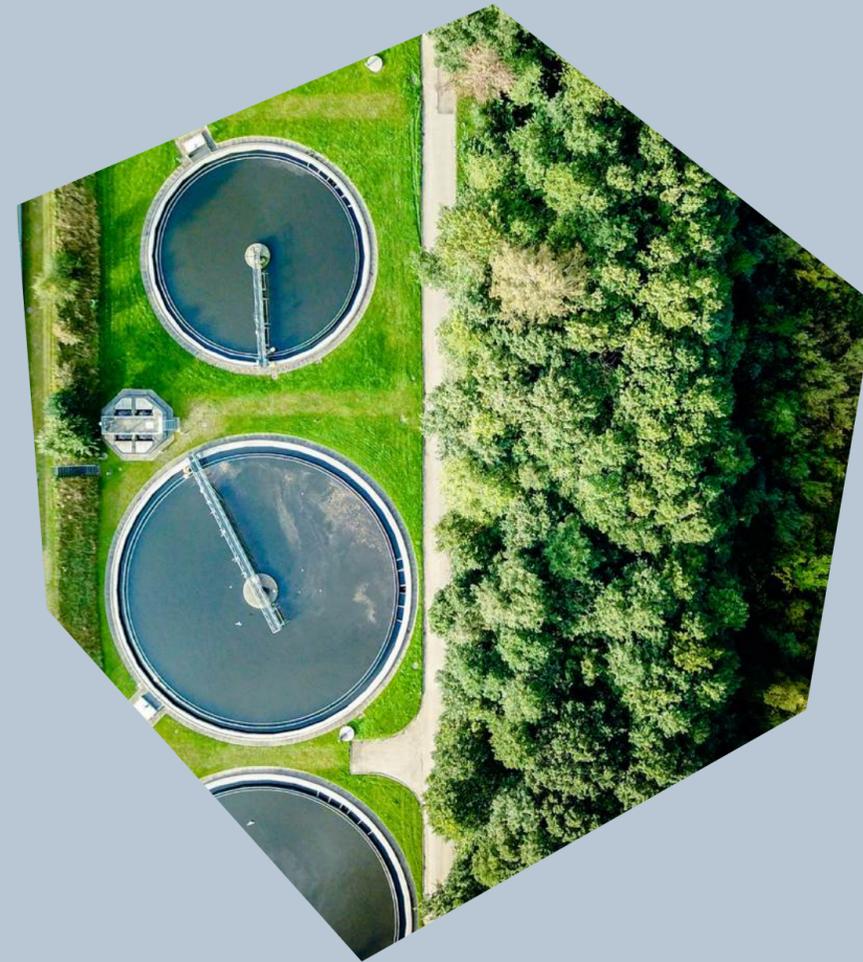


The NbS Blueprint

→ *Building business cases
for Nature-based Solutions*



Foreword

Climate change, nature loss and mounting inequality are deeply intertwined. To achieve the Paris climate goal of limiting global warming to below 1.5°C, we must leverage nature and address biodiversity loss, and doing so requires equity-building partnerships with communities across the planet.

There are solutions that can deliver positive impact for climate, nature and equity simultaneously – Nature-based Solutions (NbS) offer a powerful example. However, despite the strong societal case for action on NbS, progress from the private sector has lagged: while \$5tn of corporate financial flows impact nature negatively every year, only \$35bn of annual investment goes to NbS.

In order to scale up investment and deployment of NbS, companies must see NbS as part of a business solutions toolkit. This view has not yet “gone mainstream”, despite efforts over the years to incentivize NbS across a broad range of applications, including resilience and adaptation, watershed development programs and natural infrastructure.

Leveraging NbS fully requires a broad understanding of achievable benefits that can contribute to a strong business case. The members of WBCSD’s NbS workstream have spent a year exploring how best to build business cases for NbS. The work has drawn considerably on insights and experiences of eight member companies’ NbS implementations, which are presented here as case studies demonstrating how a business can establish an NbS value proposition and communicate it internally and externally.

The result of this collective effort is this NbS Blueprint, which offers companies:

1. a business entry point to NbS connecting the company’s own rationale for action to the need for nature action;
2. a selection of available NbS, categorized by the business challenges that they can address;
3. a structured six-stage approach to build business cases for NbS – including tools and processes for stakeholder engagement, identifying broader business and societal benefits and the fundamental aspects of designing and costing NbS activities.

The NbS Blueprint approach allows users to identify the best applications of the most suitable NbS for their company, and to build out the portfolio of potential benefits. Our experience testing this content with WBCSD members and partners shows there is real appetite for this type of business-driven practical guidance on NbS. Companies are looking to take action that navigates sustainability challenges *and* connects to corporate strategy: the Blueprint enables sustainability teams to demonstrate the value of nature and NbS to functions across the business.

Any company can use the Blueprint to build a business case for NbS; it provides an approach to follow and includes pointers to a number of additional tools, guidance, and support available from other organizations. It can be used by companies engaging with NbS for the first time, as well as those that already have several projects up and running.

The Blueprint case studies demonstrate how eight companies built investable business cases to use NbS. We invite readers to follow their example, using the Blueprint and Solutions Map to capture the fullest range of NbS benefits, build strong value propositions for accelerating investment, and deliver broad positive impacts, both commercially and for climate, nature and equity.



Dominic Waughray

Executive Vice President,
Imperatives

WBCSD



Diane Holdorf

Executive Vice President,
Pathways

WBCSD

Executive Summary

Triple crisis – climate change, nature loss and rising inequality – demands action from companies

Global average temperatures last year reached 1.45°C above pre-industrial baselines, fuelling extreme weather and other events and causing many billions of dollars in economic losses in 2023.¹ Unprecedented rates of nature loss are already impacting business, as more than half of global GDP is moderately or highly dependent on nature.² Rising inequality is eroding trust in our political and economic systems and constraining economic growth.³ As pressure continues to mount on companies, pushing them to take action on climate change, nature loss and inequality, nature action offers an important solution set: more than 1/3 of all climate mitigation actions that must be taken to meet the Paris Agreement's 1.5°C target can be provided by Nature-based Solutions.⁴ At present, however, US\$5tn per year of private finance flows have a direct negative impact on nature.⁵

Nature-based Solutions offer climate, nature and equity action opportunities as well as clear value to businesses

IPCC AR6 puts Nature-based Solutions (NbS) among the top five most effective approaches for mitigating carbon emissions by 2030;⁶ NbS is embedded in the [UN Global Biodiversity Framework](#),⁷ and the evidence base for NbS

driving greater equity is growing.⁸ The broader societal case for supporting NbS is therefore strong. Despite this, only \$35bn/yr USD of private sector investment goes to NbS.

For companies looking to use NbS, the business case remains difficult to articulate and investment remains inadequate. There are business applications of NbS that are being missed, for instance: securing water access and water quality; improving soil health and agricultural yields; reducing risk from extreme weather events; and, value chain decarbonization. When applied to business challenges, well-designed NbS can deliver strategic value to companies along with contributions to net-zero, nature-positive and equity-positive outcomes.

NbS value propositions require companies to identify benefits outside traditional business cases

Companies need a business case to select, resource and implement NbS in place of a more traditional approach; this involves capturing the full range of value that any given NbS activity offers. The NbS Blueprint offers a six-stage process for building business cases so that users can make like-for-like comparisons with existing or standard solutions, maximizing overall value to the company and therefore making well-informed decisions about which option to use.

The stages are:

1. Identify key business challenges and opportunities
2. Explore NbS relevant to the company's challenges and opportunities
3. Collect information on overall impacts and benefits to the business from the chosen NbS
4. Identify the design and implementation process required
5. Estimate costs of NbS activities
6. Compare NbS options to other solutions across full range of benefits and costs

With this approach, companies can maximize NbS value and deliver for climate, nature and equity.

Nature-based Solutions have a significant role to play in achieving Vision 2050, a world in which more than 9 billion people live well and within planetary boundaries by mid-century. NbS can also help companies to transform themselves. Recognizing the true impact of NbS – both on societal challenges and creating value for companies – is a crucial step in realizing NbS's full potential as a powerful solution set to deliver for climate, nature, equity and business ambitions at scale.

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01. Introduction

01. Introduction

Background and context

WBCSD's Vision 2050 – a world in which more than 9 billion people live well and within planetary boundaries by mid-century – is still within reach. However, societies have yet to take action at the scale necessary to address the three major and interconnected challenges facing the global community: the climate crisis, nature loss, and mounting inequality. A net-zero, nature-positive and equitable future will only come about if business leaders drive transformative change in their strategies, operations and offerings.

Nature underpins the global economy. Unprecedented rates of nature loss are already impacting business, as more than half of global GDP is moderately or highly dependent on nature. Importantly, every industry has some level of dependency on nature.⁹ Biodiversity loss and ecosystem collapse is now considered the third-highest long-term global risk by severity after extreme weather and climate change¹⁰ Current species loss is estimated to cost the global economy USD479bn per annum.¹¹

Recognizing these risks, several international bodies and national jurisdictions are pushing for increased corporate action to address biodiversity and nature loss. At the heart of the Kunming-Montreal Global Biodiversity Framework (GBF), for example, is a mission for global no net-loss of nature by 2030, moving to nature-positive by

2050. GBF Target 15 specifically calls on governments to enable and encourage businesses to assess and report on their dependencies and impacts on biodiversity. Strong regional regulatory push has also emerged, for instance in the EU's Corporate Sustainability Reporting Directive (CSRD) which places new nature-related disclosure obligations on many companies.

Within this rapidly evolving space, several industry-driven initiatives are providing guidance and voluntary standards to accelerate nature-positive corporate action. These include the Science-based Targets Network (SBTN) and the Taskforce on Nature-related Financial Disclosures (TNFD). Building on these international initiatives, WBCSD has created a series of **Roadmaps to Nature Positive**, offering step-by-step guidance to businesses at all nature maturity levels to advance their nature action journeys, focusing on where dependencies, impacts, risks and opportunities (DIROs) are most material. WBCSD has also collaborated with the World Economic Forum and Business for Nature, to provide a set of **Sector Action Overviews** that outline the main dependencies, impacts and priority actions for 12 high-impact sectors. The aim of all these initiatives is to enable companies to take credible, impactful action to help halt and reverse nature loss and contribute to an equitable, nature-positive economy.

The climate, nature and equity crises are intertwined, but there are solution sets that address all three challenges simultaneously. Nature-based Solutions (NbS) use the core aspects of nature action to deliver positive impact and solutions for Nature, Climate, and Equity.^{12,13} However, current use of (and investment in) NbS is limited; UNEP reports that annual private sector financing of NbS activities is only \$35bn USD, compared to \$5tn USD per year of private finance flows with a direct negative impact on nature.¹⁴

Companies are often unaware of their dependencies on nature and few instinctively consider the role that natural solutions can play in addressing business challenges. This Blueprint and its supporting material helps companies to identify and build the case for using NbS to address both business and societal challenges.

Roadmaps to Nature Positive: The Roadmaps to Nature Positive: Foundations serves as a basis for all business to understand and play a part in halting and reversing nature loss by 2030. Following the ACT-D high level actions on nature, the Foundations cut through the complexity of the nature agenda, providing companies with detailed how-to guidance, and identifying priority action areas and transformation levers to accelerate nature action.

Definition and role of Nature-based Solutions

The UN Environment Assembly defines Nature-based Solutions as:

... actions to protect, conserve, restore, sustainably use and manage natural or modified terrestrial, freshwater, coastal and marine ecosystems, which address social, economic and environmental challenges effectively and adaptively, while simultaneously providing human well-being, ecosystem services and resilience and biodiversity benefits.¹⁵

The fifth Session of the United Nations Environment Assembly adopted this multilaterally agreed-upon definition of NbS in 2022, recognizing the important role these solutions play in the global response to climate change, biodiversity loss and the resulting social and economic consequences. IUCN's Global Standard for NbS (2020)¹⁶ provides more detail, listing the societal challenges that NbS can address as: climate change mitigation and adaptation; disaster risk reduction; economic and social development; human health; food security; water security, and environmental degradation and biodiversity loss.

How do NbS address business challenges?

Societal challenges are often also business challenges. For example, heat waves, floods and scarcity of natural input materials can all cause business interruptions. And few businesses can operate without access to clean water as it is often an essential input – at a minimum it is a pre-requisite for a healthy work force, which is a key determinant of business performance.¹⁷ Well-designed and -delivered NbS can manage flood risk and improve water filtration, reducing business interruptions and improving performance at the same time.

