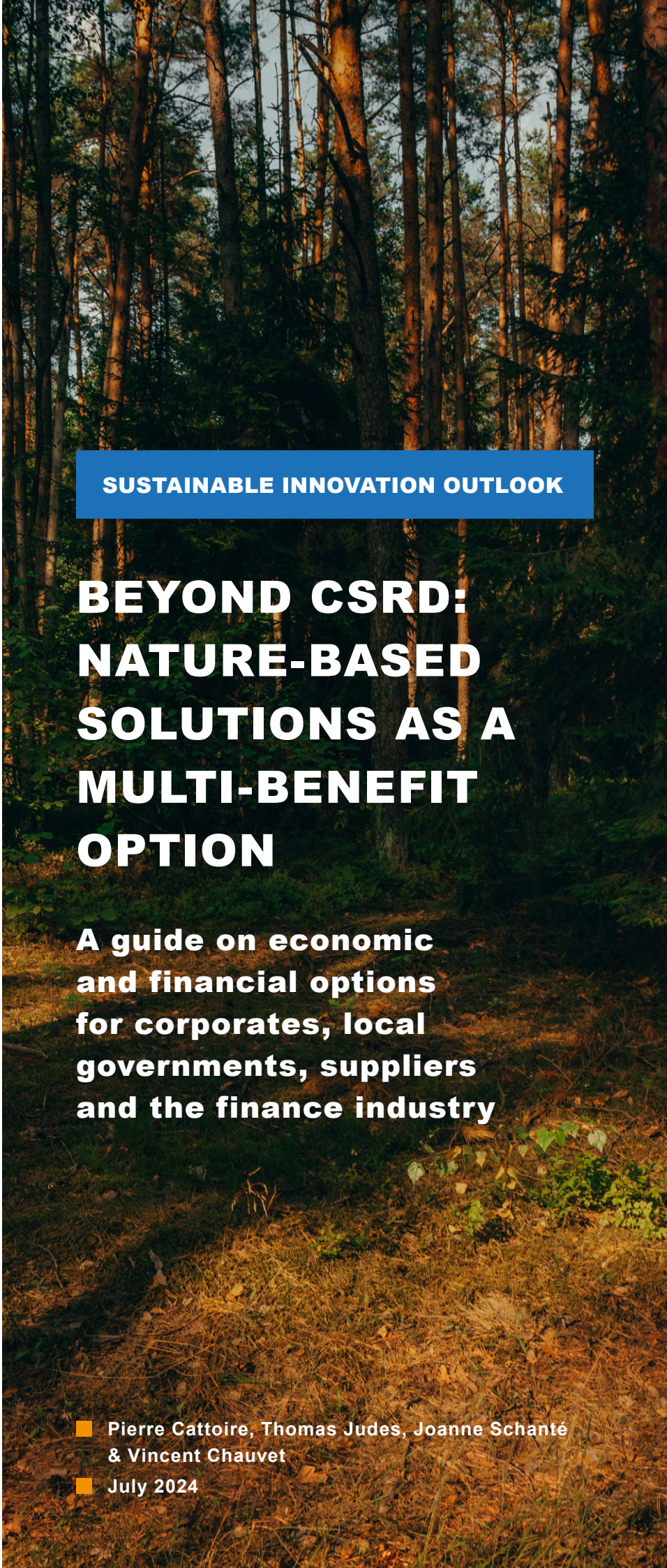

sustainable innovation

SUSTAINABLE INNOVATION OUTLOOK

BEYOND CSRD: NATURE-BASED SOLUTIONS AS A MULTI-BENEFIT OPTION

A guide on economic and financial options for corporates, local governments, suppliers and the finance industry

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Executive Summary

This Sustainable Innovation Outlook aims to facilitate the flow of information (and ultimately, decision-making) among all and any stakeholder working, or looking to work, with one of LGI Sustainable Innovation focus areas: nature. Within this broad topic, LGI and its partners have been most recently focused on nature-based solutions (NbS): projects that bring nature as a solution to human-made problems.

Nature-based solutions offer an answer to at least two of humanity's most pressing issues: climate change and biodiversity loss. These solutions, which harness the power and resilience of natural ecosystems, stand out for their ability to offer benefits on multiple fronts—environmental, social and financial. But their true potential remains locked behind assumptions, miscommunications, the lack of frameworks and taxonomies. With this relatively young market, at least in its current form and definition, the central challenge lies in mainstreaming NbS.

With a deep understanding of the opportunities and challenges to these solutions being implemented, this Sustainable Innovation Outlook builds upon LGI's work to provide a shared understanding across four key stakeholders: corporates, local governments, the finance industry and NbS project owners. Our work has showed that these stakeholders share a common pain point, that of understanding the value and benefits of NbS within our current economic systems; therefore, this report focuses on highlighting the possible usage and business models for NbS within each stakeholder's context. This report provides multiple recommendations for each stakeholder, in short, that:

- Corporates should consider NbS as an integral part of their Corporate Social Responsibility (CSR) strategy – especially in the context of increased compliance requirements including the Corporate Sustainability Reporting Directive (CSRD) in the EU – and see their involvement in these projects as a stepping stone to their long-term impact strategy, not only for reporting or regulatory compliance but also as a way to increase their organisation's resilience to rapidly changing environment and expectations;
- Local governments (regions and cities) should promote local NbS initiatives and coordinate with other regions to share best practices in supporting NbS projects, while focusing on the social impact of these solutions in the face of climate change mitigation and adaptation;
- The finance industry should consider alternative financing tools and strategies to mitigate risk through ongoing engagement with local governments and NbS project owners;
- And NbS project owners ("supply of projects") should improve their communication towards other stakeholders to increase their visibility, showcase the benefits and value that their projects bring, and setup valuation processes that can be understood within policy, investment and socio-economic contexts.

To facilitate these conversations, hurdles need to be managed: myth-busting, common language, shared frameworks, regulations, valuation and science-based approaches. At this stage in its rapid growth, the industry needs innovative business models and new financing strategies that pool public and private funds, making way for risk-sharing and scaling up of NbS projects. An upcoming consolidation of the NbS market, coupled with the development of standardised evaluation metrics, can provide the clarity and assurance investors need. To help drive action, this report comes with an NbS toolbox structured by LGI, a table of categorised resources useful for all stakeholders in the market: impact assessments, networks, standards, financial and other planning tools, monitoring and training resources.

This is but the beginning. While this report strongly recommends that NbS be widely and systematically implemented, the future is already here, with talks about a “Nature-Positive Economy” being structured.

Disclaimer:

This Sustainable Innovation Outlook has been written with the support of Artificial Intelligence (AI) technologies and meticulously reviewed and finalised by senior consultants to ensure accuracy and relevance. The document is grounded on publicly-available information, derived from public projects, or research results produced or co-produced by LGI. For detailed references, please refer to the appendix.

It also is important to note that this Outlook is not intended as an in-depth analysis for industry-leading experts, but rather as a comprehensive “connecting the dots” exercise aimed at non-specialists. Our goal is to provide an accessible overview that stimulates understanding and discussion among a wide range of stakeholders interested in nature-based solutions and sustainable innovation.

Introduction

With biodiversity's contribution to the global economy estimated at US$ 125 trillion to US$ 140 trillion annually (WWF, 2018), wildlife populations declining 69% since 1970 (WWF, 2022), and the potential annual cost of biodiversity loss projected at US$ 14 trillion by 2050 (7% of expected global GDP), the economic stakes of biodiversity conservation are immense. Despite the critical importance, a biodiversity funding gap of US$ 711 billion per year remains until 2030 (Paulson Institute, The Nature Conservancy, Cornell Atkinson Center for Sustainability, 2020), highlighting a significant challenge.

Nature-based solutions (NbS) are defined as "actions to protect, sustainably manage and restore natural or modified ecosystems, which respond to societal challenges in an efficient and adaptive manner, simultaneously delivering benefits in terms of human wellbeing and biodiversity" (Cohen-Shacham et al., 2016). Nature-based solutions simultaneously offer multiple environmental, social and economic benefits and have the potential to help address current challenges. In contrast, it is estimated that the total economic value (creation of jobs and business opportunities) of 168 NbS implemented in European cities is €1.2 billion per year, with an average value per hectare of €77.8k per year (NATURVATION, 2022). Several Member States already have specific funding in place for restoration: for example, Spain allocates funds from the EU's **Recovery and Resilience Facility (RRF)** to restoration through a dedicated "**Ecological Restoration and Resilience Fund**". While these seem like strong arguments for the widespread use of NbS as a default approach – or at least consideration – in all public and private projects, there is still a huge implementation gap.

The present Sustainable Innovation Outlook has been prepared by LGI to address the integration of NbS in the context of sustainable development and environmental challenges. It draws upon LGI's extensive consultancy work to provide a framework for entities across various sectors—corporates, public bodies, the finance industry and NbS suppliers—to engage with and implement NbS. The objective is straightforward: to compile insights from LGI's projects on NbS, align these insights with the needs of a diverse stakeholder group, and highlight LGI's role in fostering sustainable innovation. NbS is presented not just as an alternative but as a necessary shift in sustainability practices, offering benefits across environmental, societal and economic dimensions.

The report begins with an introduction to NbS (Nature-based solutions: A primer) so that all readers are (literally) on the same page. The main content is then divided into thematic sections, each addressing a key stakeholder in NbS implementation: corporate sustainability, local governments, finance industry and NbS project owners ("supply of projects"). In each section, the report identifies the specific challenges each group faces when implementing NbS, then provides solutions and recommendations to overcome these obstacles related to valuation, business model design and financing.

We aim for this approach to help facilitate discussions and collaborative efforts across different sectors, and specific chapters address the integration of NbS within corporate strategies, the role of public bodies, the finance industry's contribution, and the perspectives of NbS solution providers like startups, NGOs and associations. The report ends with a synthesis of conclusions and forward-looking recommendations, supported by an appendix that offers additional resources, a toolbox for NbS implementation and a comprehensive glossary of terms and acronyms used throughout.

Acknowledgements

The authors wish to express their gratitude to all contributors who have shared their insights and experiences, thereby enriching the breadth and depth of this report. This Sustainable Innovation Outlook was written thanks to the invaluable efforts and insights of many partners over the course of multiple collaborative projects and research. We would like to give a special thanks to the participating organisations, LGI team members and the broader community of practice in the field of sustainability and nature-based solutions.

1. Nature-based solutions: A primer

The conceptual foundation of nature-based solutions (NbS) is built upon the recognition that humanity's fate is intertwined with nature's. Simply put: we are one, humans are dependent on nature and we have human-only (and -made) challenges that only nature can solve. But not vice-versa. Therefore, NbS present an approach that integrates the stewardship of nature into societal development by harmonising conservation objectives and bringing nature back into our lives, while considering long-term human welfare.

Research refers to NbS as an approach to help solve human challenges while protecting and enhancing natural systems (Hawxell, Mok, Maciulyte, Sautter, & Dobrokhotova, 2019). As such, NbS represent a paradigm where nature is not just a beneficiary of conservation efforts but a proactive agent of societal challenges' solutions. At its core, NbS involves utilising natural processes and ecosystems to address contemporary environmental, social and economic issues. It might seem evident to many, but this means that NbS embody a shift from the traditional engineering-centric solutions towards more holistic, cost-effective and sustainable interventions. These solutions leverage the inherent capacity of ecosystems to mitigate floods, sequester carbon, purify water and cool urban heat islands, among other benefits.

