most appropriate and popular for different aspects of NbS/biodiversity projects.

### 2.1 Metrics

Defining robust monitoring and evaluating outcomes in NbS helps to lend legitimacy investment propositions and has allowed the green finance market to grow to the position it is in today. Monitoring performance against metrics enables continued improvement of NbS projects in delivering on their outcomes.

### 2.2 Defining outcomes

NbS/Biodiversity project outcomes can be split into three distinct categories:

#### I) Standard financial outcome metrics:

- i) **Risks:** e.g. Sharpe ratio, beta, Value at Risk
- ii) **Returns:** nominal, Return on Investment, Return on Assets, Return on Invested Capital

#### II) Impact returns:

Will vary significantly depending on the type of project

#### III) Reputation and brand enhancement:

Internal company quantitative and qualitative business performance measures

### 2.3 Industry Standard Metrics

CO<sub>2</sub> emission reductions and Sequestration (as established by accepted carbon verification standards) are one of the few accepted metrics for effective and reliable comparison across NbS projects. There is a large variance in the other metrics used depending on the investment and the investor. The 17 UN SDGs help provide a high- level framework

but do not capture nuances and are difficult to verify. The International Union of Conservation for Nature (IUCN) launched a Global Standard in 2020 to align best practice NbS development at a global scale. This standard sets out clear parameters defining NbS and a common framework. Other standards include the Gold Standard and Verra.

### 2.4 How do NbS Investors typically measure success?

Investors typically use due diligence, intermediaries and Nature Tech (see 2.6) to measure success of NbS investments. Some relevant definitions of various layers of biodiversity indicators include:

**Schemes:** biodiversity credit standards/ methodologies that determine the scope of biodiversity credit units.

**Credits:** the biodiversity uplift/avoided loss units that integrate (usually) multiple indicators into their calculation.

**Indicators:** the biodiversity areas of interest that schemes track using (usually) multiple metrics (e.g. species richness, habitat distinctiveness, food web complexity, etc.).

**Metrics:** specific indices/values used to calculate one of the biodiversity indicators (e.g. Margalef index of diversity, habitat distinctiveness category, CreditNature Trophic Function metric, etc.).

### 2.5 Stakeholder Response Example: Anonymous ethical bank's measurements of success

<b>CO<sub>2</sub></b>	Carbon sequestered & avoided emissions from deforestation
<b>Hectares</b>	Land under restoration / conservation / improved agricultural or forestry management
<b>Jobs</b>	Number of jobs in biodiversity sector
<b>People</b>	Number of local community benefitted, and incomes improved





## 2.6 'Nature Tech' technologies

Investors often use Nature Tech to help define, monitor and measure their NbS projects/investments.






**“Nature Tech is a broad set of technologies that can accelerate and scale the implementation of nature-based solutions”**

– Nature4Climate

There are **4** distinct market sectors / types of firms in Nature Tech:





	<b>Measurement, reporting and verification (MRV)</b>
	<b>Transparency</b>
	<b>Deployment</b>
	<b>Connection</b>

See 2.13 for list of some of the most prominent Nature Tech companies in these sectors measure biodiversity include various combinations of the following technologies:

	<b>Drones</b>
	<b>Satellite</b>
	<b>eDNA sampling</b>
	<b>Camera traps</b>
	<b>Bio-acoustic sensors</b>

## 2.7 Metric types

There are a broad range of metrics available to Nature Tech firms, investors, and NbS projects. The list below provides an approach to categorisation of the different types of metrics available:

	<b>Species</b>
	Population, variety, keystone species, risk etc.
	<b>Habitat</b>
	Condition, significance, connectivity, structure etc.
	<b>Ecosystem</b>
	Functioning, condition, connectivity, risk etc.
	<b>Misc.</b>
	E.g. risk, management, social, productivity etc.