NbS can offer companies a wide range of such benefits, including:

1. Reducing **supply chain risk** and strengthening supplier and regional stakeholder engagement (e.g. using regenerative agriculture to improve consistency of agricultural yield)
2. Reducing **risk exposure in own operations** (e.g. improving suppliers' plantation management to reduce disruption of supply for key raw materials)
3. Reducing business **impact on nature** and biodiversity (e.g. delivering toward company nature targets by using wetland restoration in place of engineered solutions)
4. Improving **business performance** (e.g. implementing regenerative agriculture on suppliers' farms to improve the quality of raw materials)

5. Supporting **regulatory compliance** and protecting license to operate (e.g. using wetland restoration to meet compliance requirements for site closure and deliver benefits to local communities)
6. Controlling and **reducing CAPEX and OPEX** for projects (e.g. using a self-maintaining ecosystem in place of a landscaped area to reducing maintenance costs)
7. Delivering direct and indirect **health benefits** to communities and employees along value chains (e.g. using wetland restoration to increase access to cleaner water)
8. **Decarbonizing** value chains (e.g. improving agricultural practices to increase carbon sequestration), and
9. Reinforcing recruitment, **employee engagement** and external brand recognition (e.g. restoring natural ecosystems to improve access to green spaces).

Common examples of business application of NbS include: climate mitigation and value chain decarbonization;¹⁸ treatment of industrial processes and waste water; securing water access and water quality; remediation of contaminated land; reducing risk of urban heat islands; reducing risk of wind and storm surge exposure; and, improving soil health and agricultural yields. When delivered through well-designed and effectively-implemented NbS, all of the above can help deliver strategic business performance alongside contributions to nature-positive, net-zero and equity-positive outcomes.

Building business cases for Nature-based Solutions

The societal case for NbS is strong: the IPCC AR6 puts Nature-based Solutions among the top five most effective approaches for mitigating carbon emissions by 2030;¹⁹ NbS is embedded in the UN Global Biodiversity Framework;²⁰ and, the evidence base for NbS driving greater equity is growing (as detailed by work from UNEP, IUCN and ILO).²¹

However, for companies looking to use NbS, the business case remains difficult to articulate and investment remains inadequate. Companies, advisors and experts have little experience in identifying and translating the value that specific NbS offer to companies, and examples of delivery are scarce. Combining the capacity of NbS to address both business and societal challenges offers companies a way of strengthening the business case for investments into NbS.

NbS has been shown to deliver effective responses to critical societal issues. The purpose of this NbS Blueprint is to demonstrate how NbS, in addition to offering broad societal benefits, can also be applied to address business priorities, such as reducing supply chain risks, controlling costs, and increasing yields. The NbS Blueprint will help companies to apply NbS to address business challenges, while also taking credible, impactful action on Climate, Nature, and Equity issues.



02. The NbS *Blueprint*

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Objective of the NbS Blueprint

Business cases are crucial to mainstream NbS as a viable (and, in time, preferred) solution-set for key business challenges. The NbS Blueprint is designed to guide companies through the process of preparing for, and then building initial business cases for using NbS that address their business challenges and opportunities.

The NbS Blueprint helps companies to understand the types of questions that need to be answered early on, shares examples of how NbS add value to companies by addressing business and sustainability issues (demonstrated through the accompanying case studies), and demonstrates how to augment the development of the business case to capture a wider range of benefits (and costs).

We have created a complementary tool, the **Nature-based Solutions Map**, that helps companies to navigate a range of potential NbS, categorized by the business challenges they help to address.

Following the guidance in this Blueprint and the Solutions Map will enable the reader to:

- identify NbS capable of addressing existing/developing business challenges and opportunities;
- outline key sources of business value that a chosen NbS can offer the company;
- start compiling the costs associated with implementing an appropriate NbS, and
- compare the available solutions (traditional and NbS) and their overall outcomes.



Focus of the NbS Blueprint

The NbS Blueprint is set up to demonstrate the range of benefits that Nature-based Solutions offer to companies, and to provide guidance on the building of business cases to support the selection of NbS approaches. The following four factors have influenced the development of the Blueprint:

Showcasing the range of potential benefits that NbS can deliver beyond climate mitigation

The existence of a carbon price and market enables companies to quantify carbon benefits from NbS, and guidance already exists to aid companies in the use of NbS for climate mitigation.²² The selection of case studies in the Blueprint demonstrates a range of business and sustainability benefits beyond climate mitigation alone that can be achieved through the deployment of NbS. The supporting [Nature-based Solutions Map](#) provides companies with a menu of the various NbS that could be deployed, and the business challenges that each can help address.

Focus on companies looking to use NbS within their value chains

The primary audience for this guidance is companies who are interested in the societal and potential business benefits of NbS, but are not able to resource and deliver NbS activities without a stronger business case. At this stage, the Blueprint is designed for NbS within companies' operations and value chains, where NbS offers a specific set of business benefits. It does not cover beyond value chain action using NbS; for

more guidance on this topic, we refer to the Natural Climate Solutions Alliance.²³ It is also not intended for project developers or NbS practitioners looking to build investment cases based on societal benefits from NbS activities; on this topic, we recommend referring to the work of organizations such as The Nature Conservancy.²⁴

Real-economy perspective on NbS

The NbS Blueprint prioritizes its guidance for the real economy rather than financial institutions; while there are important aspects of NbS business cases that apply to both audiences, there are also several key differences (e.g. real economy companies can derive direct benefit from ecosystem services, whereas financial institutions may only infer benefits from the revenue they can generate). For the investor perspective on NbS, we recommend referring to the work of organizations such as UNEP-FI²⁵ and CPIC.²⁶

Shifting how companies view and value NbS

This guidance is designed to highlight how Nature-based Solutions deliver business benefits while impacting positively on societal challenges (such as climate change, nature loss and inequality). In doing so, the Blueprint aims to shift how NbS activities are viewed and valued by companies. This guidance is designed to show companies how they can adapt their existing business case approach to capture a wider range of benefits, and will offer the most support where companies are still early in the process of exploring NbS opportunities. As a result, it is not intended to provide detailed information on costs and benefits, which companies will need to develop for each NbS considered.

The NbS Blueprint case studies

This guidance draws insights and examples from eight case studies, shown in Table 1. Each case study illustrates different ways companies have identified the value or benefits provided by NbS approaches and then translated these into a rationale for internal decision-making and financing.

The case studies profile NbS approaches in projects across sectors and geographies, solving a range of business and sustainability challenges through their application. They show that NbS can be explored by companies that are just beginning to think about how to address nature impacts and dependencies, as well as by those that have well-established nature-action strategies. Each example shows how companies developed a business case to justify going forward with an NbS approach over more traditional solutions.

Additional information on each of the NbS Blueprint case studies can be found on page 36 to 51 of this document.

Table 1: List of NbS case studies from WBCSD member companies

1 *Arcadis*

Coastal ecosystems restoration in the Netherlands (reduced nature impacts)

The Marker Wadden project increased biodiversity significantly in a manmade freshwater lake by creating artificial island habitats; it also provided coastal protection to nearby swamplands and established a dedicated ecosystem research area.

2 *Bayer*

Sustainable agriculture in Brazil (increased productivity and profitability)

The PRO Carbono program was established in collaboration with farmers to support their transition to more sustainable land management practices in line with regenerative agriculture. Field trials prior to the program showed improved local ecosystem services and soil health alongside increased farm productivity, profitability and reduced carbon emissions.

3 *Dow*

Wetland restoration in USA (reduced OPEX)

Dow used wetland restoration to close an ash pond with legacy site issues, resulting in a 9-hectare NbS that reduced maintenance costs, benefitted local flood management, improved water and air quality and reduced impact on nature.

4 *Givaudan*

Regenerative Agriculture in Brazil (mitigated supply chain risk and improved quality)

The GUARABEST program uses regenerative agriculture practices to increase supply chain resilience and improve the quality of guarana produced, while benefiting farmers. This program has evolved to deliver against Givaudan's environmental and responsible sourcing commitments as well.

5 *Godrej*

Coastal ecosystems restoration in the Netherlands (reduced nature impacts)

Godrej and its partners designed the IWDP to benefit the local ecosystem through a combination of wetland restoration and improved agricultural practices on nearby farms. The company sought to reduce its impact on nature while managing the risk of water stress at a nearby Godrej facility.

6 *GSK*

Watershed replenishment in India (mitigated water risk and improved agricultural yields)

GSK's local partner is using ecosystem-based water management and sustainable agricultural practices to improve local water storage potential, reducing the company's water risk while delivering positive impacts on nearby communities' health and livelihoods (e.g. through cleaner water and improved agricultural yields).

7 *INGKA*

Wild gardens for local biodiversity in Romania (reduced OPEX)

INGKA piloted using local ecosystem restoration in place of traditional landscaping at a company site in Timisoara, reducing both nature impacts and maintenance costs while also delivering benefits to employees and customers.

8 *Reckitt*

Sustainable cultivation of rubber in Thailand (improved supply chain resilience)

Reckitt is working with local stakeholders and expert partners to improve rubber cultivation practices, using NbS to protect and restore nature while also improving supply chain resilience, farmer livelihoods, and TNFD disclosure.

03. Building a business case for NbS

NbS can offer a wide range of benefits over alternative approaches, while still addressing the same business challenges and/or opportunities. Using the NbS Blueprint will help companies to move beyond defining NbS benefits in terms of societal value alone, by first identifying a clear commercial justification for the consideration of NbS. The guidance is drawn from the lessons learnt from the Blueprint case studies.

Any departure from business as usual will normally demand that a business case be built for the new direction. This section of the Blueprint guides companies through building a robust and compelling business case that will help a commercial audience understand why an NbS deployment is being considered over a more traditional business-as-usual solution. It also outlines

how companies can calculate what the likely costs and benefits of the deployment will be.

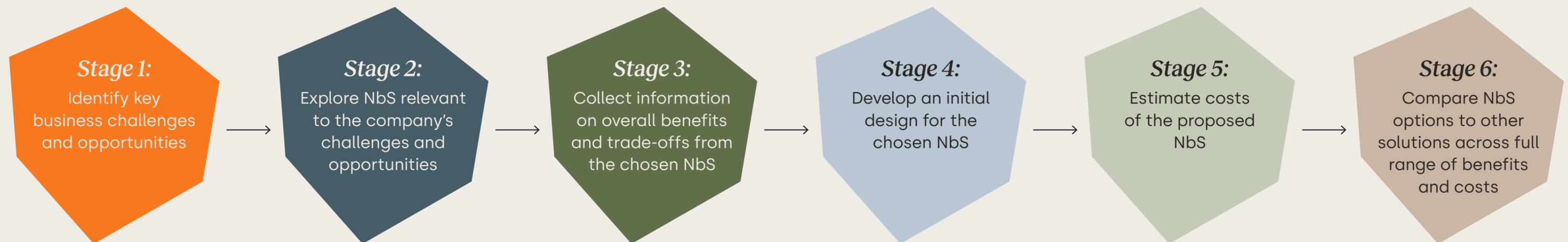
The NbS Blueprint proposes six stages for building NbS business cases, augmenting common steps in the standard business case process with NbS-appropriate tools and approaches derived from the case studies and available guidance on this topic. The stages are as follows:

1. Identify key business challenges and opportunities
2. Explore NbS relevant to the company's challenges and opportunities
3. Collect information on overall benefits and trade-offs from the chosen NbS

4. Develop an initial design for the chosen NbS
5. Estimate costs of the proposed NbS
6. Compare NbS options to other solutions across full range of benefits and costs

This process is designed to navigate the user from identifying challenges and opportunities (before NbS are even considered), through to comparing the relevant NbS activities with the business-as-usual options available.

Importantly, these six stages focus the initial business case primarily in terms of what the business already wants or needs to do, reducing internal resistance to using a new solution/approach.



Stage 1: Identify key business challenges and opportunities

The first stage in building a strong NbS business case is to aggregate the information and insights on current challenges and opportunities from already-existing assessments of direct operations and supply/value chains. Some of the typical challenges and opportunities identified in the Blueprint case studies are shown in Figure 1.

Why do this?

The objective of this stage is to ensure that companies are selecting Nature-based Solutions that address the business' challenges and opportunities.

Blueprint users complete this stage by using existing or new assessments of their own operations and value chains to build a comprehensive list of current and developing business challenges and opportunities.

Figure 1: Synthesis of business challenges and opportunities addressed by NbS in the Blueprint case studies



Risk management & mitigation:

- Investor pressure
- Supply chain resilience
- Regulatory requirements
- Reputation risk

Business performance:

- Profitability
- Client demands and expectation
- Cost control and reduction

Strategic priorities & ESG:

- Climate/Nature/Equity commitments
- Corporate citizenship
- Regulatory requirements

Please note that the definition of drivers might differ sector by sector.

Companies already undertake assessments of their own operations and supply/value chains for a wide range of reasons – risk management, carbon emissions accounting, nature impacts and dependencies, or to gather other important information about the business and its operations.

While each of the above analyses will provide some useful data for identifying opportunities to deploy NbS, the most relevant information is likely to come from a nature materiality assessment. This type of analysis is strongly encouraged, as it will ensure that the NbS business case recognizes the company's dependencies and impacts on nature and ecosystems as well as nature-related risks and opportunities from the outset ("DIROs" in TNFD terminology).