One generally accepted definition of NbS was proposed by IUCN in 2016:

> *Nature-based solutions are actions to project, sustainably manage and restore natural and modified ecosystems in ways that address societal challenges effectively and adaptively, to provide both human wellbeing and biodiversity benefits.*
>
> (IUCN, 2016)

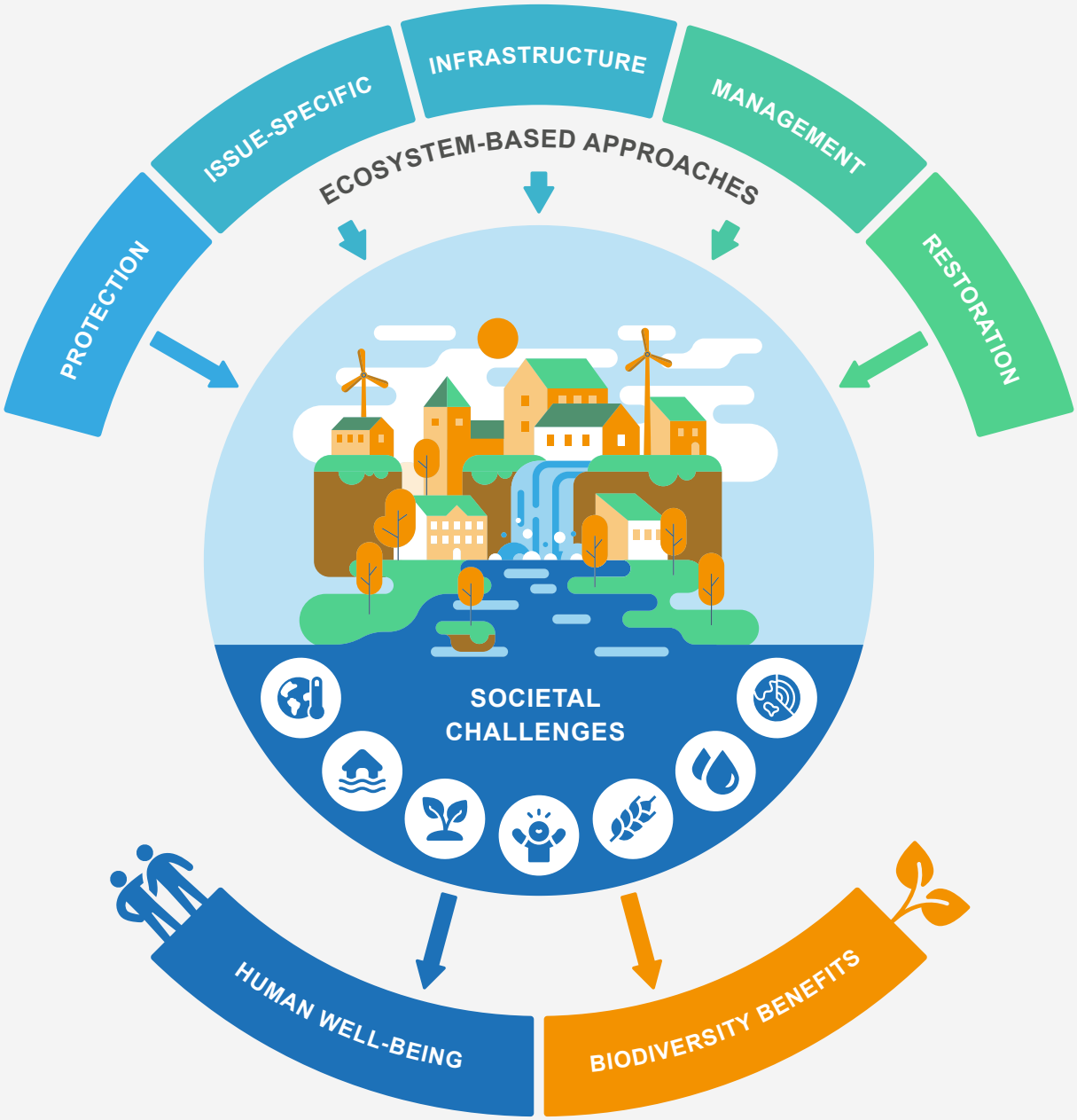


Figure 1: *Working with ecosystem-based approaches (adapted from IUCN, 2016)*

LGI has been using this definition as a starting point for its many projects on NbS. From there, one needs to get concrete: What does an NbS look like on the ground? This is where categorisation comes in. While there aren't any generally-approved segmentations of all possible NbS in the world, LGI proposed a categorisation of NbS types/categories in 2023, based on the available research available at the time. We have since aligned this with the IUCN "NbS Pillars":

IUCN NbS pillar	Family of solutions	Solution
Manage ecosystems	Biotechnologies and soil health	Improved root phenotype
Manage ecosystems	Biotechnologies and soil health	Inoculation & mychorizal symbiosis
Manage ecosystems	Biotechnologies and soil health	Selection of suitable plant varieties
Manage ecosystems	Biotechnologies and soil health	Biofertilizers & biopesticides
Preserve ecosystems	Biotechnologies and soil health	Phytoremediation & decontamination
Manage ecosystems	Agroecology and regenerative agriculture	Cover plants
Manage ecosystems	Agroecology and regenerative agriculture	Intermediate crops
Manage ecosystems	Agroecology and regenerative agriculture	Incorporation of crop residues
Manage ecosystems	Agroecology and regenerative agriculture	Reduced mechanical tillage
Manage ecosystems	Agroecology and regenerative agriculture	Agroforestry
Restore ecosystems	Agroecology and regenerative agriculture	Communal gardens
Manage ecosystems	Agroecology and regenerative agriculture	Fertilization natural amendment (manure, compost, digestate, etc.)
Manage ecosystems	Creation of green ecosystems & infrastructure	Planting hedges and/or trees
Restore ecosystems	Creation of green ecosystems & infrastructure	Green roofs and walls/facades
Manage ecosystems	Creation of green ecosystems & infrastructure	Urban park, garden creation & lawn management
Manage ecosystems	Creation of green ecosystems & infrastructure	Forest creation
Restore ecosystems	Creation of green ecosystems & infrastructure	Setting up grassland
Restore ecosystems	Creation of green ecosystems & infrastructure	Wetland creation
Manage ecosystems	Creation of green ecosystems & infrastructure	Bioretention systems (vegetated drains, plant-based filter systems)
Manage ecosystems	Restoration and management of degraded ecosystems	Reforestation
Manage ecosystems	Restoration and management of degraded ecosystems	Restoration of degraded grasslands
Manage ecosystems	Restoration and management of degraded ecosystems	Restoration of degraded wetlands (coasts, peat bogs, rivers, ponds, etc.)
Preserve ecosystems	Restoration and management of degraded ecosystems	Restoration of degraded soils
Other	Circular economy	Creation of technosoils (from construction waste/topsoil)
Other	Circular economy	Methanisation
Other	Circular economy	Biochar
Other	Circular economy	Composting
Other	Circular economy	Valorisation of sediments

Table 1: *Proposed categorisation of NbS (LGI, 2023)*

During the same engagement, LGI also proposed a structure for the biomes and the types of interventions (or roles) around the implementation of NbS:

Biome
Urban
Agricultural lands
Polluted lands
Marine
Coastlines
Rivers, lakes
Forests
Prairies
Mountains

Interventions
Contracting authority
Research & studies
Generalist/across the entire value chain
R&D and related services
Materials & products supply
Construction
Communication, training
Advisory and other support
Regulations
Financing
Labels & certifications
Resources & KPIs
Networking

Table 2: ***Proposed categorisation of biomes and types of interventions for NbS (LGI, 2023)***

These structuring efforts were one of many that we have seen in recent years and have helped LGI, our partners and clients in having a shared understanding of the different terminology used during our collaboration.

NbS offer multifaceted benefits: Beyond their environmental advantages, NbS play a pivotal role in enhancing social cohesion, promoting public health and generating economic opportunities, thus contributing to the achievement of the **Sustainable Development Goals** (SDGs). Increasingly, active stakeholders are referring to "ecosystem services" and "co-benefits". Ecosystem services are quite well defined, especially since the **Millenium Ecosystem Assessment** which was part of the UN effort to define the Millenium Goals (which later evolved into the SDGs): they are benefits that we humans get from ecosystems, when they are healthy, so these services can include food production, air and water quality, temperature and flood control. While there isn't a generally approved definition of co-benefits, they are similar to ecosystem services in that they are benefits that humans get from functioning ecosystems, but they extend to broader implications, which may include the creation of economic activity (job creation, job stability), gender equality and others. In summary, ecosystem services are "outputs" of the ecosystem, while co-benefits are "outcomes" of healthy ecosystems.

A publicly-available framework that helps to visualise and categorise both nature, its assets and ecosystem services has been put together by the Task-Force on Nature-Related Financial Disclosure (TNFD): the first set of recommendations were published in September 2023 (TNFD, 2023), with another set of recommendations published in March 2024, available on **TNFD's website**:

Figure 2: *Classification of realms, biomes, environmental assets and ecosystem services (adapted from TNFD, 2023)*

In the ensuing sections, this report explores the enablers and barriers of NbS implementation within diverse contexts—corporate sustainability, local governments, finance industry and NbS project owners.

2. Economic and financial viability of NbS

Despite their potential, the development and implementation of NbS face multiple challenges, which we can summarise by an overall misunderstanding of who, how and why to implement these solutions.

2.1. Innovation and collaboration as key levers

In particular, the complexity of their value proposition often transcends traditional financial evaluation frameworks and there is a strong need for innovative investment approaches. From there stems a still limited approach to the business models around their implementation, with some recurring questions:

- Who should be the main funder or investor?
- Should it be a public, private, or a collaborative project?
- Should it, and if so how, generate monetary value (income)?

The Clever Cities project has enumerated 10 significant barriers to NbS adoption: knowledge deficits; multifunctional green infrastructure governance; the dilemma of balancing multiple objectives; engaging citizens; ensuring social inclusion; securing public support; obtaining political backing; acquiring financial resources; evaluating project impacts; and the scalability of solutions. This is in line with a previous study from LGI (in partnership with EcoAct for ADEME on the French climate adaptation project ARTISAN) that revealed NbS-wide challenges that are still relevant today: policies are the most substantial enabler, while they were also seen as significant barriers. Funding was clearly identified as a universal barrier. As a side note, in the context of the CLEARING HOUSE project, LGI has developed a detailed analysis of UF-NbS (Urban Forests as nature-based solutions) business models, with a particular focus on the creation of a “database” of strategic questions. The report can be found **here**.

The following sections, taking the perspective of four key stakeholders in the implementation of NbS projects, provide a blueprint to understand their respective challenges and opportunities to facilitate these projects; the toolbox in the appendix provides specific tools and references, categorised, to help all stakeholders and readers.

As the role of collaborative efforts in unlocking NbS potential cannot be overstated, this is the main recommendation for all stakeholders in the sections below. Partnerships among governments, businesses, financial institutions, NGOs and community organisations are essential to facilitate resource pooling, risk sharing and the co-creation of innovative solutions that align these projects with social, community and environmental objectives. Additionally, engaging with

existing and emerging networks dedicated to NbS can enhance knowledge exchange, identify investment opportunities and foster project collaboration.