**Source:** Bloom Labs (2023)

## 2.8 Nature Tech investor types

Nature Tech is a rapidly growing asset class of its own. The following chart shows some common categories of Nature Tech investor:



**Source:** Nature for Climate (2023)

## 2.9 Stakeholder views on Nature Tech



“There is often little consideration of the social aspect, i.e. local communities and indigenous groups”

“Many of the publicly available NbS data sources are fragmented and inconsistent across platforms”

“There is a lack of sufficient scientific opinion. This poses a barrier to effective metrics and methodologies”

“There is an absence of dedicated platforms for aggregating public information on prior transactions. This often creates a mismatch between publicly quoted economic statistics and corresponding market data”

“For field-based biodiversity MRV, issues often arise in highly heterogeneous or fragmented areas. These areas often require high sampling intensities to substantiate relevant impact claims, and this increases costs”

“Certification or accreditation models, hosted by qualified institutions must be managed carefully to avoid conflicts of interest between certification, income sources and impact objectives”

## 2.10 Key considerations for Nature Tech / Metrics

### Considerations

<b>Additionality</b>	Demonstrating additionality i.e. the difference the NbS project has made to an ecosystem and not the effect of another factor such as direct human activity.
<b>Attribution</b>	Accurately attributing the effect to the NbS investment.
<b>Permanence</b>	Establishing whether the effect will occur over a long period and is not just a one-off initial impact.
<b>Contrasting</b>	Contrasting NbS project outcomes against other NbS projects. Including benchmarking is challenging due to a wide variety of different projects. Evaluation is complicated and technically difficult for investors. Standardisation of metrics and processes is the medium/long term solution.
<b>Transparency</b>	Is a challenge given tech companies come from a culture of ‘black boxes’.
<b>Data sharing</b>	The data collected through the measurement of nature needs to be collated and accessed across multiple geographies, languages, landscapes and ecosystem types. This creates practicality issues.



**Open data** Open data, while sought after, has limitations in Nature Tech i.e. it can stifle investment as profit-based firms seek to protect their data and transparency to get a foothold in the market.

**“Quantifying biodiversity is incredibly complex. The challenge is to maximally simplify it without losing quality. However, using multiple complex metrics doesn’t serve complexity either. If understanding the different metrics used to calculate biodiversity credits takes hours, then something isn’t right”**

– In Bloom

**2.11 NatureTech future trends**

**Blockchain technology**

Such as the OMA DAO model; this technology will help with market transparency as all historic transactions are securely recorded and saved.

**Consolidation of market**

The nascent Nature Tech market is currently seeing an explosion of biodiversity credit schemes, Nature Tech company mergers and acquisitions and corresponding relative consolidation of the market. While this demonstrates a maturing of the market, as with other tech sectors, there is a debate on whether the best firms in terms of biodiversity impact will emerge ‘on-top’.

**2.12 What can improve the collection and analysis of data and information?**

**Standards**

Additional internationally and academically accepted biodiversity project standards are needed to ensure that the expansive range of NbS activities can be assessed and compared.

**Communication**

The use of smart phone data that is cost-effective, scientifically valid and reliable could be seen as the ‘holy grail’ of NbS metrics.

**Skills**

Trained implementation partners in different regions. (Stakeholder response).

**Sensor Innovation**

E.g. combining cameras with bioacoustics, real-time data transmission (Stakeholder response).



Nature-based Carbon Solutions.

## 2.13 Who is developing metrics and solutions

Nature4Climate have identified the following companies as the key actors in the development of NatureTech. These are grouped into the four main types of Nature Tech company: Connection – Nature Tech that helps connect communities to sources of information. Deployment - for example drones that allow quick planting of trees.

Transparency – Nature Tech, such as Blockchain that improves transparency and legitimacy. MRV - Technologies like satellites, eDNA and LiDAR that increase cost effectiveness of measuring NbS projects.



### Connection

- Earth
- Carbon Co-op
- NCX
- Koltiva
- Taking Root
- Pempem
- Earthshot Labs
- Soilify
- FarmWise



### Deployment

- Terraformation
- Drone Deploy
- Kula Bio
- Dendra
- Flash Forest
- Vence
- Living Carbon
- Drone Seed
- Evolved by Nature
- MyEasy Carbon
- The Seaweed Company
- Stony Creek Colors



### Transparency

- Rebalance Earth
- Earthly
- Climate Impact X
- University of Cambridge
- Nori
- Carbon Stack
- Climate Vault
- Tentree
- Veritree