At a minimum, all companies should review the reference information for their sector and/or sub-industry available from the ENCORE tool.²⁷ This will provide indicative information on sector-relevant nature dependencies and impacts, helping companies to consider at a high level where their operations and value chains interface with natural ecosystems – and therefore where NbS can offer the most value.

To collect more granular information, companies should undertake a detailed materiality assessment, following the guidance laid out in Stage 1 of [WBCSD's Roadmaps to Nature Positive](#), which draws on existing frameworks such as TNFD and SBTN. For instance, after completing the initial scoping element of the TNFD "LEAP" approach,²⁸ companies will already have enough preliminary data to start identifying opportunities to use NbS; completing the subsequent "Locate" step will offer a much more detailed, useful dataset for building the case for any relevant NbS activities.

With or without a nature materiality assessment, companies can use/add information from:

- risk assessments (including existing and expected future issues) to incorporate physical and transition risks;
- strategic priorities for the company, including but not limited to sustainability priorities;
- carbon emissions accounting to include emissions hotspots and climate action priorities; and
- additional analyses of assets and operations, particularly those offering integrated or holistic accounting of different resources and/or impacts (such as the Capitals Coalition approach).²⁹

In order to identify where best to apply NbS, companies can combine the results of these different assessments to build a map of business challenges and opportunities linked to nature dependencies and impacts across their operations and value chains. Teams should then use this information to create a new dataset organised by two factors:

- the type of business challenge/opportunity, and
- the region/biome where each is located.

Once this dataset is finalised, teams should flag the challenges/opportunities that are already recognised as priorities for the company, and also the geographical regions where multiple challenges and/or opportunities are located.



Figure 2: Example datasets from Blueprint case studies showing priority business challenges/opportunities and biomes/regions

<i>Case Study: Godrej</i>	
<i>Business challenge/opportunity</i>	<i>Biome/location</i>
Manage water stress on facility	Wetland, India
Meet targets of Integrated Watershed Development Program	Wetland/agricultural land, India
Improve soil health in neighbouring agricultural areas	Wetland/agricultural land, India
Improve economic outcomes for local communities	Wetland/agricultural land, India
Leverage experience from philanthropic NbS work to deliver positive impact for Godrej	Wetland/agricultural land, India

<i>Case Study: Bayer</i>	
<i>Business challenge/opportunity</i>	<i>Biome/location</i>
Mitigate supply chain risk	Agricultural land, Brazil
Improve farm productivity and reduce yield variability	Agricultural land, Brazil
Improve soil quality and reduce impact of chemical crop protection	Agricultural land, Brazil
Reduce soil erosion from wind and water	Agricultural land, Brazil
Improve farm profitability and farmer livelihoods	Agricultural land, Brazil
Reduce value chain GHG emissions	Agricultural land, Brazil
Improve & broaden value chain engagement	Agricultural land, Brazil
Improve local water and air quality	Agricultural landscape, Brazil
Improve habitat for local biodiversity	Agricultural land, Brazil

Stage 2: Explore NbS relevant to the company's challenges and opportunities

Building on Stage 1's dataset of the company's priorities and biomes, Stage 2 identifies the NbS activities that address the company's challenges/opportunities in the appropriate biomes.

Why do this?

The objective of this stage is to enable companies to focus on the NbS that are most relevant to their existing challenges and opportunities, in the relevant locations.

Blueprint users complete this stage by using the outputs of Stage 1 and the "Nature-based Solutions Map" to identify the NbS activity/activities best-suited to add value to the company by addressing its identified challenges and/or opportunities.

The "[Nature-based Solutions Map](#)" linked to this guidance can help companies with this stage of building the business case for NbS. Using a similar structure to that shown in Figure 3, the Solutions Map arranges NbS activities by the business challenges they can address and the biomes where they can be applied. This enables companies to generate an initial set of NbS that they can consider against the challenges and opportunities identified in Stage 1.

Figure 3 depicts how the dataset from Stage 1 can be applied to the Nature-based Solutions Map, using the Blueprint case studies from Figure 2 as examples.

WBCSD's Nature-based Solutions Map can be used in conjunction with the CEO Water Mandate's [NbS Benefits Explorer](#), which provides additional detailed information on the ecosystem processes and benefits involved in a broad range of NbS activities.



Figure 3: Map of business challenges/opportunities and biomes/regions, with two Blueprint case studies identified

<i>Example business challenges/opportunities</i>		<i>Biomes</i>							
		Forests & woodland	Savannas, grasslands & deserts	Intensive land use systems	Urban & industrial	Rivers & lakes	Wetlands	Coastal	Open ocean
Core business	New & improved raw materials, products and services		Regen. ag. (Bayer)						
	Cost reduction								
	Increased asset value								
	Resilience of operations and supply chain		Regen. ag. (Bayer)						
	Regulatory compliance								
	Social licence to operate and meeting consumer expectations								
	Increase brand value and equity								
	Increase circularity								
Climate	Emissions avoidance/reduction		Regen. ag. (Bayer)						
	Emissions removals		Regen. ag. (Bayer)						
	Climate adaptation								
Nature (including biodiversity)	Avoid/reduce nature impacts and/or dependencies								
	Restore/regenerate natural ecosystems								
Water	Flood management								
	Managing water stress						Wetland restoration (Godrej)		
	Water treatment						Wetland restoration (Godrej)		
Equity (including social)	Employee engagement								
	Improving supplier livelihoods								
	Economic development for local communities						Wetland restoration (Godrej)		
	Human health & well-being						Wetland restoration (Godrej)		

Building a business case for NbS

→ Stage 3: Collect information on overall benefits and trade-offs from the chosen NbS

Stage 3: Collect information on overall benefits and trade-offs from the chosen NbS

Once one or more suitable NbS have been identified, the next stage is to map out the potential benefits for all stakeholders (including the company), expanding the scope to consider factors that are often overlooked in a traditional business case process.

Why do this?

The objective of this stage is to ensure that companies are capturing all the relevant impacts of the NbS, including benefits and drawbacks to the business, relevant landscapes and stakeholders.

Blueprint users complete this stage by working with stakeholders and using tools such as the Solutions Map, landscape-level analysis and forecasting to build a portfolio of benefits and trade-offs for the solutions being considered, both NbS and traditional.

This stage contains three elements:

3.1: Establish full range of benefits

3.2: Identify full range of trade-offs

3.3: Evaluate benefits and trade-offs

The success and continuity in the NbS activity depends on maximising positive outcomes while minimising negative ones. All NbS activities should do no harm to climate, nature, or people as a minimum – a crucial part of delivering NbS is ensuring that they do not compromise one or more fundamental sustainability priorities in order to deliver other benefits.

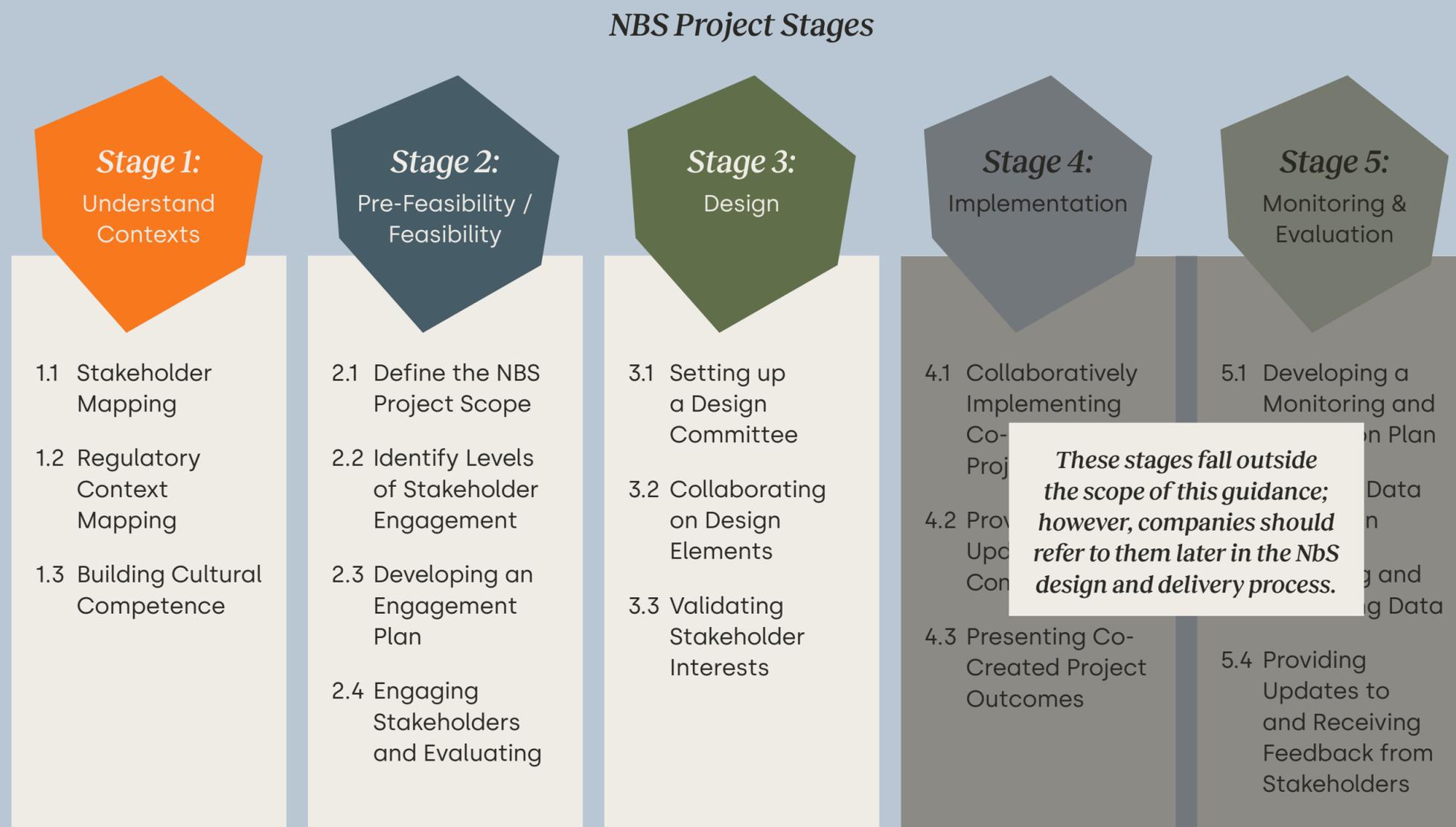


Spotlight: stakeholder engagement

CEO Water Mandate's *Stakeholder Engagement Guide For Nature-Based Solutions*³⁰ notes that "effective stakeholder engagement is paramount to the long-term success of any NBS project", and provides a framework for involving stakeholders throughout the process of delivering an NbS. The relevant sections are shown in Figure 4.

Each of the activities listed in Figure 4 offers important inputs to the NbS business case in development. Mapping stakeholders and regulatory requirements (as well as building cultural understanding of the local context) will enable companies to connect with the right stakeholders and delivery partners, including key groups such as Indigenous Peoples and Local Communities. Working with local partners to define the scope of the NbS, appropriate levels of stakeholder engagement, and developing an engagement plan, will create and prepare a community of stakeholders around the NbS to best enable its success, and ensure that fundamental stakeholder safeguards (such as provision of Free, Prior and Informed Consent³¹) are maintained.

Figure 4: Stages of the NbS stakeholder engagement framework (adapted from CEO Water Mandate, 2022)



To start mapping stakeholders, the *Stakeholder Engagement Guide For Nature-Based Solutions* suggests the “Four As” approach.³² In a table, list the different Actors (who are impacted by or dependent upon aspects of the NbS), their Agendas, the Arena in which they operate and the Alliances they influence or are influenced by. Companies can then add the “levels of stakeholder engagement” to this map. Figure 5 shows an illustrative example of such a combined map; it is based on a theoretical case of a copper mining company looking to use forest and/or river restoration for water quality and quantity management in New South Wales, Australia.

Completing an initial stakeholder map will give companies a first outline of key stakeholders and potential partners to engage with throughout designing and delivering the NbS.