Part of LGI's work in the coordination of research and projects for the uptake of NbS can be summarised by the visual below, which uses LGI's QWIA (Quick Wins and Innovative Approaches), specifically applied to UF-NbS (Urban Forests as nature-based solutions) as part of our work with the CLEARING HOUSE project:

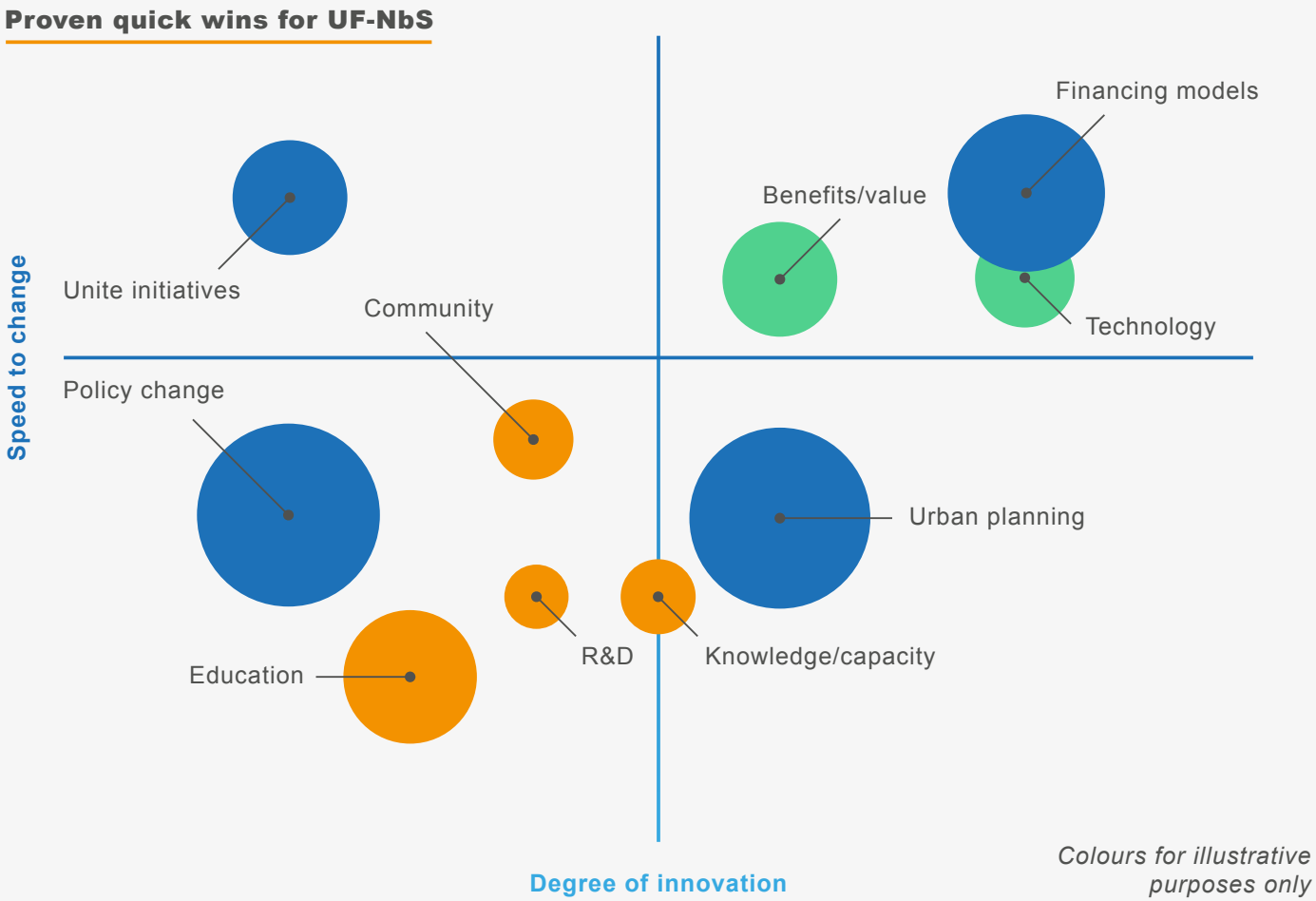


Figure 3: *Quick Wins and Innovative Approaches (QWIA) matrix for NbS uptake designed by LGI (CLEARING HOUSE, 2024)*

Details of this methodology and how LGI achieved these results can be found on the CLEARING HOUSE **website**. The purpose of this mapping tool is to position – and therefore question – each choice or category of strategic choices according to three criteria:

- **Innovation:** The desired level of innovation of the action (X-axis, from low to high)

- **Speed:** The speed of implementation of the action and of the observation of its effects in the more or less long term (Y-axis, from slow to fast)
- **Impact:** The observed leverage of the action towards the intended outcome (bubble size)

A core output of this analysis is that while policy changes and urban planning considerations have great long-term impact towards the uptake of UF-NbS, financing models for these projects is a much lower hanging fruit, which is linked to the clearer identification of UF-NbS benefits and value. While this analysis focused on urban forests, the themes can be relevant to other NbS in different contexts.

The first step in that direction is the establishment of a shared taxonomy to serve as a common language for investors, policymakers and scientists to effectively communicate and align projects and investments with biodiversity goals (EU Platform on Sustainable Finance, 2022). In particular, the current lack of a shared taxonomy for biodiversity finance has significant implications (Layman, et al., 2023):

- **Incomplete and untested models:** Without a shared taxonomy, the links from activities to impacts are incomplete and omit critical information.
- **Treating symptoms, not causes:** There's a risk of treating the symptoms of climate change or biodiversity decline without addressing underlying causes. This is particularly concerning in regard to the previous point.
- **Data quality and coverage:** Creating metrics for positive and negative biodiversity impacts is challenged by data quality and coverage: while the **IUCN Red List** data are relevant for assessing impacts in terms of species risk status, they are limited by the lack of explicit reasoning that links threat assessments to the extent of business impacts.
- **Biased and lacking spatial resolution:** All biodiversity metrics are biased taxonomically and lack the spatial resolution necessary for effective application to site-level business activities.

2.2. Corporate sustainability

We're at a pivotal moment: Companies, especially those in high-impact sectors, are caught in a maelstrom of mitigating environmental impacts while having to work with the intricacies of corporate reporting on their dependencies on nature. For example, LGI's work in CLEARING HOUSE points out the stark reality: "While companies recognise that their dependencies on nature are critical to their financial risk, they tend to focus on mitigating impacts rather than factoring these dependencies into their corporate reporting" (CLEARING HOUSE, 2024). This insight reveals a crucial gap in current corporate strategies: the underestimation of nature's integral role in their operations and the potential of NbS to bridge this gap.

However, the role of Corporate Social Responsibility (CSR) has shifted from a voluntary practice to a key aspect of public policy, particularly in the EU (Wang, Tong, Takeuchi, & George, 2016) – so much so that SMEs are adopting new forms of reporting, such as sustainability and integrated reporting, to showcase their sustainable development journey (Girella, Rossi, & Zambon, 2019). For example, "Digitally unified reporting" is a proposed approach that combines digital data management with standardised sustainability reporting, enabling real-time transparency of performance measurement and reporting (Lock & Seele, 2017). This trend might seem voluntary of the market; however, ESG market regulations play a key role in driving this positive change:

- **Globally, 90 new regulations were adopted within the first four months of 2023**, with European regulations accounting for 38 of them (PwC, 2023); since January 2022, a total of 369 ESG regulations were issued, with 129 of them originating from the EU.

- **Reporting standards are being updated** and many ESG projects have become non-compliant (PwC, 2023) – not only is the market moving with consumer demand, the uptake in ESG regulations creates a multi-speed compliance industry.
- **Investor sentiment is shifting**, with 49% expressing the desire to divest from companies not taking sufficient ESG actions (PwC, 2023). Not only is compliance a requirement and an expectation, but being non-compliant will lead organisations to lose funding opportunities.

Europe is the most potent ESG-regulation-making environment to date: The EU introduced the **Taxonomy Regulation**, establishing a classification system for environmentally sustainable economic activities, then the **Sustainable Finance Disclosure Regulation** (SFDR) which imposes transparency and disclosure requirements on financial market participants, while it is striving to become a global leader in sustainable finance through measures such as the **European Green Bond Standard** and a **Corporate Sustainability Reporting Directive**. The ESG landscape is complex and rapidly evolving, and businesses often struggle to understand what is expected of them.

As a result, the ESG market is experiencing remarkable growth, with sustainability-themed investment products reaching a value of US$ 3.2 trillion in 2020, marking an 80% increase from the previous year (Global Sustainable Investment Alliance (GSIA), 2022). Notably, sustainable funds account for over US$ 1.7 trillion of the total value, while green bonds amount to over US$ 1 trillion, social bonds reach US$ 212 billion, and mixed-sustainability bonds represent US$ 218 billion. The majority of these investment products are domiciled and invested in developed economies, indicating a mature and robust market for ESG-related services and solutions.

AI and blockchain technologies are increasingly utilised in the ESG space (White, 2023). They enable the analysis of equity and fixed income portfolios' exposure to climate transition risks, real-time assessment of public opinions on sustainability, and the development of blockchain platforms to monitor compliance with the SDGs. These technologies also allow for assessing the positive or negative impact of a company's activities on each of the SDGs and using big data to measure environmental impacts such as carbon emissions and supply chain traceability.

However, with growth comes challenges. One of the most significant hurdles facing today's businesses is the intricate web of ESG regulations. With standards that are as dynamic as they are diverse, companies often find themselves struggling to stay relevant to the latest requirements, risking penalties and missing out on opportunities to tap into the growing sustainability-driven market. The complexity of these regulations can stifle the innovation necessary to meet both market demands and sustainability goals, leaving businesses in search of streamlined solutions that can bridge the gap between compliance and competitive advantage. For the sake of representing this argument, below is the 2021 view of ESG disclosures in the EU for financial institutions prepared by the EBA:

ESG disclosures in the EU: Financial institutions

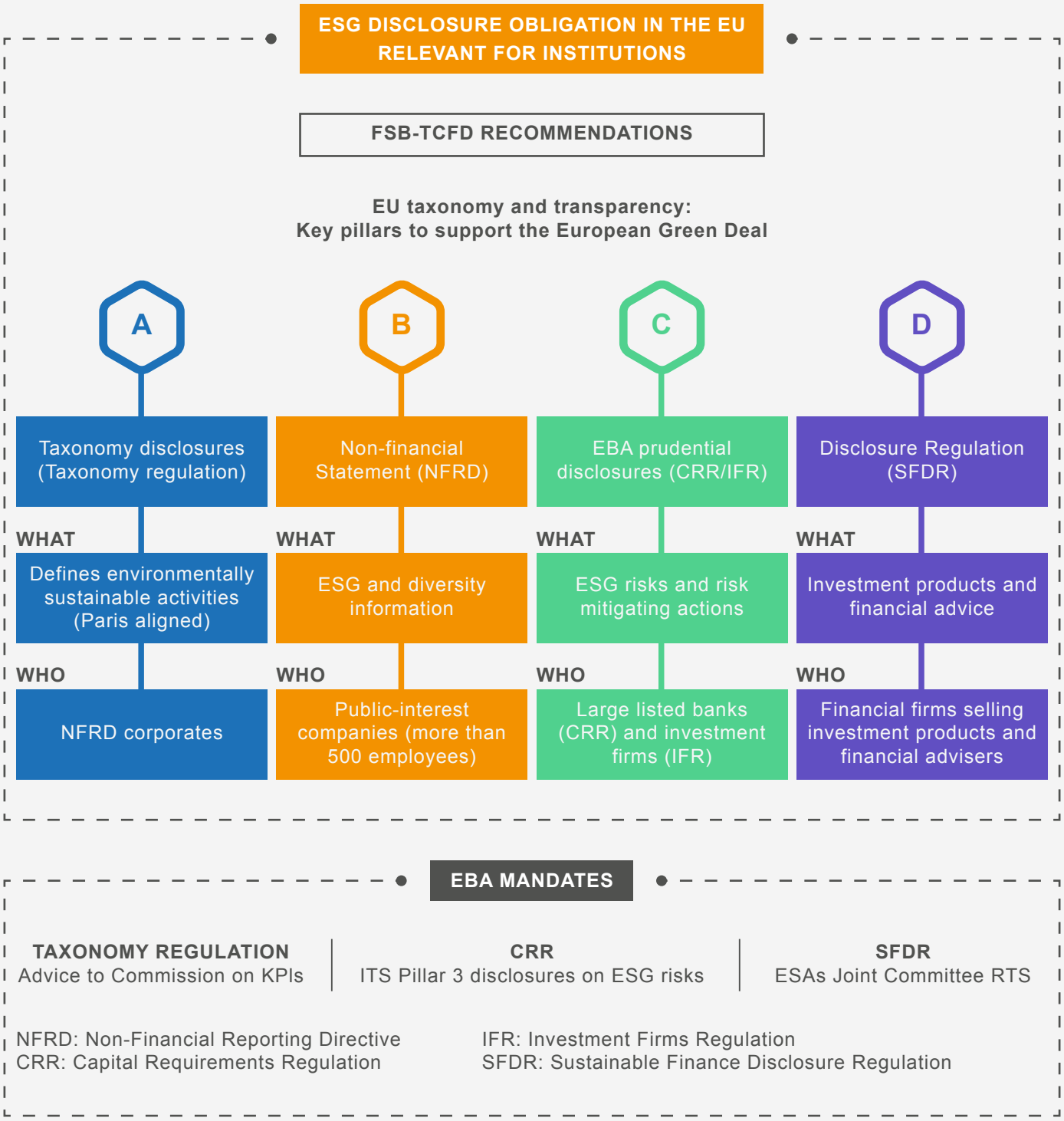


Figure 4: *EBA ESG disclosures in the EU for financial institutions (EBA, 2021)*

In the labyrinth of corporate sustainability, the alphabet soup of ESG, CSRD, SFDR and TNFD makes businesses navigate through a fog of compliance. This has positives and negatives, helping move the sustainability needle overall, at the same time as it shifts focus from "impact" to "compliance". In this journey, nature-based solutions can become a strategic focus combining long-term impact with short-term compliance, which can help corporates to transform reporting challenges into opportunities for resilience and growth. For those seeking more and hopefully "living" the values of ecology, protecting the environment and finding resilience in ever-changing constraints, NbS offer a compelling option to improve ESG performance while unlocking new growth opportunities. As such, NbS can (dare we say, "should"?) become one of their core activities and be an asset to shift their business models and priorities.

From enhancing biodiversity to reducing carbon footprints, NbS can help these businesses address environmental challenges head-on. For instance, urban green spaces are not just lungs for the cities but also incubators for sustainability and innovation; in its work with CLEARING HOUSE, LGI's work proposes the concept of urban green spaces as social impact hubs, an example of the multiple co-benefits of integrating NbS into corporate strategies. These hubs, leveraging the synergy of social entrepreneurship and environmental education, can be a blueprint for businesses to invest in urban sustainability. However, integrating these solutions into corporate strategy requires a nuanced understanding of their benefits and implementation challenges, and the central recommendation will always be to connect the stakeholders with the expertise, before making any decision.

Tools you can use (see Toolbox for details): EU Guide to Financing nature-based solutions (financing guide), Natural Infrastructure for Business Platform (information platform), ThinkNature Platform (networking platform)

2.3 Local governments

In the quest for urban sustainability, regions, cities and other public bodies stand at the crossroads of innovation and governance. Their challenge is monumental: creating green infrastructure while considering the urban fabric and history, to create resilient, liveable cities, that are both attractive and resilient to long-term environmental changes. It's a narrative that delves deep into the role of public stewardship over natural assets. Here, they have to work with trade-offs between several drivers of public policy (economic attractiveness, industry, jobs, transport, etc.), as well as climate mitigation, climate adaptation, biodiversity collapse and social resilience.

By 2050, approximately 70% of the world's population is expected to reside in urban areas (United Nations, 2018). The swift expansion of cities, coupled with economic and industrial progress, could result in adverse circumstances that have detrimental consequences to human welfare.

NbS are considered effective strategies to address the negative effects of climate change and urban expansion (Baro et al, 2014; Elmqvist, Gomez-Baggethun, & Langemeyer, 2016). They offer a wide range of ecosystem services, encompassing benefits like boosting biodiversity, improving air quality, moderating urban heat and assisting water regulation. Furthermore, NbS are an integral component of urban environments, fostering the residential living environment by creating green spaces that bring physical and mental wellbeing to urban residents (Pearlmutter et al., 2017). Lastly, green spaces have been shown to promote learning, creativity and innovation (UN FAO, 2016).

The widespread use of NbS is part of many international strategies to achieve the UN Sustainable Development Goals. In this way, NbS can contribute to the objectives of the following initiatives:

- the United Nations Framework Convention on Climate Change (UNFCCC, e.g., the Paris Agreement),

- the Convention on Biological Diversity,
- the Strategic Action Programme for the Conservation of Biological Diversity and the Sustainable Management of Natural Resources in the Mediterranean Region (SAPBIO post-2020),
- 2020 IUCN Marseille Manifesto,
- the European Green Deal, framing a number of policies, such as:
  - the European Climate Law,
  - the 2030 Climate Target Plan,
  - the European Strategy on Climate Adaptation (COM/2021),
  - the European Biodiversity Strategy 2030 (COM/2020/380),
  - the Nature Restoration Law,
  - the European Action Plan "Towards zero air, water and soil pollution" (COM/2021/400),
  - the Sustainable Chemistry Strategy (COM/2020/667),
  - the EU Forest Strategy for 2030 (COM/2021/572)
- the European Birds and Habitats Directives,
- the European Marine Strategy Framework Directive,
- the European Water Framework Directive.

The main challenge is to identify and implement cost-efficient NbS to restore nature in urban environments, enhance ecological connectivity, and ensure human wellbeing and social inclusion. Thanks to CLEARING HOUSE, which specifically focuses on tree-based green infrastructures such as forests, parks and trees within and adjacent to urban areas, LGI has had the opportunity to identify the key barriers and enablers for cities to implement NbS (specifically, urban forests):

Barriers	Enablers
■ The limited financial capacity of public actors and the private sector's cautious investment due to perceived low commercial potential and uncertainty on returns.	■ Increasing international and European policies integrating NbS for biodiversity conservation and climate adaptation (e.g., the EU biodiversity strategy for 2030).
■ A lack of explicit quantification of costs and efficacy, leading to hesitation in adopting NbS at a broader scale.	■ Growing acknowledgment of the economic benefits of NbS, which can generate substantial commercial opportunities and employment.
■ Difficulty in quantifying socio-economic benefits of NbS, as benefits are less tangible compared to traditional infrastructures.	■ Positive trends in funding and implementation, with examples of significant investments from private funds such as AP1 and BNP Paribas.

Table 3: ***Barriers and enablers for the uptake of UF-NbS in cities (CLEARING HOUSE, 2024)***

As a result of these pressure points on NbS implementation, public bodies are, more often than not, pioneers in innovative financing strategies—from environmental bonds to land sales and taxes, among others. Additionally, often led from on-the-ground requirements, crowdfunding emerges as an integrated solution to multiple challenges, exemplified by initiatives like **MyParkScotland**, which uses public support for park enhancements, showcasing the importance of communal spirit in urban regeneration.

Additionally, the value of NbS in terms of job creation and economic opportunities is substantial, highlighting the need for increased investment. Education and empowerment form the cornerstone of enduring NbS, and there is a demand for green skills among the youth and the broader community. Harnessing these trends can ensure the stewardship of these solutions by the community – in turn answer a central barrier to NbS: the maintenance cost. One of the solutions identified by LGI through its work with CLEARING HOUSE has been the proposed "Trees as Infrastructure" approach, detailed in the upcoming report. The concept of **Trees as Infrastructure** (TAI), can be a starting point for other model designs. It connects apparent disparate city actors (such as landowners, investors or beneficiaries) under one model to form alliances, interactions and investment streams that will support the growth and maintenance of urban forests.