### Measurement, Reporting and Verification

- Rainforest Connection
- Impact Observatory
- Ecometric
- Earthbanc
- RS Aqua
- Vizzuality
- Planet
- Downforce
- GEDI
- Chloris Geospatial
- Strobilo
- Pattern Ag
- NatureMetrics
- Restor
- Sentera
- Agerpoint
- Space Intelligence
- Zulu Forest Sciences
- Treemetrics
- Pachama
- VanderSat
- Satelligence
- Moja Global
- Sound Forest Lab
- Trase
- Earth Defenders Toolkit
- Sylvera

### 3 Challenges and opportunities

#### 3.1 Key Issues & Barriers to Private NbS Investment

The key issues and barriers to greater levels of private investment in the NbS market, based on the research and stakeholder feedback are as follows:

	A limited pipeline of investable projects
	A lack of financial experience in the NbS project development community
	Land ownership complexities
	Effective impact measurement
	Underdeveloped market infrastructure e.g. absence of transaction databases and market research platforms, limited transaction reporting and analytical reporting
	Cost of independent verification can diminish potential returns
	Requirement of specialist management teams for NbS assets

#### 3.2 Stakeholder Response: describing issues and barriers in the market.

NbS tend to require a significant amount of upfront financing. There is little established track record and there are many uncertainties in the voluntary carbon market, which is often the main revenue source in these projects. The pipeline of bankable NbS projects is small in the Global South – particularly in Sub-Saharan Africa. These projects are typically developed by organisations who are inexperienced in attracting international investment. For example, it has been difficult to finance native species forestry projects because of uncertainties such as:

- I) No price track record, official specifications, or official controlled seed production
- II) Unpredictable demand

#### 3.3 Emerging key actions to increase private NbS investment



##### Cost Effectiveness

Increasing access to cost-effective independent verification will be key to enabling investment-ready projects as this will support ROI.



##### Scientific standards

The market would benefit from independent, scientifically driven guidance on which NbS assets and projects that align with the COP commitments for the rapid transition to a low-carbon economy.



##### Project scale

Aggregation of projects into aligned portfolios to build scale and offer an investable package to institutional investors.

#### 3.4 Stakeholder Response: suggested actions to increase NbS investment

The solution will lie in supporting and derisking early stages of development but this early stage has many barriers.

Suggested solution:

- I) **First loss guarantees**  
Investors agree to bear losses to an agreed percentage in the event of default.
- II) **Blended finance to support first loss models**  
Strategic use of finance from development and philanthropic sources to mobilise private capital. This addresses market failures and thereby encourages investment.

### III) Investors engaging with and investing in indigenous led companies.

This could be through funding land rights or purchasing credits with audited MRV – certification models tend to penalise indigenous projects at all levels with delays, land title requirements etc.

### 3.5 Conclusions

NbS Investment Market is nascent, dynamic but expected to expand and mature in the future.

Key challenges are:

- **Siloed market**  
supply side doesn't talk to the demand side and very little discussion with stakeholders and local communities.
- **Lack of pipeline of investable projects**
- **Nature Tech**  
crowded market and difficult to balance robustness with cost-effectiveness.

Key recommendations for attracting additional private capital to fund NbS biodiversity projects are:

- **State**  
Science driven independent standards, disclosure and guidance, guarantees & blended finance
- **Private sector**  
Collaborate to support standardisation, be more ethical and encourage incentives for holistic projects, i.e. benefitting both biodiversity and communities.
- **Skills and Education**  
Upskilling and training NbS developer and investment community
- **Nature Tech**  
Simplify and create usable NT without losing quality.

### 3.6 Special acknowledgements

Stantec thanks the following stakeholders for their extensive contributions during the research stage of this report:

✓	<b>Bloom Labs</b>
✓	<b>Bright Tide</b>
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✓	<b>International Institute for Environment Development</b>
✓	<b>Mana Impact</b>
✓	<b>Meliora ESG</b>
✓	<b>Nature+Futures</b>
✓	<b>Nature4Climate</b>
✓	<b>Nature Investment Group</b>
✓	<b>NatureMetrics</b>
✓	<b>Okala</b>
✓	<b>Rebalance Earth</b>
✓	<b>Savimbo</b>
✓	<b>Systemiq</b>
✓	<b>The Ark</b>
✓	<b>Triodos</b>
✓	<b>UN-Habitat</b>
✓	<b>UCL</b>

# Emerging Actions to Increase NbS Investment