Figure 5: Combined stakeholder map from theoretical example of Copper Eagle Mining (CEO Water Mandate, 2022)

<i>Actor (name, function)</i>	<i>Agenda (mandate/mission, strategic objectives)</i>	<i>Arena (field of action, outreach)</i>	<i>Alliances (relations with other actors)</i>	<i>Engagement</i>
MDBA	An independent, expertise-based statutory agency that was established by the Water Act; responsible for coordinating how the basin's water resources are managed through the Basin Plan.	Administer the Basin Plan; measure/monitor/ record the quality and quantity of the basin's water resources; support and conduct research about the basin's water resources and ecosystems.	MLDRIN, NBAN, state governments, Australian governments, WaterNSW, NSW Planning, Industry, and Environment Department – Water	Collaborate
NSW Planning, Industry, and Environment Department – Water	State agency responsible for water security and managing NSW water resources, including surface and groundwater management, and ensuring equitable sharing of water resources.	Administer Water Management Act 2000; assess, manage and review major developments in NSW; develop allocations for licensed water users; track water extractions.	WaterNSW, NSW NRAR, MDBA	Involved
NBAN	Non-profit that represents, advocates for and empowers First Nations in the northern Murray-Darling Basin in water management.	Form strategic advice on policy development and project execution; advocate for and research cultural flows.	MDBA, NSW Government, MLDRIN	Empowered
Murray-Darling Wetlands Working Group	Focused on restoring and managing Murray-Darling wetlands by linking community, science, business and government.	Help implement wetland management plans and activities on private and public property; manage environmental water delivery; train community groups and Aboriginal communities.	NSW Planning, Industry, and Environment Department – Water	Empowered

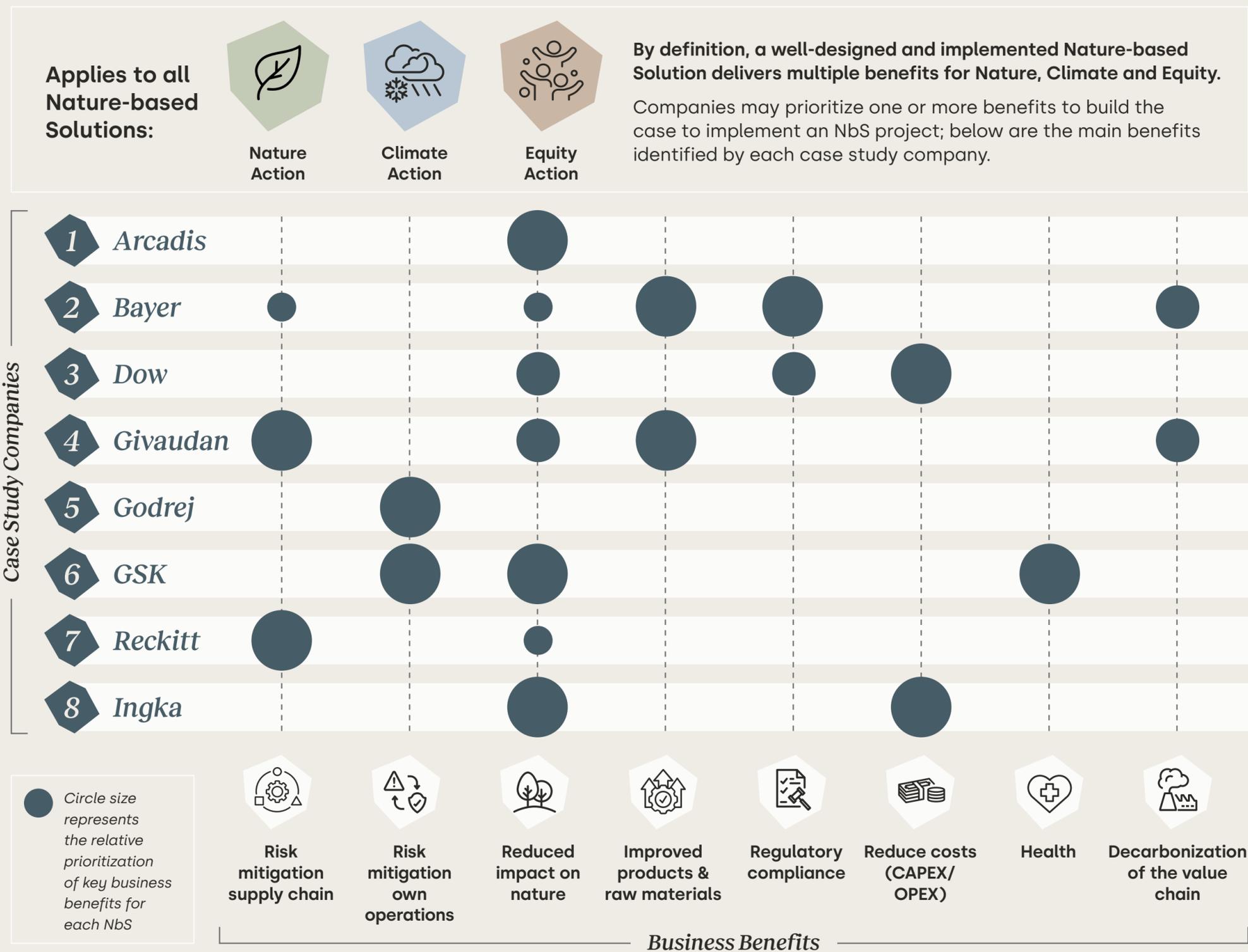
3.1 Establish full range of benefits

Stages 1 and 2 of the Blueprint have shown how NbS can address one or more specific business challenges and/or opportunities. **However, companies must also broaden their benefits "scope" to look for additional value arising from the NbS activity.** Expanding the scope will help identify outcomes that are of interest to the business but not necessarily part of the priority challenges/opportunities listed in Stage 1.

The Blueprint case studies demonstrate how broadening the benefits scope can incorporate a wide range of benefits, beyond addressing the initially-identified business challenge/opportunity. Figure 6 provides an overview of how each case study company identified one or two primary business benefits, as well as the potential of the NbS to generate additional value.

By broadening the benefits "scope", companies can build an initial "portfolio" of project benefits for each solution they are considering, capturing the full range of positive impacts that the solution can deliver. To start, companies can draw from the indicative list of 20 different benefits provided in the Solutions Map, shown in Table 2 (page 21).

Figure 6: Range of business benefits identified in NbS Blueprint case studies



As a next step in building out the benefits portfolio, companies should then include:

- benefits identified by the key partners and stakeholders in the early-stage stakeholder engagement process;
- key benefits from the landscape around the NbS;
 - benefits will arise from (or occur) well beyond the physical boundaries of the activity, but these can often be identified by examining both the area of the NbS intervention and the full landscape around it
 - as an example, the GSK case study shows how the use of an NbS that results in cleaner water is also delivering improved health outcomes for local communities
- projected benefits during and after the activity timeline;
 - forecasting tools (such as scenario planning) can help companies account for potential future impacts, both negative and positive
 - examples from the case studies include Bayer improving long-term supply chain resilience by stabilizing agricultural yields year to year, and Reckitt maintaining local workforces by creating long-term economic opportunities that reduce the impact of urbanization
- benefits from other relevant resources (see callout on additional resources below).

A similar exercise should be carried out for the traditional solutions/approaches available, to create a comparable list for all options. Doing this will allow companies to more effectively compare the case for the NbS option(s) and traditional solutions in Stage 6.

Table 2: List of NbS business benefits from the Nature-based Solutions Map

New & improved raw materials, products and services	Climate adaptation
Cost reduction	Avoiding/reducing nature impacts and/or dependencies
Increased asset value	Restoring/regenerating natural ecosystems
Resilience of operations and supply chain	Flood management
Regulatory compliance	Managing water stress
Social licence to operate and meeting consumer expectations	Water treatment
Increasing brand value and equity	Employee engagement
Increasing circularity	Improving supplier livelihoods
Emissions avoidance/reduction	Economic development for local communities
Emissions removals	Human health & well-being



Additional resources with lists of NbS benefits

- **AgEvidence** (for Agricultural NBS and best management practices), The Nature Conservancy
- **Agricultural NBS literature review**, The Nature Conservancy, Food and Agriculture Organization
- **IUCN typology of NbS**, as reported by Anderson & Gough
- **National Water Retention Measures**, Office International de l'Eau, ACTeon, IMDEA WATER, IACO, REC, REKK inc., BEF, SLU, ENVECO, SRUC and AMEC
- **NBS Evidence Platform**, Nature-based Solutions Initiative, University of Oxford
- **NbS Benefits Explorer**, CEO Water Mandate
- **NCS Health Toolkit**, Pollination, GSK
- **Water quantity impacts of NBS/NBS for sanitation**, The Nature Conservancy, Wildlife Conservation Society, National Center for Ecological Analysis and Synthesis

3.2 Identify full range of trade-offs

Every solution – NbS and traditional alike – requires the balancing of different benefits and drawbacks to deliver the best overall outcome. While teams work their way through building a portfolio of project benefits, they must also consider the consequences of any of the activities or actions associated with delivering the NbS. The impacts could be inherently negative – such as a loss of biodiversity – or a trade-off of positives, in cases where one benefit comes as a result of partially reducing another positive impact.

In order to establish the trade-offs of the NbS being considered, companies should walk through a similar process to benefit identification, applying the same “broader scope” thinking to seek out potential negative impacts such as:

- Drawbacks or losses to the company;
 - by reviewing how the NbS affects both the original priority challenges and opportunities (in Stage 1) as well as the business’ impacts and dependencies on nature
- trade-offs impacting local stakeholders and the landscape around the NbS;
 - by consulting key stakeholders and local experts
- projected impacts during and after the NbS timeline;
 - by forecasting and reviewing scenarios, again with local stakeholders and experts.

The next part of this process is balancing the trade-offs and mitigating negative impacts as much as is possible. In Principle 5 of the *Principles of integrated capitals assessments*,³³ the Capitals Coalition outlines how companies can manage trade-offs once they have been identified. It suggests applying the mitigation hierarchy to address the issue(s): where the impact cannot be avoided, the next step is to reduce it, and as a last resort companies may consider compensating in an appropriate way.

In the same set of principles, the Capitals Coalition also recommends that each part of the trade-offs assessment process, from identifying impacts to defining mitigation plans, is undertaken together with relevant stakeholders – ensuring that the best overall outcomes are achieved consistently. As with the benefits identification process, companies can carry out a parallel trade-off assessment for the traditional solutions under consideration. This will generate comparable information on all available options.



3.3 Evaluate benefits and trade-offs

Once the relevant benefits and trade-offs have been identified, the next step is to assess their impact quantitatively for both the business and other stakeholders involved. *Benefit Accounting of Nature-Based Solutions for Watersheds Guide Version 2³⁴* offers useful guidance on this topic, specifically in Sections 3 and 4 of the guidance. The starting point is the “Total Economic Value” model depicted in Figure 7.

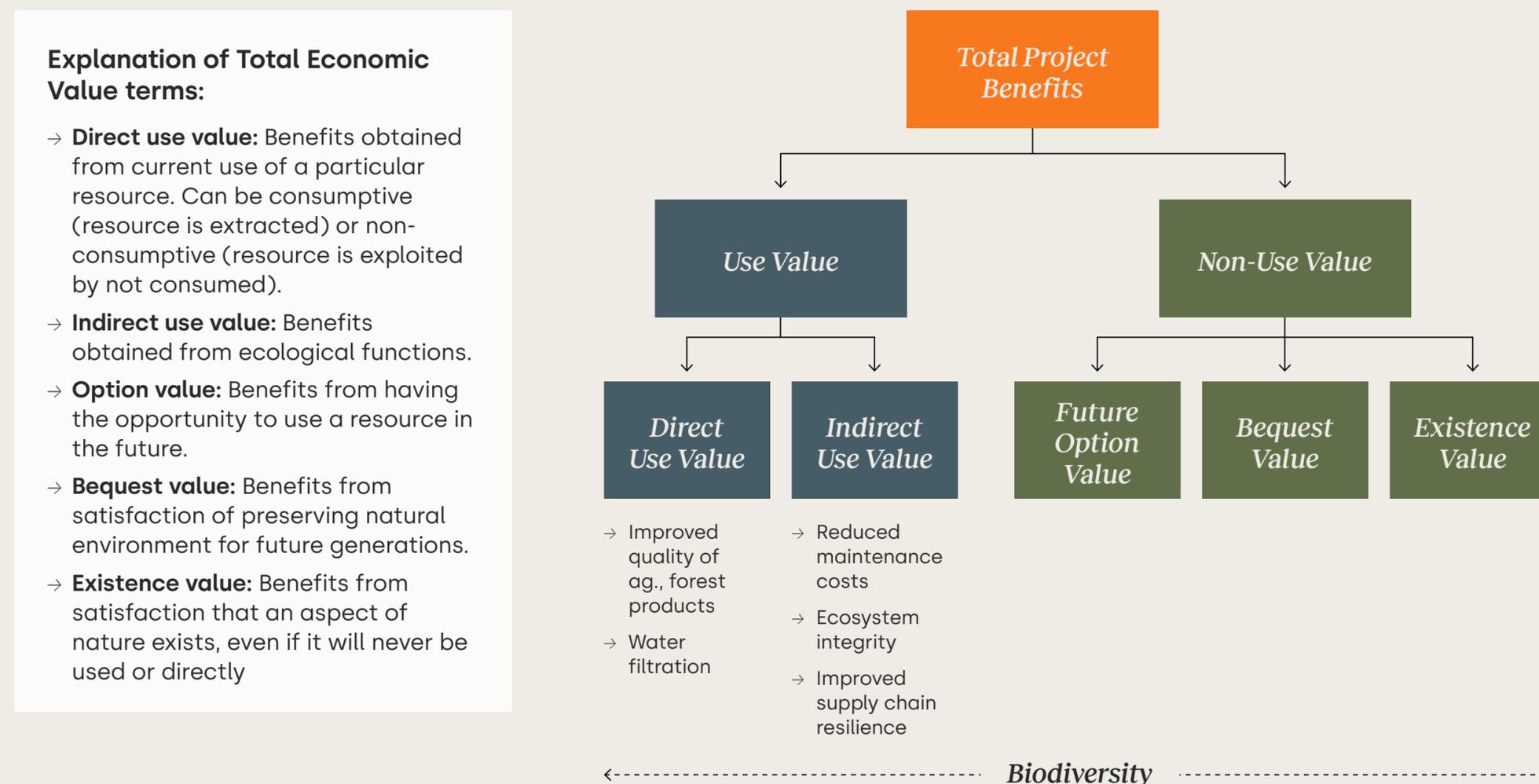
Companies can use this structure to arrange the benefits and trade-offs identified in Sections 3.1 and 3.2 above.