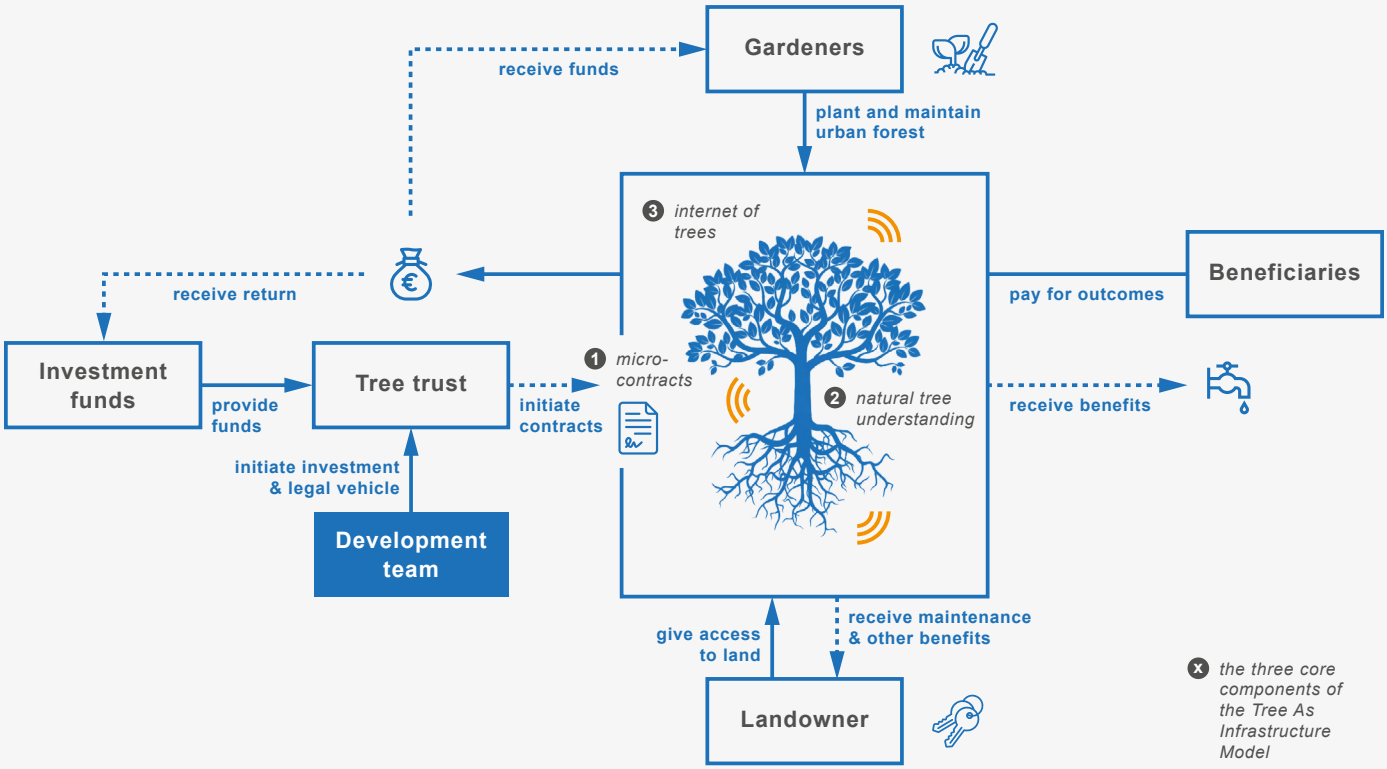


Figure 5: *Trees as Infrastructure model design (adapted from TreesAI, 2021)*

Through the lens of NbS, cities are starting to reimagine their relationship with nature. Cities and regions are pivotal in the application of NbS, primarily because they can tailor solutions to specific local environmental and societal needs. For example, urban areas in Europe have integrated NbS within green infrastructure to enhance urban resilience, contributing to sustainability goals set by entities like the European Commission (Bona, Silva-Afonso, Gomes, Matos, & Rodrigues, 2023). Effective implementation often relies on strong community involvement and the use of local knowledge, as evidenced by projects like mangrove restoration in Mexico. Local communities not only engage actively in the NbS projects but also derive direct benefits such as improved biodiversity, job creation and enhanced climate resilience, thereby supporting the broader adoption and success of NbS (López Portillo Purata, Rodríguez, & Lomelí, 2023). To make these projects become a reality, they must explore a range of strategic actions. Public-private

partnerships (PPPs) play a pivotal role in this context, fostering collaborations where private sector efficiency and innovation can be harnessed alongside public sector funding and support.

Still, too many projects face a final hurdle: money. Local governments play a critical role in the integration of diverse financing tools. Financial and regulatory frameworks at regional levels can significantly influence the success of NbS. The European Investment Bank report emphasises the necessity for regulatory and subsidy reforms to encourage both private and public sectors to invest in NbS over traditional "grey" infrastructure. This includes the need for transparency and measurability in the benefits provided by NbS to attract investment (European Investment Bank, 2023). By blending grants, debt, equity and potentially green bonds, projects can enhance their scalability and appeal to a broader spectrum of investors. This multifaceted funding strategy not only supports project viability but also encourages a more robust engagement from various financial stakeholders. It is also imperative for cities to leverage regional and national funding mechanisms. For example, the effective use of funds from the EU's Recovery and Resilience Facility by countries like Spain exemplifies how national strategies can bolster local NbS initiatives. Such strategies ensure that cities are not solely reliant on local funding sources and can benefit from broader fiscal policies and programmes.

Additionally, the inherent economic value of NbS should not be underestimated. By quantifying and promoting the economic benefits derived from ecosystem services, cities can attract significant investment. This valuation process serves as a compelling incentive for potential funders who are evaluating the long-term benefits and profitability of investing in urban green infrastructure. Government intervention, through the establishment of policies that acknowledge the economic value of ecosystem services, can significantly catalyse investment in NbS. By introducing fiscal incentives for green infrastructure development and mandating biodiversity offsets, policymakers can mobilise considerable financial resources toward NbS projects. Further, simplifying the permitting process for NbS and ensuring their integration into urban planning standards can mitigate investment risks, thereby attracting more investors.

Tools you can use (see Toolbox for details): IUCN Guide to nature-based solutions for Urban Areas (implementation guide), Green Infrastructure Valuation Toolkit (financial planning tool), Green Infrastructure Investment Coalition (collaboration network)

2.4. Finance industry

The financing landscape for NbS is undergoing significant changes, driven by a combination of regulatory developments, policy shifts and the introduction of innovative financing mechanisms. This evolving environment is enhancing the attractiveness of investments in NbS, supported by several key factors. Regulatory measures and policies at the European and international levels are increasingly supportive of NbS, with initiatives such as the EU Biodiversity Strategy and the French National Adaptation Plan for Climate Change introducing mandatory conservation and restoration targets. These regulatory frameworks are creating a more favourable investment environment by emphasising the importance of biodiversity and ecosystem services. Finance, traditionally seen as the backbone of global economies, now finds itself at the heart of a green revolution. Funders and investors play a critical role in the implementation of NbS, providing the necessary capital to bring these projects to fruition. Through strategic investments in NbS, investors and funders can achieve significant ecological, social and economic returns, contributing to the resilience and sustainability of urban environments.

Private investors in particular, are key. The annual investment required to safeguard the natural environment in 2022 was estimated at US$ 845 billion, while the annual spending was only around US$ 134 billion that same year; it is clear

that the remaining gap of US$ 700 billion/year cannot be invested by public and philanthropic funding alone. Private funders and investors need to step up, and it's an interesting bet for them to take on: a 2022 study found that out of 88 public financial transactions meeting IUCN criteria, with a total value of US$ 1.5 billion invested globally between 2002 and 2021 (Finance Earth, 2021):

- The majority offered mark-to-market returns, with returns of 2%-12% IRR
- Half used blended finance approaches (grant capital is used to reduce risk and improve investor returns)
- Deals are small: US$ 30m on average and median US$ 9.3m, ranging from US$ 90k to US$ 400m
- There is a strong tendency to invest on a small scale: 55% of disclosed investments were < US$ 10 million and 90% < US$ 100 million

Additionally, and increasingly, there are potential ESG and regulatory risks for investors down the road, if they do not adapt to the pressure. For example, the EU has proposed the **Nature Restoration Law**, recognising that "Every €1 invested into nature restoration adds €8 to €38 in benefits", putting biodiversity at the same commitment level as carbon emissions (European Commission, 2023). This is in direct relation to the still–recent international agreement to implement the **Kunming-Montreal Global Biodiversity Framework** from COP15, resulting in a surge in country-level targets and financing schemes for biodiversity. Anybody can track EU-level biodiversity strategy actions on the **European Commission's dedicated tracker**.

Concurrently, there is a growing recognition within the financial sector of the risks associated with biodiversity loss and the potential economic opportunities that investing in ecosystem services can offer. This recognition is encouraging a shift in perspective among financial entities, leading to a greater interest in and allocation of capital towards NbS. And while the increased adoption of **blended finance** models marks a significant advancement, effectively reducing investment risks and making NbS more appealing to a wider range of investors, several barriers remain that complicate the landscape for NbS financing.

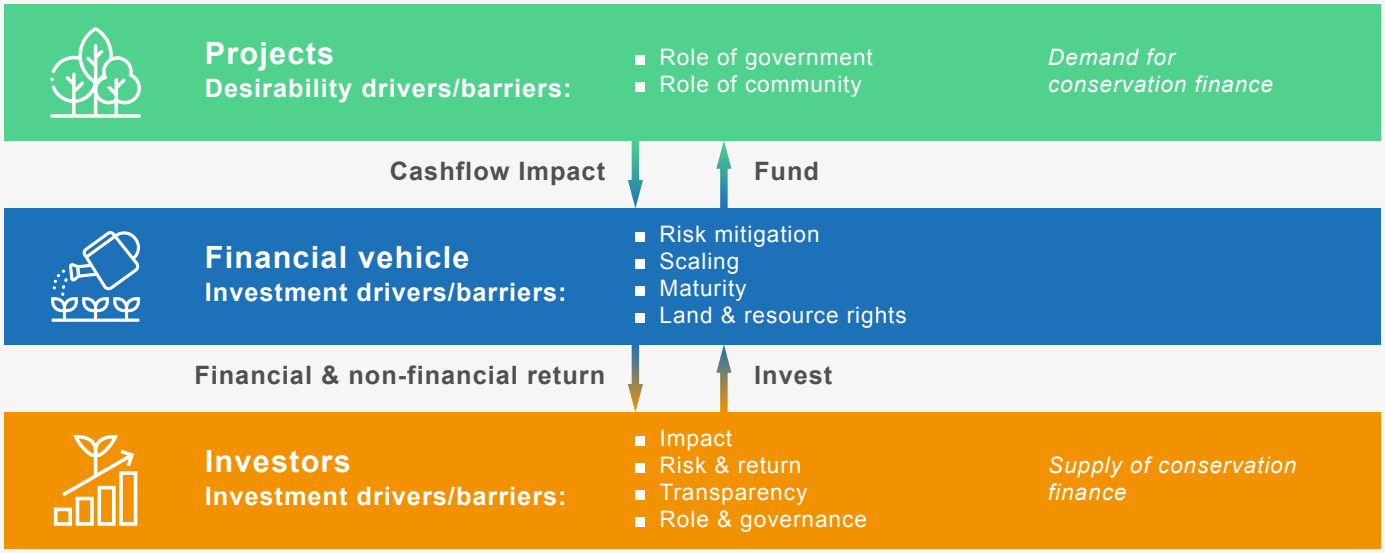


Figure 6: *Risk layering and misalignment of priorities in conservation finance (adapted from Smith et al., 2022)*

Firstly, accurately quantifying the tangible benefits of NbS poses a significant challenge. The diverse ecosystem services provided by NbS, such as carbon sequestration, biodiversity enhancement and flood mitigation, have economic values that are difficult to measure directly. This ambiguity in quantifying benefits complicates the assessment of returns on investment, making NbS projects less attractive to investors accustomed to straightforward financial returns. A crucial step in overcoming the quantification challenge is the adoption of frameworks like the **Natural Capital Protocol**, which provides comprehensive methodologies for assessing the broad array of benefits ecosystems offer. This approach not only aids in constructing compelling investment rationales for NbS but also enables a more precise evaluation of their long-term economic returns.

Additionally, the perception of higher risks associated with NbS projects, as compared to traditional grey infrastructure investments, is prevalent within the finance industry. This perception is largely due to unfamiliarity with NbS, variability in ecological outcomes and uncertainties regarding long-term maintenance and effectiveness. The involvement of NbS projects in public spaces, serving broader community benefits, adds further complexity to project governance and revenue generation models. Ground-level market studies offer unique insights into the NbS sector, revealing specific needs, challenges and opportunities that traditional analysis methods may overlook. Engaging directly with NbS providers through interviews, surveys and participatory research can inform targeted investment strategies. Analysis of public financial transactions within the NbS market highlights a preference for small-scale, blended finance investments, indicating a viable pathway for structuring future investments in NbS that promise market-rate returns.

The scalability of NbS projects also presents challenges, with many being small-scale and localised. This limitation, coupled with the absence of standardised models for NbS, makes it difficult for investors seeking large-scale investment opportunities, as each project often necessitates a bespoke approach to planning, implementation and financing. Moreover, the NbS market's nascent stage and its unconsolidated nature hinder the establishment of solid investment cases, complicating valuation and investment attractiveness. A general lack of awareness about the comprehensive benefits of NbS further impedes decisive investment actions. Digital marketplaces such as the **Connecting Nature Enterprise Platform** (of which LGI is an active member) represent a significant innovation in scaling NbS investments by facilitating connections between land managers and NbS providers. These platforms can significantly enhance the visibility of NbS projects, streamline transaction processes and bridge the supply-demand gap.

Tools you can use (see Toolbox for details): Biodiversity Finance Initiative (financing guide), EU Guide to Financing nature-based solutions (financing platform), Conservation Finance Network Toolkit (toolkit)

2.5. NbS project owners

Oversimplified: There's an abundance of initiatives. There's an abundance of demand for these initiatives (by public and private stakeholders), but they have difficulty (1) finding them, and (2) comparing which ones are the best. Both sides need as much support as they can get. It's time to meet!

The market for NbS projects (often referred to as "the offer side", compared to "the demand side" from which previous market incumbents are more traditionally a part of) is in its infancy, characterised by fragmentation and a lack of broad understanding among potential investors and partners. This situation is made worse by difficulties in quantifying the socio-economic and environmental benefits of NbS, which create a very high barrier for project owners in making compelling investment cases. But this also means that the ecosystem of stakeholders involved in NbS is a dynamic network of innovation, ambition and collaborative effort. Startups, NGOs and foundations are central in the implementation of NbS, but they most often lack stable funding, need to navigate complex regulatory environments

and lack impactful partnerships. Many end-up in the “disillusioned zone”, all the while their market is experiencing growth.

There is a recognised need to foster demand across various sectors, which, in turn, will stimulate the supply and scalability of NbS initiatives. The finance sector’s growing recognition of the tangible value in investing in ecosystem services and natural capital is instrumental in kickstarting NbS initiatives. Similarly, the evolving regulatory framework that supports NbS, with initiatives like the French National Adaptation Plan for Climate Change, indicates the willingness for the integration of NbS into national and international environmental strategies. Key to empowering these stakeholders is the facilitation of knowledge exchange and the promotion of innovative practices, and here, clearly, capacity building actions and collaborative networks emerge as critical enablers, creating a shared learning environment and further fostering a united front in the application of NbS.

However, the core challenge remains: accurately assessing and communicating the diverse benefits that NbS offer. These include ecosystem services such as carbon sequestration, biodiversity enhancement and flood mitigation. For project owners, developing robust metrics and valuation methodologies is crucial; tools like the **Natural Capital Protocol** can aid in this effort, enabling a clearer articulation of the economic, social and environmental returns on NbS investments. Additionally, project owners should prioritise engaging in dialogues with potential investors and partners to educate them on the multifaceted benefits of NbS. Highlighting successful case studies and demonstrating the long-term value of NbS projects can help in shifting perceptions and fostering a more supportive investment environment.

From there stems some issues related to NbS business models. A ‘business model’ is a widely used term by enterprises and organisations to explain how different mechanisms of the entity work together to deliver value to a customer and how the entity makes money from this value proposition (Connecting Nature, 2019). Typically, NbS projects are designed to achieve environmental rather than economic objectives, so any revenue generated by these projects is often seen as a collateral benefit rather than a primary objective. In addition, NbS projects are often funded from public and private sources that are not directly related to the revenues generated by the project itself. In some cases, NbS projects can generate income from the sustainable use of natural resources, such as eco-tourism or sustainable production of forest products. However, these revenues are often uncertain and depend on external factors such as economic conditions and consumer preferences. From one of our projects, we have been able to identify the most common business models for NbS projects: Most have developed a standard operating system, in particular through the sale of agricultural products and carbon credits, and they very often combine multiple sources of funding and income streams. It is interesting to note that the life annuity from rental income (ruby-red circle below) is used as a source of income in less than 1% of cases (Finance Earth, 2021).

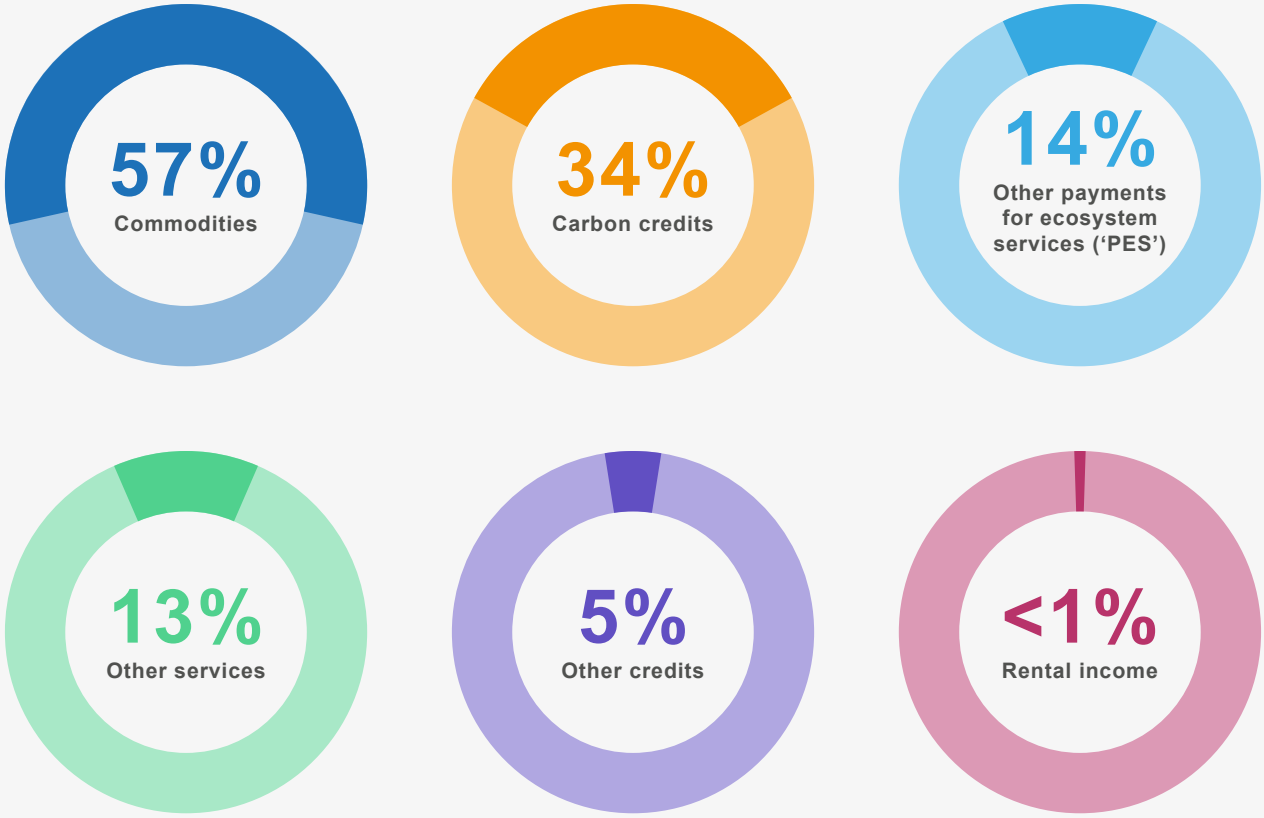


Figure 7: *Most common NbS business models (LGI, 2023)*

Hybrid models, especially those tapping into the Fourth Sector, represent an innovative approach to tackling environmental issues. The Fourth Sector refers to organisations that blend the mission-driven ethos of the public sector, the profit-driven mindset of the private sector and the community-focused values of the non-profit sector. These models offer a new frontier for addressing urban environmental challenges due to their inherent flexibility, adaptability and innovation.

With this in mind, policies can unlock many hurdles and sometimes in unsuspected ways. Supportive policies and regulatory frameworks are significant enablers for NbS projects if project owners actively engage with policy developments at local, national and international levels, advocating for policies that recognise the value of ecosystem services and provide fiscal incentives for NbS. What's more, understanding and leveraging these policies can open new funding avenues and support mechanisms for NbS projects, while working on the need for other stakeholders to adhere to regulatory requirements (while taking advantage of available incentives) can significantly enhance the viability of NbS projects. Project owners should therefore remain informed about regulatory changes and incentives that could impact NbS implementation and financing.

Finally, implementing strategies to cultivate demand among investors and the broader market is essential. Project owners should emphasise the sustainability alignment and long-term benefits of NbS to attract significant investment. Engaging potential investors and partners in the project development process can help in demonstrating the tangible benefits of NbS. However, it is evident that both project owners and investors must adapt their expectations to the existing challenges, such as the difficulty in accurately assessing and communicating the diverse benefits of NbS, which include ecosystem services like carbon sequestration, biodiversity enhancement and flood mitigation.

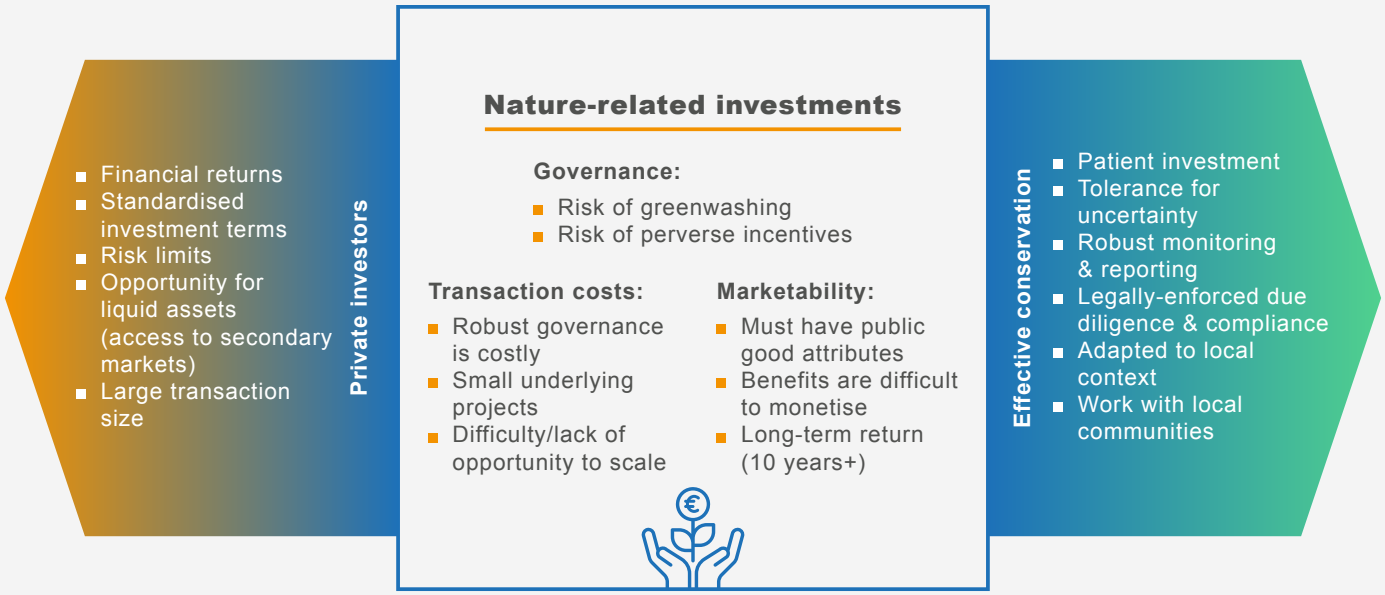


Figure 8: *Antagonisms between conservation and financial investor outcomes (adapted from (Kedward, zu Ermgassen, Ryan-Collins, & Wunder, 2023))*

Innovative financing models such as blended finance, green bonds and environmental impact bonds are mechanisms that can help bridge the gap. Project owners are encouraged to explore these options to leverage public and private funds, reducing investment risks and enhancing project appeal.