Next, companies should use (or build, if necessary) tools and frameworks to organize and standardize their methods for quantifying and evaluating benefits – translating intangible or difficult-to-define ecosystem benefits into usable metrics. Measuring the impacts and benefits of an NbS intervention in this way is crucial to its success, allowing companies to monitor NbS value throughout implementation, communicate NbS benefits, and further strengthen the business case.

The Blueprint case studies from Bayer, Dow, GSK and Reckitt all reference specific tools used in this process. Bayer and Reckitt designed bespoke approaches with key partners and experts; Dow helped develop the [Ecosystem Services Identification & Inventory Tool](#), and GSK references the [WRI Volumetric Water Benefits Accounting methodology](#). Risk management and (re) insurance valuation processes can also provide a starting point for risk-related benefits and trade-offs.

A table of additional tools and frameworks is available in Appendix A. Furthermore, *Benefit Accounting of Nature-Based Solutions for Watersheds* lists specific indicators and calculation methods for a range of NbS outcomes and these are summarised in Appendix B of this guidance.

Figure 7: Breakdown of the Total Economic Value framework (adapted from CEO Water Mandate, 2023)



Stage 4: Develop an initial design for the chosen NbS

Once the full extent of the NbS benefits and their value to the business is clear, companies can draw up a preliminary design of NbS activities that will deliver these benefits.

Why do this?

The objective of this stage is to guide companies through the first design of the NbS, recognizing factors and processes specific to NbS that may not appear in a standard business case.

Blueprint users complete this Stage by working with stakeholders and using existing resources and guidance from organizations such as IUCN, Verra and CEO Water Mandate to generate an outline of the proposed NbS.

This stage contains two elements:

4.1: Establish stakeholder involvement in NbS design

4.2: Outline the NbS design and implementation plan

4.1 Establish stakeholder involvement in NbS design

NbS delivery is often influenced by factors that are project-, sector-, biome-, location- and/or company-specific. As a result, creating an initial project outline will need support and input from experts and key stakeholders.

The *Stakeholder Engagement Guidance for Nature-Based Solutions*³⁵ gives specific guidance for NbS project design, recommending:

- assigning stakeholder roles and responsibilities;
 - using the stakeholder map prepared under Stage 3 of this guidance (example shown in Figure 4), allocate suitable stakeholders to work on design elements such as planning, operations and governance
- collaborating on design decisions;
 - co-creating the NbS design is an important approach for ensuring local stakeholder buy-in – the activities should not be devised solely by any one stakeholder, including the company itself
- resolving a final draft of the design that is approved by all key actors involved;
 - a fundamental part of this process is reviewing the planned actions with relevant stakeholders and validating the benefits and trade-offs identified in Stage 3 of this guidance.

4.2 Outline the NbS design and implementation plan

As a starting point for the NbS design, teams should consult the IUCN *Global Standard for Nature-based Solutions* (and associated guidance,³⁶ tool³⁷) to ensure that they are incorporating lessons learnt from previous NbS implementation efforts. The eight criteria of the Global Standard are:

1. NbS effectively address societal challenges;
2. NbS design is informed by scale;

3. NbS result in a net gain to biodiversity and ecosystem integrity;
4. NbS are economically viable;
5. NbS are based on an inclusive, transparent, and empowering governance process;
6. NbS equitably balance trade-offs between achievement of the primary goal(s) and the continued provision of multiple benefits;
7. NbS are managed adaptively, based on evidence, and
8. NbS are sustainable and mainstreamed with an appropriate jurisdictional context.

With these criteria and stakeholder engagement practices in mind, the next step is to outline the NbS activity itself, how it will be delivered, and what its intended outcomes are in a project description document. Below is an example of a description template (adapted from Verra³⁸), mapped against the eight IUCN criteria above, highlighting the elements of the initial design and where they are connected to the Global Standard for NbS.

Using these three resources (from IUCN, Verra, and CEO Water Mandate), companies can structure and assess their initial design and implementation plans. This practical information on what is proposed and how it will be delivered is an important element in developing the NbS cost estimates.

Table 3: Combined project outline template (adapted from Verra, IUCN)

<i>Project description document section/heading</i>	<i>Short description</i>	<i>IUCN</i>	<i>Criteria</i>
Summary description of the project	Summary of the project activities, motivation, and intended impacts	N/A	N/A
Project design (single activity, multiple instances of a single activity, group of activities, etc.)	Brief outline of activity structure and any grouping/interaction between elements of the activity (e.g. a single localized NbS, a collection of different NbS activities all contributing to the same outcomes)	N/A	N/A
Project proponent(s)	Entities driving the project	5	Inclusive governance
Other entities involved	List of participants and key stakeholders	5	Inclusive governance
Ownership	Evidence of project ownership and accountability	5	Inclusive governance
Start date and duration	Information on project start and timeline	N/A	N/A
Project scale and location	Size and scope of project initially and on completion	2	Design is informed by scale
Initial description of project activities	Description of the activities proposed, where each is to take place, how it will achieve its intended impact, and the roles/responsibilities of any stakeholders involved	1, 2, 3	Address societal challenges; design informed by scale; biodiversity net gain
Conditions before project start	Description of the existing conditions in and around the project area, including the ecosystem type, current and historical use of the ecosystem/land	1	Address societal challenges
Compliance with regulatory requirements	Identification of major regulatory requirements relevant to the project, and demonstrate compliance	5, 8	Inclusive governance; sustainable and legal
Safeguards	Consideration of key safeguards including no net harm, risks to local stakeholders, potential environmental impacts, public feedback and comments	6	Balance trade-offs
Stakeholder engagement	Outline of stakeholder engagement process including initial mapping, outreach, expected impacts and benefits, willingness to pay for ecosystem services, communication and feedback mechanisms	5, 7	Inclusive governance; adaptive management
Impacts of the project and quantification methods	Outline of expected impacts and how these will be managed, detailing how impacts will be quantified (including how baselines can be set)	1, 3, 4, 7, 8	Address societal challenges; biodiversity net gain; adaptive management; sustainable and legal
Monitoring and evaluation processes	Description of data and parameters fixed at project start, data and parameters that will be monitored, and outline of monitoring plan (e.g. processes used to capture, process, and use information)	1, 3, 4, 7, 8	Address societal challenges, biodiversity net gain, adaptive management, sustainable and legal

Stage 5: Estimate costs of the proposed NbS

With a clear outline of what work needs to be done, the next step in the process is to develop a breakdown of the costs involved. This can take the form of a high-level estimate for initial consideration, or a more detailed itemized breakdown as needed.

Why do this?

The objective of this stage is to guide companies through the preliminary estimation of NbS costs.

Blueprint users complete this stage by using reference data to generate an initial range of potential overall costs, confirming the cost categories likely to be required and refining the estimate for each category using available local data.

It is important to note that NbS costs vary widely, and depend heavily on contextual factors. As a result, generating initial high-level estimates of project costs is difficult. The World Bank report *Assessing the Benefits and Costs of Nature-Based Solutions for Climate Resilience: A Guideline for Project Developers*³⁹ suggests starting with “value transfer”, using the unit costs of comparable projects to estimate the cost of the NbS being considered.

Businesses should use information from projects that expert partners or stakeholders are already aware of where possible. Some tools, such as the NbS Benefits Explorer,⁴⁰ WaterProof⁴¹ and Sustainable Asset Valuation,⁴² may offer useful valuation data. Alternatively, there are

datasets available for review for some common NbS types; several are collected in Table 4 below. For other NbS types, companies should search for specific projects in similar situations and use the value transfer method. This will generate preliminary estimates, often as a range of possible prices. Companies can use these database values for order-of-magnitude estimates.

Table 4: High-level cost estimate data for specific NbS types

NbS type	NbS activities listed	Region	Reference implementation costs (USD)	Per unit area
Agroforestry ⁴³	Silvoarable agroforestry	UK	1158-1926	ha
	Silvopastoral agroforestry	UK	642-1070	ha
	Hedgerows	UK	453-4030	ha
Coastal protection/resilience ⁴⁴	Coral reef restoration	USA	2-4790	m2
	Oyster reef restoration	USA	107-316	m2
	Salt marsh restoration	USA	100-330000	ha
	Mangrove restoration	USA	500-64300	ha
Forest restoration ⁴⁵	Forest and landscape restoration	Ethiopia, Madagascar	87-1445	ha
Peatland restoration ⁴⁶	Mix of ditch blocking, peat restoration, bunding, forest to bog restoration, and scrub removal	Scotland	1712	ha
Ecosystem restoration ⁴⁷	Protection of degraded ecosystems to allow passive regeneration	USA	2778	ha
	Active regeneration of degraded landscapes	USA	8218	ha

The next step is to review the design plan (as outlined in Table 3 on page 25) and assign cost estimates to each item and/or activity included. Expert partners and key stakeholders will be able to provide preliminary information relevant to the project area, which should be incorporated wherever possible. At this point, it may be useful to review existing NbS cost breakdowns to ensure that all appropriate costs are included; an example of a typical NbS cost breakdown is shown in Figure 8 for reference.⁴⁸

Finally, as most NbS affect entire landscapes, companies looking to use NbS will need to design and deliver activities outside their operations and across their entire value chain. This could push business actors out of their usual comfort zone as it means that instead of having full control over all activities involved, companies will be delivering the NbS alongside the range of stakeholders and the ecosystem itself. This change in role demands new and/or different skillsets for staff charged with leading the company's NbS activities. Companies should review internal capacity to undertake: stakeholder engagement (ranging from communities on the ground, up to major organizational partnerships), NbS project management; and, long-term monitoring of the NbS and its outcomes. This review will indicate whether to either upskill existing staff, hire new team members or outsource as needed. This must be factored into any cost estimates, once again starting with value transfer and refining with local information as it becomes available.

Figure 8: NbS cost categories for collective action watershed programs (Kang et al., 2023)

Grouping	Major activity category	Examples of activities included
Administration & transaction costs	Stakeholder outreach	<ul style="list-style-type: none"> → Stakeholder identification and outreach (incl. surveys, interviews, visits) → Coordination with program partners → Partner enrollment and management
	Legal services	<ul style="list-style-type: none"> → Institutional, legal, and policy analyses/studies → Contracts preparation and management → Legal processes required for program establishment → Enforcement of contracts in case of non-compliance
	Technical analyses	<ul style="list-style-type: none"> → Biophysical analyses and modeling → Socio-Economic analyses → Business case analysis (return on investment; cost-effectiveness) <i>(Includes field visits, focus group meetings, surveys, expert consultations)</i>
	Program management	<ul style="list-style-type: none"> → Program strategy design, fundraising, administration → Training and capacity building workshops that program staff participate → Landowner enrollment (selection, engagement, contract negotiations, etc.)
	Communications	<ul style="list-style-type: none"> → Marketing, outreach materials, web materials; internal and external reporting → Event organization
	Monitoring	<ul style="list-style-type: none"> → Hydrologic, biodiversity, or socioeconomic monitoring → Landowner compliance monitoring → Data management → Contract design, implementation, and maintenance of monitoring system → Impact evaluation
Intervention costs	Interventions implemented by program	<ul style="list-style-type: none"> → NbS intervention costs borne by program for directly implementing NbS or for assisting landowners in implementation → Design and planning, equipment, materials, maintenance, technical assistance to landowners → Contracts to implement conservation activities
	Payments (cash or in-kind) to landowners	<ul style="list-style-type: none"> → Payments (cash or in-kind) to landowners and/or communities for implementing agreed-upon interventions → Cost of purchasing and delivering in-kind support to landowners/communities
Other	Other	Anything not falling under categories above

Spotlight: piloting NbS and creating proof of concept

NbS are often novel, complex activities for companies to support. Running pilots and establishing a proof of concept can help with testing feasibility, confirming sources of added value, and embedding the role of NbS within the company's climate and nature transition plans.

Companies can start with pilots from as early as Stage 2 (exploring relevant NbS) to demonstrate that the chosen NbS will deliver what is needed. In the Givaudan case study, the team set up a demonstration regenerative guarana farm to test best practices, proving to the company that the NbS activities would help meet core business imperatives such as increasing supply chain resilience. Givaudan is now reiterating this approach of piloting and scaling up regenerative agriculture models in other sourcing regions and supply chains.

Companies should use trial runs for Stage 3 (identify benefits and impacts from the chosen NbS) and Stage 4 (design and cost estimates). In Stage 3, model/pilot programs are powerful tools for confirming the benefits identified (or correcting them), and adding potential sources of value not captured by desk research and initial stakeholder consultation. Similarly, in Stage 4, piloting the NbS will generate valuable information about project design and delivery, which can be used to refine the initial cost estimates.

In the INGKA Group case study, the company is using the NbS project at an INGKA site in Romania to test the impact of wildgarden restoration on local biodiversity alongside the expected savings on garden maintenance. In running this pilot, Ingka has established that there is significant additional benefit for the staff and customers using the store. The costs and benefits data this initial project is generating can be used in the project design and cost estimations for future wildgarden restorations. In this instance, the pilot has contributed to both Stages 3 and 4 of the business case build.

Finally, pilot programs do not need to be tied to NbS business cases to begin with; proofs of concept can be an outcome of voluntary action to support local ecosystems and/or communities. In the Godrej case study, the company started with a philanthropic initiative using NbS to deliver benefits to local communities and biodiversity in the same landscape as one of its facilities. This built internal capacity to use NbS for future challenges and opportunities, equipping Godrej to apply NbS to reduce water stress in the Nashik river basin thereafter.



Stage 6: Compare NbS options to other solutions across full range of benefits and costs

At this stage, the company is equipped with:

1. a clear picture of its business challenges and opportunities;
2. an appropriate NbS to deliver against selected challenges and opportunities;
3. an outline of the benefits and trade-offs expected from the selected NbS; and
4. an initial estimate of the costs involved in delivering the NbS and its benefits.

The final element of building this business case is rational, weighing up the benefits and costs of each available course of action.

Why do this?

The objective of this stage is to generate the initial argument for the best solution to the business challenges/opportunities outlined in Stage 1.

Blueprint users complete this stage by using a multi-criteria decision analysis tool and the information generated in Stages 3-5 to select a solution (NbS or otherwise) based on the most important elements of the benefits portfolio, trade-offs and cost estimates.

With comparable information for the solutions being considered, companies must weigh up the benefits and costs of each approach. For this final stage of the business case process, a decision-making tool may be useful in selecting the most beneficial solution overall. One example that companies can use is "Decision Matrix Analysis", which requires:

1. the list of potential solutions being considered (see Stage 2 of this guidance);
2. the key criteria for deciding between the solutions (derived from Stages 3 and 4 of this guidance);
3. a relative weighting of each criterion (which will have to be developed for each case, using company priorities, context-specific factors such as costs, and impacts on stakeholders), and
4. how each solution performs against each criterion (using information from Stages 3 and 4 of this guidance).

By multiplying each solution's performance score against the weight of the relevant criterion, this analysis generates an overall score for each solution, indicating (by weighted average) which approach best fits the criteria that the company deems most important. An illustrative example of this, using some of the factors from the Dow case study (see Figure 9 on page 30) is detailed below.

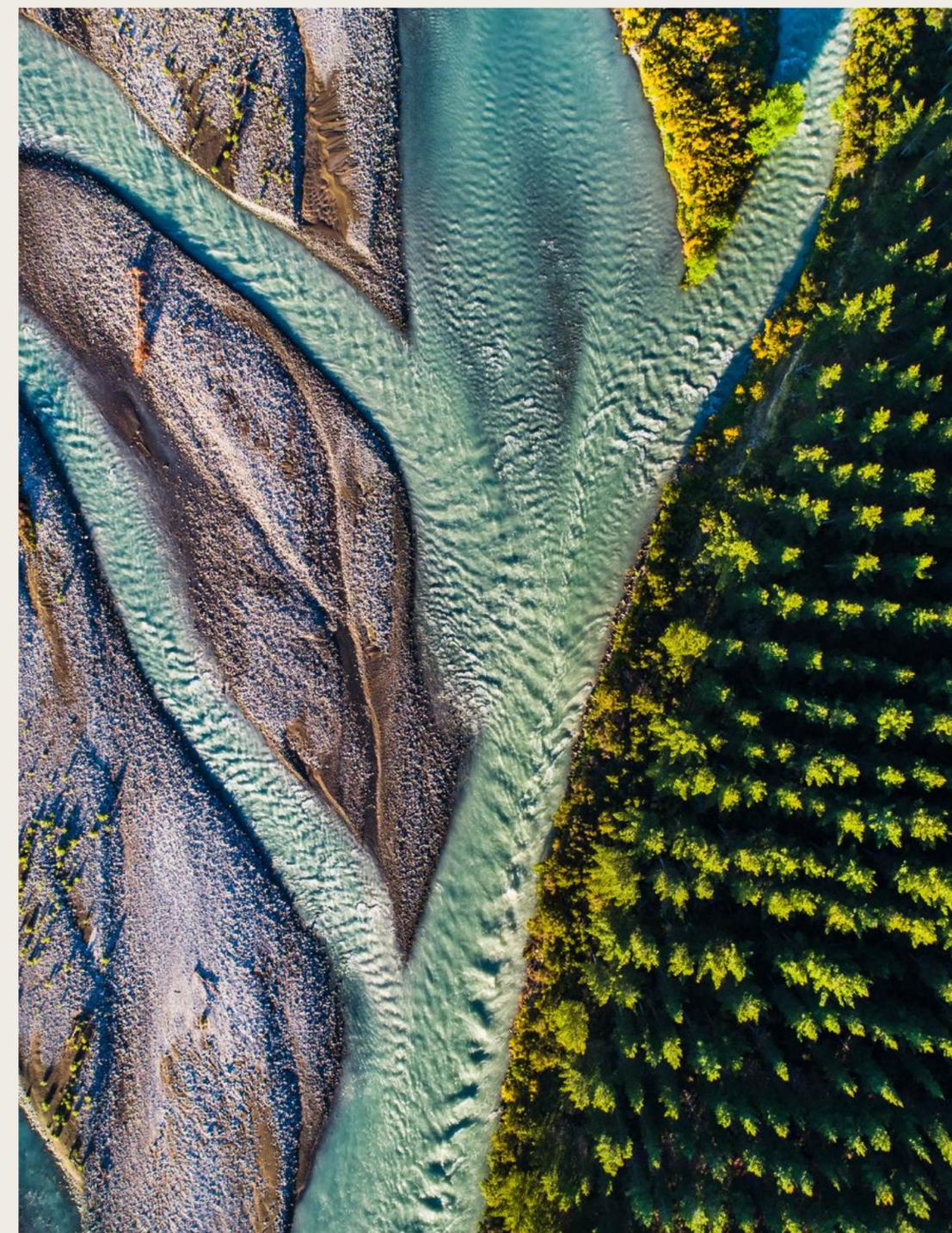
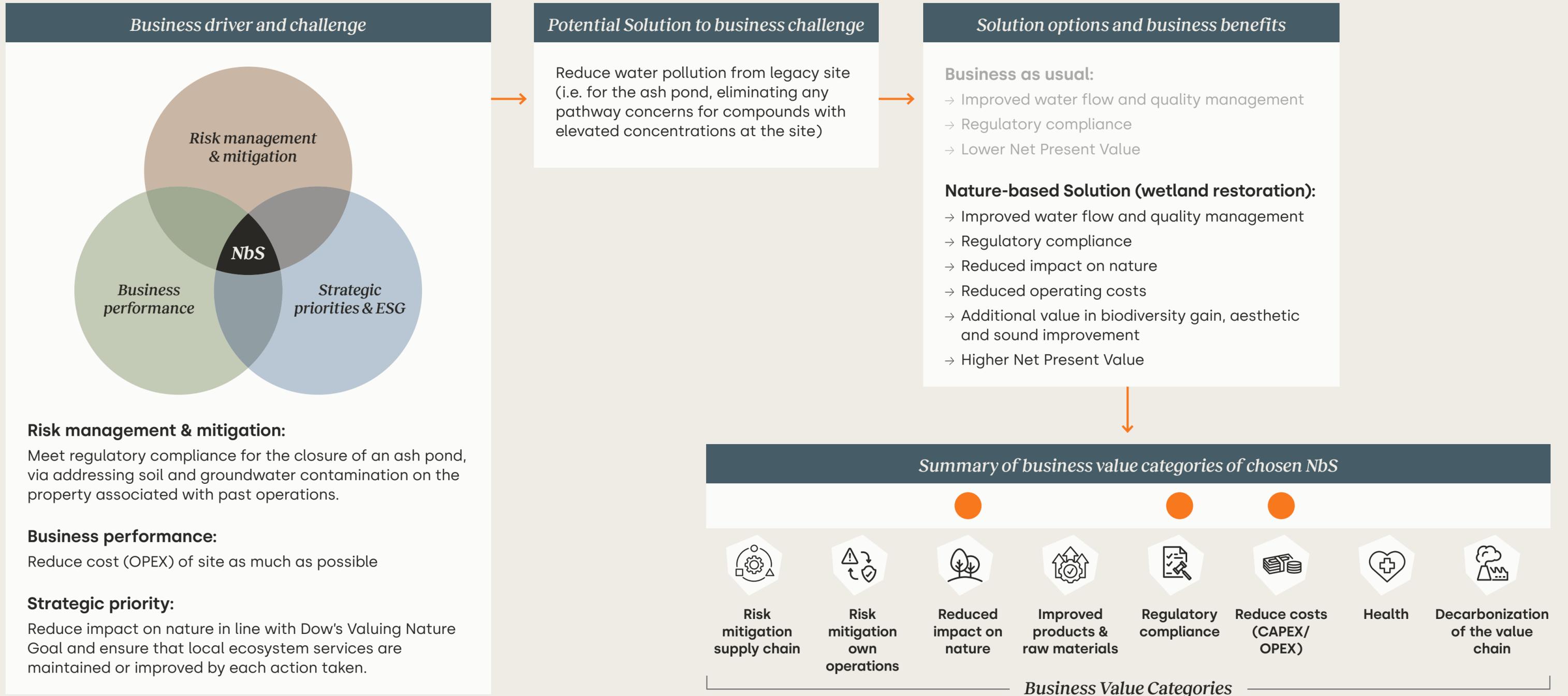


Figure 9: Outline of Blueprint case study from Dow, showing comparison of business-as-usual and NbS options



By multiplying each solution's performance score against the weight of the relevant criterion, this analysis generates an overall score for each solution, indicating (by weighted average) which approach best fits the criteria that the company deems most important. An illustrative example of this, using some of the factors from the Dow case study (see Figure 9 on page 30) is detailed below.

Decision Matrix Analysis using parameters from Dow case study

1. List the solutions:

- traditional engineered solution: a "cap" for the ash pond
- NbS approach: ash pond excavation and riverine wetland restoration.

2. List the key criteria:

- meet regulatory requirements;
- reduced OPEX for the site;
- manage local water quality, and
- reduce impact on nature.

3. Assign relative weight to each criterion:*

- regulatory requirements – mandatory, if the solution does not meet this it is not considered;
- reduced OPEX – 35% (example value);
- manage local water quality – 45% (example value); and
- reduce impact on nature – 20% (example value).

4. Map solutions in a Decision Matrix and assign a score for each solution against each criterion, then multiply and add to generate final scores:

This example results in the NbS approach being selected, as it performs better overall against the chosen criteria (despite a lower performance in water quality).

At the end of this process, companies will have carried out a balanced comparison of a far wider range of costs and benefits for each available solution, traditional and NbS. Using the NbS Blueprint and Solutions Map, and following the examples in the case studies, a company can capture the business and societal benefits of each approach and build a much stronger business case for whichever solution works best overall.