Tools you can use (see Toolbox for details): We Value Nature (training resources), Nature Value Explorer (impact assessment tool), NetworkNature (research collaboration platform)

Conclusions, recommendations and looking to the future

It is clear that nature-based solutions stand at the confluence of environmental sustainability, economic viability and social wellbeing. Throughout this report, we have navigated the landscapes of corporates, local governments, the finance sector and project owners, each finding unique value and opportunity within the realm of NbS. For corporates, NbS offer a path to not only meet regulatory benchmarks but to innovate and lead in sustainability. Public bodies, through the prism of NbS, can envision and enact resilient, vibrant urban spaces that cater to the needs of their communities. The finance industry, on recognising the tangible and intangible returns of investing in nature, is poised to be a catalyst for scaling NbS initiatives. Meanwhile, project owners, from startups to NGOs, are the vibrant mosaic of actors bringing NbS to life, showcasing the potential of collective action and innovation.

Specific recommendations can be made based on successful examples and strategic insights drawn from various initiatives and studies: investors need a clearer understanding of the economic, social and environmental returns on NbS investments; governments can introduce and strengthen policies that recognise and incentivise investments in NbS; public funders can take a leading role in initiating NbS projects using blended finance, setting examples for private investors to follow; partnerships among governments, businesses, NGOs and communities can unlock the potential of NbS by pooling resources, sharing knowledge and aligning objectives; a ground-up approach to market studies can provide valuable insights into the specific needs and opportunities within the NbS sector; and successful NbS investment stories can serve as powerful testimonials to attract new investors.

This report is but a starting point for a deeper exploration and implementation of NbS across sectors. The insights, analyses and pragmatic toolbox presented here aim to inspire action, encourage collaboration and spark innovation. Here, LGI had the particular objective to show each stakeholder in the NbS economy, the challenges faced by other stakeholders, hopefully facilitating the creation of a common ground from which all can work, together, to implement NbS.

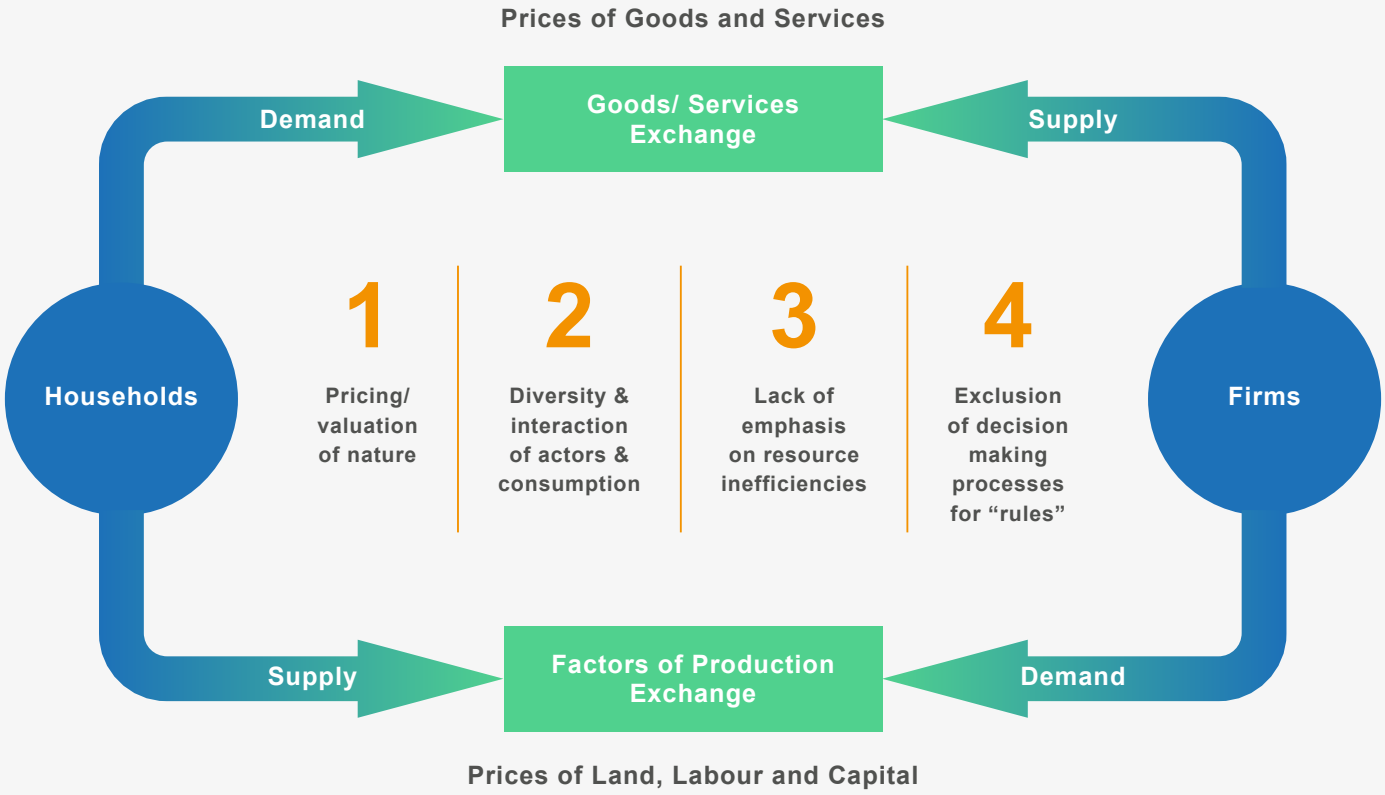
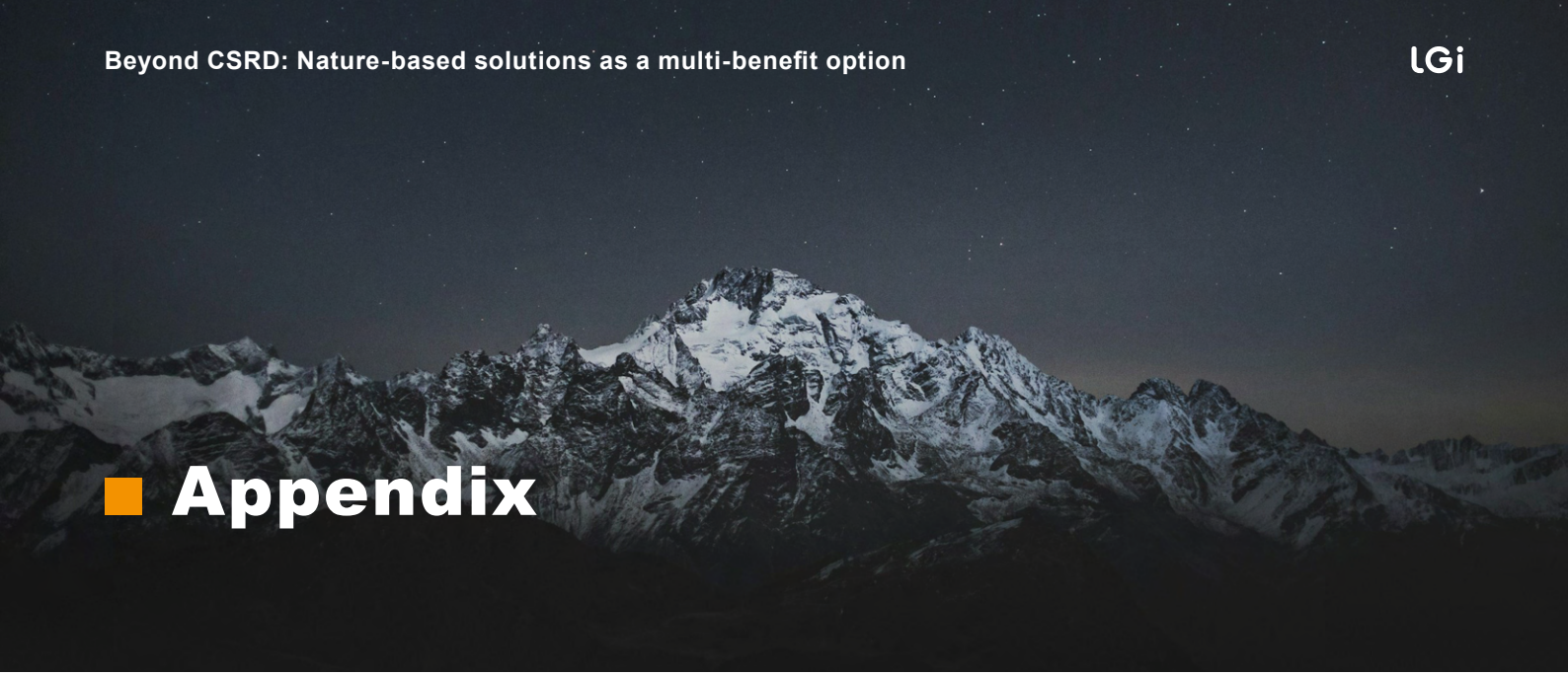


Figure 9: *Limitations in the traditional economic perspective (adapted from Samuelson, 1961)*

The economy is now in need of **systemic re-design**. The concept of "nature-based solutions" is already evolving into a broader integration within our existing economic systems, with work being carried on the topics of "Nature-Based Economy" and "Nature-Positive Economy", including the **GoNaturePositive!** project of which LGI is a proud partner, among many others. This new direction comes from the (now more generally approved) observation that the system itself needs to evolve, to allow nature to redeem the central focus that it should have in our daily lives.



Appendix

Toolbox

The below list of useful tools & resources to implement nature-based solutions has been curated from the various projects that LGI has participated in. It is not meant to be exhaustive; rather, it aims to make visible that which might not be.

Resource	Link	Category	Description	Use this resource to...
Green Unified Scenarios (GUS)	https://gus.earth/	All-in-one NbS Tool	The Green Unified Scenarios is an all-in-one solution for nature-based climate projects.	Utilise effective tools for urban planning, environmental impact assessment and green infrastructure implementation. Monitor, assess and regulate nature-based climate projects.
NbS Catalogue by URBAN GreenUp	https://www.urban-greenup.eu/news--events/news/the-urban-gree-nup-catalogue-of-nature-based-solu-tions-is-now-pub-lic_1.kl	Catalogue	The document provides a detailed description of the green urban interventions implemented by the project.	Foster the global uptake of the URBAN GreenUP approach by providing cities worldwide with robust indicators on how to embrace urban challenges using nature.