<i>Solution\ criteria</i>	<i>Meet regulatory req.s</i>	<i>OPEX for the site</i>	<i>Manage local water quality</i>	<i>Reduce impact on nature</i>	<i>Overall scores</i>	<i>Score</i>
<i>Criterion weighting</i>	<i>Required</i>	<i>35%</i>	<i>45%</i>	<i>20%</i>		
<i>Solution 1 (engineered "cap" for the ash pond)</i>	<i>Achieved</i>	<i>20% (OPEX relatively high)</i>	<i>80% (water quality high)</i>	<i>0% (minor negative impact)</i>	<i>(0.35*0.2)+ (0.45*0.8)+ (0.2*0)</i>	<i>43%</i>
<i>Solution 2 (NbS – excavation and wetland restoration)</i>	<i>Achieved</i>	<i>80% (OPEX relatively low)</i>	<i>60% (water quality acceptable)</i>	<i>80% (positive impact)</i>	<i>(0.35*0.8)+ (0.45*0.6)+ (0.2*0.8)</i>	<i>71%</i>

Note: *The criterion weighting values used here are indicative, not based on case study data.

04. Conclusions *and next steps*

Nature-based Solutions, when designed and delivered well, can deliver business benefits as well as addressing societal challenges. This is not always evident; it can be difficult to articulate the value that NbS offer to companies, even when the societal case is strong.

The NbS Blueprint case studies demonstrate how eight companies used expanded business case processes, creating new approaches that allowed each to incorporate the broader range of positive impacts that NbS offered, to the business and beyond.

Building on those experiences, the NbS Blueprint lays out a six-stage process for companies to follow that will enable the building of strong initial business cases for using Nature-based Solutions. A company that uses this process will be able to identify and communicate the value of NbS as solutions to its own business challenges and opportunities, building stronger justifications for investing in activities that bring value to the business, while contributing to sustainability imperatives such as climate, nature and equity action.

This Blueprint provides the foundations for an acceleration in the consideration and implementation of NbS to both tackle business challenges and contribute to net-zero, nature-positive and equity strategies. To support this, WBCSD is, with members of its Nature Action imperative, now turning its focus to the practical aspects of NbS delivery for companies, exploring:

- where NbS can address priority actions to halt and reverse nature loss for specific value chains;
- the metrics that can demonstrate the climate-, nature- and equity-positive impacts of NbS; and
- the innovations and strategies needed to direct investment towards NbS.

The objective of the next phase of this work is to steer companies towards impactful, valuable NbS activities that are implemented in the near-term.

Nature-based Solutions have a significant role to play in achieving Vision 2050, a world in which more than 9 billion people live well, within planetary boundaries by mid-century. NbS can also help companies to transform themselves. Recognizing this dual capability is the key to unlocking NbS's full potential as a powerful solution set to deliver for climate, nature, equity and business ambitions, at scale.



NbS Blueprint *Case Studies*

Arcadis: *Coastal ecosystems restoration in The Netherlands*

Value drivers

- Risk management & mitigation
- Strategic priorities & ESG

NbS type

- Ecosystem restoration

Corporate strategy connections with NbS

- Develop the growing market for Nature-based Solutions (NbS) in Europe, Australia and the U.S. (e.g. for risk management. With 70% of the Dutch GDP being produced in areas below sea level, Arcadis actively aims to play a role in mitigating the risks).

Challenge

- Significant loss of biodiversity and local species in the artificial lake created by two important dikes

Opportunities

- Increase biodiversity and resilience by creating a wildlife nature reserve
- Collect important information and data on sandy shores that can be applied to other cases



Context

The Marker Wadden Islands are the largest constructed islands in Europe. They were established to increase biodiversity in a manmade freshwater lake landward of the Afsluit and Houtrib dikes. These dikes were built for flood protection and reduced the natural water variations of the Lake IJssel, causing much of the wildlife to disappear. Arcadis was involved in planning the structure and design of five new islands for a total of 1,000 hectares of new landmass. The islands are constructed using sediment present in the lake, with sand and clay, structured to provide protection for swamplands and to attract fish and other wildlife. The outer boundaries of the islands consist of sandy dams. The project was funded by a Dutch wildlife conservation organization and a Dutch ministry.

Additional sources of value:

- Increased biodiversity (flora & fauna) that had nearly disappeared from the area
- New research area: islands form a living laboratory for the development of new natural systems
- Educational purposes and recreational activities
- Creation of shores and archipelagos that support the establishment of wildlife and new habitats
- Partial restoration of Lake Markermeer as a Nature 2000 site

Tools:

- Results of the pilot experiment in which the application of sandy shore in lake environments was studied
- Numerical models for waves/currents and silt transport

Project evaluation / project metrics

- +1000ha of land created
- Increases in key species, local bird and fish populations

Project partners:

Natuurmonumenten (Dutch Society for Nature Conservation); Rijkswaterstaat (the executive agency of the Ministry of Infrastructure and Water Management) Boskalis, Wttevee+Bos, Vista

Duration:

- 2016 Preliminary work started
- 2021 First five islands
- 2023 Last two islands

Arcadis case study: context and additional information

Arcadis and NbS

- Arcadis is investing in its own capability to meet growing market demand for NbS and biodiversity projects in Europe, especially the United Kingdom, Netherlands, Australia and the U.S. In addition, NbS is playing a vital role in achieving the company's goal of integrating nature and biodiversity into business operations.
- Arcadis views NbS as an important way of improving climate resilience in cities, reversing biodiversity loss, and reducing carbon footprints. Arcadis acknowledges that it is not always possible to choose an exclusively nature-based solution; compromises must be made to ensure that climate-related solutions are as integrative as possible and address multiple issues at once, benefitting nature, society and economy.

Climate adaptation challenges for NbS

Arcadis views NbS according to the different climate challenges it can tackle: flooding, heavy rain, wildfires, heat stress, drought, biodiversity loss / ecosystem degradation.

Flooding: Dutch Coastlines Design

- The Netherlands, with 70% of its GDP being produced in areas below sea level, must be constantly aware of flooding risk. Studies in 2003 revealed that the Dutch North Sea coastline with its extensive stretches of dunes and dikes needed further strengthening to maintain the desired protection levels (with the ambition to withstand a superstorm as extreme as once in 10,000 years).
- The Dutch Government started the reinforcement of coastal "Weak Links", and Arcadis was one of the partners involved in the planning, engineering, coastal morphology investigation, scenario analysis, environmental assessment and archaeological assessment required.
- Arcadis uses NbS to mitigate flooding risks not only in the Netherlands but also in the U.S. (e.g. Louisiana Coastal Area Beneficial Use of Dredged Material).



Bayer: *Sustainable agriculture in Brazil*



Value drivers

- Risk management & mitigation
- Business performance
- Strategic priorities & ESG

NbS type

- Regenerative agriculture

Corporate strategy connections with NbS

- Strengthen supply chain engagement by connecting partners with research institutions, farmer associations and other industry participants
- Improve economic performance
- Deliver climate action by reducing GHG emissions
- Transform farming to regenerative agriculture

Challenge

- Reducing GHG emission footprint while transforming the existing farming system and improving farmers' livelihoods

Opportunity

- Work on soil health while increasing yield

Context

Bayer has established the *PRO Carbono* program to support farmers transitioning toward more sustainable management of their land. According to prior field trials, successful implementation of the program would result in increased productivity and decreased environmental impact. The approach started with testing solutions regionally and investigating a broad range of relevant metrics and indicators before scaling up successful practices as part of the *PRO Carbono* program. The 3 key measures – extending crop rotation, inclusion of cover crops, and no-till management – are baselined so that progress can be tracked.

While the initial focus was on improving economic performance, it quickly became clear that measures that improved yield could also contribute positively to soil stability and other ecosystem services, illustrating that economic and nature-related objectives can align and reinforce one another. Within this program and its broader business activities, Bayer has the chance to work closely with farmers through multistakeholder initiatives and expert organizations to generate more sustainable outcomes. The program has provided a learning opportunity and supported the broadening of Bayer's sustainability approach, identifying the key role that regenerative agriculture plays in transforming agriculture systems.

Additional sources of value:

- Improved livelihoods for local farmers (e.g. higher incomes)
- Increased soil health (e.g. increased soil organic matter and microbial activity)¹
- Reduced soil erosion from wind and water¹
- Improved water and air quality¹
- Increased habitat for wildlife¹

Tool:

- Bespoke tool development

Project evaluation/project metrics:

- (Most metrics measured were preparatory steps to inform agricultural method for the *PRO Carbono* program)
- Productivity (increased output/yield) & yield variability
 - Profitability (% gross margin and % return on investment) & temporal variations
 - Environment/soil (carbon, water and nutrient balance, environmental impact reduction of chemical crop protection, GHG emissions, soil organic carbon and other physical, chemical and biological soil properties)

Project partners:

Universities, research institutions, external consultants & advisors, farmers associations, other companies/ startups, internal collaborators and local farmers

Duration:

Started as a local initiative in ~ 2014 and has since grown into a regional (LatAm) and global programme

Resources:

¹[Reduced Tillage Systems are a Key Component of Sustainable Agriculture, Soil Health and Mitigating Climate Change \(bayer.com\)](https://www.bayer.com/content/dam/bayer-com/global/corporate-responsibility/sustainability-reports/2022/2022-sustainability-report-en.pdf) for general perspective, and partially investigated locally

Context and additional information

PRO Carbono Management and related Research & Development efforts

- Bayer is actively working on a methodology for setting up and improving agricultural practices that combine environmental and economic indicators. The environmental factors considered are: resource use efficiency; carbon, water and nutrient balance; environmental impact reduction of chemical plant protection products; soil evolution and evolution of pests, diseases and weeds. The economic factors considered are: grain yields; system productivity; yield risk and variability, and economic return.
- The management approach was tested in strip and regionalization trials before being upscaled to 1,800 farmers in Brazil and 130 farmers in Argentina as part of the implementation of the PRO Carbono program.
- A key assumption is that beneficial performances during strip and regionalization trials are likely also beneficial when scaled up, though currently only partially tracked. Outcomes measurement is a work in progress and will evolve over the coming years. This depends in part on possible reduction of costs associated with measuring specific metrics.
- Recommended practices included:
 - **No Tillage:** [increase stover intake and do not revolve the soil]

- **Cover Crops** [additional non-commercial crop for soil conservation] and/or crop rotation [adopt rotation of winter or cover crops]
- **Productivity & Carbon Boosters:**
 - Adopt high-performance genetics & biotechnology
 - Optimize the use of fertilizers and correctives
 - Nitrogen Smart management
 - Precision agriculture adjusting plant density and fertilizers by yield zone
 - Prescription
 - Implement crop protection based on monitoring

New strategic focus: Regenerative Agriculture

- Bayer considers regenerative agriculture an **outcome-based production model** with **soil health** and **increased resilience** at its core.
- Bayer commits to:
 1. reducing the climate footprint of farming,
 2. reducing the environmental impact of crop protection,
 3. enabling smallholder farmers and
 4. improving water use

- Regenerative agriculture also contributes to:
 - mitigating climate change through GHG emissions reduction and carbon removals,
 - maintaining or restoring biodiversity,
 - conserving water resources and
 - increasing yield and improving economic and social well-being of farmers
- Bayer is working with local partners around the world to support farmers in understanding and adopting regenerative farming practices by offering modular, rotational cropping systems, providing a range of agriculture innovations and adapting to farmers' needs.



DOW: Reduced OPEX cost through wetland restoration in Michigan, USA



Value drivers

- Risk management & mitigation
- Business performance
- Strategic priorities & ESG

NbS type

- Ecosystem restoration

Corporate strategy connections with NbS

- By 2025, deliver US\$1bn in Net Present Value (NPV) through business-driven projects that enhance nature

Challenge

- Close ash pond in line with state agency requirements and corporate nature goal

Opportunity

- Reduce long-term costs associated with the closure of a legacy site

Context

Dow had an ash pond in Michigan that had ceased operation in the 1980's and was set for closure. Connected to its corporate goals, the objective was to close this pond in a way that best reduced operating and maintenance costs and liabilities while meeting state agency requirements and enhancing ecosystem services. The solution was a 9ha functional wetland with recreational amenities that improved natural habitats along one mile of the riverfront. In addition to reducing operating costs, the wetland allows for improved stormwater control, which results in reduced floodwaters downstream.



Planned closure



Realized closure (Beyond Dow's restoring property)

Additional sources of value:

- Increased important ecological functions: improved air and water quality and water quantity control (which was the most evident ecosystem service the wetland provided)
- Improved biodiversity through habitat health
- Recreational opportunities and improved aesthetics

Tool:

- ESII Tool: environmental impact measured through performance on 13 ecosystem services and 20 engineering unit outputs. Able to compare the traditional closure method of "cap and treat" to restored wetlands. Providing this data facilitated the adoption of this non-traditional closure solution with Dow leadership and regulatory agencies

Project evaluation / project metrics:

- Ecosystem services performance of various closure methodologies (i.e. "cap and treat" vs functional wetlands)
- Net present value (NPV) of NbS solution versus business-as-usual scenario

Project partners:

The Nature Conservancy, EcoMetrix Solutions Group, AECOM, City of Midland, Michigan Department of Environmental Quality

Duration:

3-4 months to design alternatives

Context and additional information

Key metrics for nature at Dow

- As of 2022, nearly **77%** of the US\$1bn goal in NPV from business-driven projects that enhance nature by 2025 has been reached.
- Realized an NPV of **US\$129m** in 2022, bringing the total to US\$766m since launching the goal.
- A full **100%** of **capital projects screened** for potential benefits and impacts to nature, water, air, soil, land use and opportunities to utilize engineered natural technology.