Resource	Link	Category	Description	Use this resource to...
Climate, Community & Biodiversity Standards	https://www.climate-standards.org/	Certification Standards	The CCBS standards provide a framework for assessing the environmental and social impacts of NbS projects and for certifying projects that meet these standards.	Evaluate and certify NbS projects to ensure their credibility with funds and investors.
MyDynamic-Forest	https://www.mydynamicforest.de/app/	Evaluation Tool	The tool provides suggestions on UF-NbS design, local conditions and settings.	Gain knowledge on the perceptions of/about UF-NbS by citizens.
i-Tree	https://www.itree-tools.org/	Evaluation Tool	i-Tree is an assessment tool for the services provided by urban trees, such as carbon sequestration, water retention and reduction of air pollution.	Evaluate the benefits of urban trees and design NbS projects based on these benefits.
Natural Capital Protocol	https://capitals-coalition.org/capitals-approach/natural-capital-protocol/	Evaluation Tool	Natural Capital Protocol is a framework for assessing the environmental and social impacts of economic activities on nature and communities.	Evaluate the impacts of economic activities on NbS projects.
Restoration Opportunities Assessment Methodology	https://portals.iucn.org/library/sites/library/files/documents/2014-030.pdf	Evaluation Tool	ROAM is a methodology for assessing ecosystem restoration opportunities, using maps and data on land cover, land degradation and biodiversity.	Evaluate ecosystem restoration opportunities in and design NbS projects to restore ecosystems.
Conservation Finance Network Toolkit	https://www.conservationfinancenetwork.org/collection/conservation-finance-toolkit	Finance Toolkit	The Conservation Finance Toolkit is a resource explaining tools and techniques available to conservation finance practitioners.	Increase the financial resources utilised and expand effective funding and financing strategies.
Natural Capital Planning Tool	https://mainstreaminggreeninfrastructure.com/reports/Oliver%20Holzinger%20Natural%20Capital%20Planing%20Toolkit%20for%20measuring%20net%20gains.pdf	Financial Planning Tool	This tool allows communities to consider the long-term economic impacts of NbS projects and plan their financing accordingly.	Plan long-term financing and assess the economic costs and benefits of NbS projects.

Resource	Link	Category	Description	Use this resource to...
Green Infrastructure Valuation Toolkit	https://www.merseyforest.org.uk/services/gi-val/	Financial Planning Tool	This tool enables communities to plan the financing of NbS projects for green infrastructure, evaluating the costs and economic benefits of different project scenarios.	Plan the financing of NbS projects for green infrastructure and assess the costs and economic benefits of different project scenarios.
Biodiversity Finance Initiative	https://www.biofin.org/finance-solutions	Financing Guide	The tool provides information on biodiversity credits and payments for ecosystem services, as well as concrete examples of projects funded by these mechanisms.	Understand how financial mechanisms (biodiversity credits and payments for ecosystem services) work and how they can be used to finance UF-NbS projects.
Nature Value Explorer	https://www.natuurwaardeverkenner.be/	Impact Assessment Tool	This tool provides a qualitative and quantitative calculation on how ecosystem services are influenced and what socio-economic impact projects can bring.	Assess the impact of projects and ecosystems on human welfare.
EKLIPSE and ThinkNature Task Force on Impact Evaluation	http://www.eklipse-mechanism.eu/apps/Eklipse_data/website/EKLIPSE_Report1-NbS_FINAL_Complete-08022017_LowRes_4Web.pdf	Impact Assessment Tool	An impact evaluation framework to support planning and evaluation of NbS projects.	Measure NbS benefits and effectiveness; note that this has been further developed: https://op.europa.eu/en/publication-detail/-/publication/d7d496b5-ad4e-11eb-9767-01aa75ed71a1.
IUCN Guide to Nature-based Solutions for Urban Areas	https://portals.iucn.org/library/sites/library/files/documents/2020-020-En.pdf	Implementation Guide	This guide provides specific recommendations for cities and local authorities that wish to implement NbS projects.	Understand how to identify NbS projects, mobilise funding, and monitor and evaluate NbS projects.
Natural Infrastructure for Business Platform	https://www.wbcsd.org/actions/?vc=Built+Environment	Information Tool	This platform provides information on the benefits of NbS projects.	Find information on the benefits of NbS projects. This resource can help communities understand how NbS projects can address environmental and social issues while providing economic benefits for businesses and local communities.

Resource	Link	Category	Description	Use this resource to...
Urban Forest Map	https://opentree-map.github.io/	Mapping Tool	Urban Forest Map is an interactive map of urban trees in participating cities, providing information on species, size, age and the benefits of trees.	Map urban trees in their city and design NbS projects based on these trees.
Methodological Guide for Identification and Mapping of NbS	https://grow-greenproject.eu/wp-content/uploads/2018/05/NbS-Climate-Adaptation-Basque-Country.pdf	Methodological Guide	Methodological guide for their identification and mapping.	Help local authorities identify their potential for NbS.
World Bank Database for the Payment for Ecosystem Services	https://www.worldbank.org/en/topic	Monitoring Tool	This database provides information on payment for ecosystem services projects worldwide.	Track trends in NbS project financing worldwide and draw inspiration from successful projects to design NbS projects.
GLOBE Observer	https://observer.globe.gov/	Monitoring Tool	GLOBE Observer is a mobile application that allows citizens to monitor biodiversity, climate and the environment using their smartphones.	Involve citizens in environmental monitoring and collect data for NbS project planning.
Earth Observation for Ecosystem-based Adaptation	https://webassets.eurac.edu/31538/1629982531-climate-risk-assessment-for-ecosystem-based-adaptation-2018.pdf	Monitoring Tool	EO4EBA is a remote sensing monitoring tool for evaluating the effectiveness of NbS projects for climate change adaptation.	Adapt to climate change and make improvements accordingly.
Urban Green Infrastructure Planning Guide by Green Surge	https://www.researchgate.net/publication/319967102_Urban_Green_Infrastructure_Planning_A_Guide_for_Practitioners	Planning Guide	Describes case studies of existing NbS projects with a planning guide for replication.	Replicate NbS projects.

Resource	Link	Category	Description	Use this resource to...
Green Infrastructure Wizard	https://cfpub.epa.gov/wizards/giwiz/	Planning Tool	The Green Infrastructure Wizard is a planning tool that helps decision-makers design NbS projects by providing information on the benefits and costs of different NbS options.	Design NbS projects that maximize benefits and minimise costs.
The PLACARD Toolbox	https://www.placard-network.eu/accessing-sharing-and-improving-information-management/	Planning Tool	The PLACARD toolkit provides tools and examples for climate change adaptation planning and risk management in cities.	Plan NbS projects that consider climate and environmental risks.
ThinkNature Platform	https://climate-adapt.eea.europa.eu/en/knowledge/adaptation-information/research-projects/ThinkNature	Platform	Collaborative platform.	Find examples of NbS on local, regional, EU and international levels.
OPPLA	https://oppla.eu/case-study-finder	Platform	OPPLA is a platform that allows you to find NbS projects from around the world, studies, guidelines and reference reports for NbS.	Find concrete examples of NbS projects in different contexts and draw inspiration from these projects.
Connecting Nature	https://connecting-nature.eu/	Project Platform	Connecting Nature is a platform that brings together a variety of NbS projects.	Find concrete examples of NbS projects in different contexts and draw inspiration from these projects.
NetworkNature	https://networknature.eu/	Research and Innovation Platform	The NetworkNature platform gathers all research and innovations on NbS funded by the EU.	Find examples of NbS projects implemented in other cities and connect with experts and organisations to get advice and funding for new projects.
Spatial Impact Assessment and Classification Tool	https://zenodo.org/records/10255287	Training Tool	The SIAC tool is a GIS-based tool for the assessment and classification of UF-NbS.	Assess the impact of UF-NbS.

Resource	Link	Category	Description	Use this resource to...
Nature-based Solutions Initiative, NbSI	https://www.naturebasedsolutionsinitiative.org/	Technical Tool	This platform provides detailed information on NbS projects, as well as approaches and tools available for planning, designing, implementing and evaluating them.	Find technical tools to support the identification and selection of NbS projects.
We Value Nature	https://wevaluenature.eu/	Training Resource	We Value Nature provides training resources to businesses on adopting nature-based and natural capital approaches.	Raise awareness among local businesses about the importance of NbS and encourage their participation.

Acronyms and glossary of terms

Acronym/Term	Definition
BGI	Blue-Green Infrastructure: Integrative solutions that manage water resources and provide environmental benefits.
Blended Finance	Financial instruments combining concessional public finance with non-concessional private finance and philanthropic funds to stimulate private sector investment.
CSRD	Corporate Sustainability Reporting Directive: A European Union directive requiring large companies to disclose information on their environmental and social impacts, governance and sustainability practices.
Ecosystem Services	Benefits humans derive from ecosystems, which include provisioning, regulating, cultural and supporting services that directly affect people, including ecosystem goods.
Environmental Impact Bonds	Financial tools that allow investors to fund environmental projects with potential financial returns dependent on the achievement of agreed-upon environmental outcomes.
ESG	Environmental, Social and Governance: Criteria used to evaluate the sustainability and ethical impact of an investment in a company or business.
GPP	Green Public Procurement: Procurement process that incorporates environmental considerations.
Green Bonds	Bonds specifically earmarked to be used for climate and environmental projects. These bonds are typically asset-linked and backed by the issuer's balance sheet.
Natural Capital Protocol	A framework designed to help organisations identify, measure and value their direct and indirect impacts and dependencies on natural capital.
NbS	Nature-based solutions: Strategies that use natural processes and ecosystems to address various environmental, social and economic challenges.
SFDR	Sustainable Finance Disclosure Regulation: EU regulation for transparency in sustainable investment.
SPP	Sustainable Public Procurement: Procurement aiming at reduced environmental and societal impact.
TNFD	Taskforce on Nature-related Financial Disclosures: Framework for reporting environmental risks and opportunities.

About the authors

- **Joanne Schanté:** Leading the Sustainable Innovation Strategy team at LGI, Joanne is a recognised driver of initiatives in sustainable innovation and nature-based solutions. Her work focuses on applying innovative approaches to leverage natural processes for sustainable development, underlining her expertise in crafting solutions that align with ecological and societal benefits.
- **Thomas Judes:** As Deputy Head of Innovation Strategy and Senior Consultant at LGI, Thomas specialises in environmental finance and green infrastructure. His role involves advancing innovative strategies that support sustainable economic growth, focusing on integrating environmentally conscious practices into infrastructure projects.
- **Vincent Chauvet:** The CEO of LGI, Vincent Chauvet brings extensive experience in ecological engineering, forestry and biodiversity. His leadership is marked by a strong commitment to integrating sustainability and resilience into public and private strategies.
- **Pierre Cattoire**: A Senior Consultant, Pierre focuses on strategic thinking across sustainability and finance. With a profound commitment to societal and environmental projects, Pierre develops sustainable business models for sustainable innovation, including work with startups, corporates and within collaborative public projects.
- **Multiple AI Agents:** Including but not limited to ChatGPT, Llama, Gemini and others. These AI agents collectively contribute to a variety of projects and discussions related to sustainability, offering insights, analyses and solutions that leverage cutting-edge machine learning technologies and big data analytics.

Contact

We are open to all reactions and comments. Our goal is to engage, assist, co-construct and expand our conversations about sustainability and innovation. Please feel free to reach out to us via email for any inquiries or collaboration opportunities.

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