How Dow sees NbS

- NbS represents additional value to business-as-usual scenario where the overall ecological footprint can be improved and more opportunities are created for the business.
- The nature goal set in 2015 as part of Dow's 2025 Sustainability Goals will create new value for Dow and for society by helping the company understand and value the benefits that nature can provide to the bottom line.

Lessons learned from implementing NbS

- Early development of the ESII tool helped make the impact measurable and was key in establishing the business case.
- NbS can offer numerous opportunities that initially may be hidden or unclear. There is potential to implement NbS in a wide range of projects and locations. The ESII tool helps DOW employees to identify these opportunities.
- It takes time for companies to recognize the full value of NbS and include nature in their decision-making processes. However, institutionalizing this supports implementation at scale.

Future outlook

- With a strong foundation, successful examples to follow and the right tools and processes in place, Dow now asks each new project whether it has considered NbS.
- Dow is already defining the next steps of its nature journey, engaging with TNFD and participating in the development of the **chemical industry's guidance document**.



Givaudan:

Mitigated supply chain risk and improved business and environmental performance in Brazil

Givaudan

Value drivers

- Risk management & mitigation
- Business performance
- Strategic priorities & ESG

NbS type

- Regenerative agriculture

Corporate strategy connections with NbS

- Ensure access to key input materials for products (resilient supply chain)
- Drive business performance and contribute to purpose ambitions and sustainability commitments

Challenge

- Reduce supply chain risk (upstream; materials/ingredients)

Opportunity

- Add to a framework for strategic supply development including NbS, mitigating nature-related risks in the supply of key raw materials

Context

Givaudan's products depend on nature-related inputs; as a result, Givaudan strives to mitigate nature-related risk within the supply chain by piloting regenerative agriculture projects. The starting point for these projects was securing input materials and enhancing performance; however, it became clear that they could also help Givaudan to deliver on its purpose as well as its environmental and responsible sourcing commitments. An example is the GUARABEST program which is designed for more than 240 Brazilian guarana farmers from 2 cooperatives. This program uses extension services on best possible agricultural practices to improve the botanical performance of guarana, establish traceability to source, reduce negative environmental impacts and improve farmers' economic resilience.

Additional sources of value:

- Positive environmental impacts (see metrics below)
- Increase in farmers' incomes and economic resilience and provides greater market opportunities

Tools:

- Traceability to production unit level
- Extension services to farmers
- Regenerative guarana experimentation and demonstration farm

Project metrics:

- Soil health and water
- Carbon mitigation and sequestration
- Biodiversity
- Return on investment for Givaudan and partner farmers

Project evaluation:

Value for the business from:

- Avoided cost related to disruption of supply
- Improved product placement as premium guarana extract

Project partners:

Local guarana producers, cooperatives, local implementation partner, design partner (ReNature)

Duration:

2019-[On-going]

Context and additional information

GUARABEST Programme

A specific Guarana Farming “Handbook” was issued to support the implementation of best practices, accompanied by training sessions and coaching. Key examples of agricultural best practices include:

- Better adapting fertilization methods to the crop needs and fostering the use of organic manure
- Implementing good pruning practices to improve guarana trees fruit setting and consequently seed yield
- Investigating guarana genetic diversity for plant material improvement
- Set up of an experimental and demonstration regenerative guarana farm combining intercropping of guarana trees with fruit and service trees, use of cover crops, integrated soil fertility management, pruning plan, etc.

Givaudan approach to NbS

- The GUARABEST program shows that **Nature-based Solutions** can help **meet core business imperatives** such as building resilient supply chains, continuous improvement of business performance, and contributing to Givaudan’s corporate sustainability goals.

- As such, Givaudan is **expanding this model** by leveraging **other agronomic projects** across different regions and supply chains to test and promote Regenerative Agriculture farming models. All of them are **commercially driven** and have the ability to support the company’s purpose, ambitions and sustainability goals.
- The implementation of these projects is mainly driven by Givaudan’s Agronomy team with support from external partners.
- The insights and experiences gathered through these projects should enable Givaudan to scale up the promotion of regenerative farming practices in its key Naturals supply chains, and therefore contribute to the company’s Scope 3 roadmap.

Partnerships

- Globally, Givaudan has developed a broad network of implementation, technical and academic partners
- reNature was the partner for the design of the Regenerative guarana project

Challenges / lessons learned

- High volatility of ingredient price and competition at farm gate were both notable challenges
- Little available background experience on a “regenerative guarana model”. Based on the initial

socio-economic and agronomic diagnosis, a model farm and associated crop management programme was developed and is being tested for a minimum period of 3 years to assess the performance of the design (agronomically, environmentally and economically).

- Based on the trial results, the model can be promoted at scale to other guarana producers in the supply chains provided that the enabling conditions are also met (capital expenditure, technical support, etc.)
- It remains a challenge to assess the contribution of the model in terms of carbon removals in the scope 3 accounting calculations.



Godrej Group: *Integrated Watershed Development Project in Nashik, India*



Value drivers

- Risk management & mitigation
- Strategic priorities & ESG

NbS types

- Watershed/wetland restoration
- Regenerative agriculture

Challenge

- Drought conditions, poor water quality, high water use, heavy use of fertilizers and chemicals that flow into the catchment area, and weak governance

Opportunity

- Using a multistakeholder approach, Godrej worked in drainage basins and catchment areas to help restore the ecological balance of the region by harnessing, conserving and regenerating degraded natural resources such as soil, vegetative cover and water

Corporate strategy connections with NbS

- To manage the identified risk of water stress, Godrej Industries has committed to water positivity
- The "Integrated Watershed Development Program" was established and rolled out in 2016 across locations in India in order to meet the water positive target

Context

The aim of the ***Integrated Watershed Development Program*** is to help restore the ecological balance of target regions by harnessing, conserving and regenerating degraded natural resources such as soil, vegetative cover and water while reducing the company's risk of water stress. The program comprises of multiple projects covering a total of ~4,850ha situated in drought-prone regions in India. One example project is the catchment area of Dindori in Nashik where a Godrej Plant is located. It is a large basin of water connected to agricultural production as well as water for drinking, domestic needs, marketing and local livelihoods. The delineated catchment in the vicinity of the Godrej Agrovet plant at Ashewadi village consists of 9 villages with an overall area of 6,688ha. Water scarcity in the summer months, harmful farming practices and high demand and use have negatively impacted the water quality and availability in the area. With the support of implementation partners, Godrej is restoring and improving water quality, availability and groundwater resources by maintaining existing dams and irrigation structures, improving soil health, inserting artificial groundwater recharges, and educating the local population on the importance of water.

Additional sources of value:

- Improved water quality, availability
- Better educated population
- Improved agricultural practices and chemical use
- Improved agricultural yield

Activities that are undertaken in this program:

- Capacity building and awareness program
- Implementation of Sustainable Agriculture & Land Management (SALM) practices with nearby farmers
- Community development initiatives

Project evaluation / project metrics:

- Watershed area developed
- Reduced GHG emissions
- Water captured
- Farmers impacted

Project partners:

National Bank for Agriculture & Rural Development (NABARD), Watershed Organisation Trust (WOTR), Aga Khan Rural Support Programme (AKRSP), Peoples Action for Creative Education (PEACE)

Duration:

2016-2024

Context and additional information

Integrated Watershed Development Program

- The program comprises of multiple projects covering a total of ~4,850ha throughout drought-prone regions in India.
- The Integrated Watershed Development Program is a large-scale, agriculture-based, water percolation project that involves the restructuring of a valley to arrest or slow down water after rainfall, allowing it to percolate into the soil. This helps to increase the water table and improve water availability.
- In regions dependent on agriculture, a higher water table helps ensure year-round cropping. In FY22-23, Godrej captured 32 million kiloliters of water which was made available for agriculture.
- The program also allowed for the formation of the Village Watershed Community, which provides educational and financial support to village members involved.

NbS at Godrej

- At the Godrej Group, biodiversity and water management began as part of the family owners' philanthropy efforts and is now embedded in the group's goals and strategy.

- Once water stress was identified through the corporate risk process, improved management practices were initiated at operating sites. The knowledge and skills gathered through the Integrated Watershed Development Program were used to establish projects that allow Godrej to pivot towards becoming water positive and mitigating future risks.

Lessons learned

- The social impact of the project enhanced community camaraderie and ownership through the formation of village watershed committees. These also offer a platform for financial access and an avenue for women to speak and be heard (~30% of women participate). The interventions also promoted income and employment diversification.
- For the successful implementation of sustainability projects, it is critical to set clear goals, realistic deadlines and have support from the board/executive leadership and senior business leaders. As a result, Godrej Group now:
 - prepares an annual operating plan which weaves sustainability targets into key responsibility areas for dedicated Green Champions;
 - enforces a robust governance mechanism that provides the ability to monitor, review and enhance sustainability performance;

- has established an innovation cell specifically dedicated to exploring state-of-the-art sustainability solutions that can shape medium to long-term strategies;
- holds itself accountable and continuously improves by participating in multiple ESG disclosures and measuring its performance against industry peers.



GSK: *Contributing to a nature positive world through watershed replenishment in Nashik, India*



Value drivers

- Risk management & mitigation
- Strategic priorities & ESG

NbS types

- Wetland restoration
- Regenerative agriculture

Corporate strategy connections with NbS

- GSK is publicly committed to a net zero, nature positive, healthier planet with ambitious goals set for 2030 and 2045 and believes that action on nature matters for health, climate and business success.
- GSK has a clear pathway to reduce carbon emissions by at least 90% by 2045 and to contribute to a nature positive world in line with the goal of the post-2020 Global Biodiversity Framework: to halt and reverse biodiversity loss by 2030.
- To support its commitment to reducing its impact on climate and nature, GSK invests in high quality nature protection and restoration, including investing in nature-based solutions.

Challenge

- Reducing water risk and improving local communities' health and livelihoods

Opportunity

- Go above and beyond initial objectives, create a long-lasting positive impact in the wider basin

Context

Human health relies on the fundamentals of nature: clean air and fresh water. Nature loss has a range of negative impacts on health. For example, habitat degradation and deforestation are increasing the risk of new human pathogens and pandemics and nutrition is impacted by changes to agriculture. Protecting nature makes businesses more resilient and can inspire future innovations. Water is also essential for the production of GSK vaccines and medicines. GSK is committed to reducing the amount of water used for manufacturing, keeping any Active Pharmaceutical Ingredient (API) emissions from manufacturing below the predicted no-effect level for all sites and working with local communities to further take action to improve livelihoods and sanitation in water-stressed basins. In India, GSK has partnered with WOTR, a non-profit

organization that works to tackle the key causes of rural poverty by rejuvenating ecosystems and building the community's resilience to climate change. The project will be implemented in four villages in the Nashik district and aims to tackle the problem on two main fronts: (1) improve the water storage potential of the four identified villages through ecosystem-based adaptation solutions and (2) build the response capacity of the communities to stabilize and enhance agricultural productivity through soil and water conservation. This project also involves educating and empowering communities to implement sustainable agriculture and improve degraded landscapes. These activities aim to improve water availability in the dry season and slow the flow of excess water during monsoon season for sustainable agriculture use, domestic purposes and ecosystems regeneration.

NbS Blueprint case studies

→ GSK: Contributing to a nature positive world through watershed replenishment in Nashik, India

Additional sources of value:

- Increased economic stability, health and education to local families through improved agriculture yield of local subsistence farmers
- Increased biodiversity through eco-friendly agricultural practices
- Increased resilience to climate change

Tools:

- Engagement with local communities on sustainable agriculture practices and conservative water use
- WOTR's water budgeting tool and micro-irrigation techniques
- Technological improvement of water infrastructure (WRI Volumetric Water Benefits Accounting Methodology)

Project evaluation metrics and targets:

- Target population: >2,000 ha and >4,000 people
- Water replenishment: increase water capacity (m³) through water storage and soil/water conservation
- Sustainable agriculture: improve crop productivity (%) and improve livelihoods (\$)
- Health: drinking water sources and nutrition (via crop productivity)

Overcoming challenges:

- Identification of a water replenishment program with human and health co-benefits incorporated
- GSK's first NbS pilot intervention – opportunity to learn how it can scale intervention in other basins

Project partner:

Watershed Organisational Trust (WOTR)

Duration:

Project began Q4 2023 for 3 years [on-going]

Context and additional information

Environmental sustainability strategy and approach at GSK

GSK's environmental sustainability strategy focuses on the interconnectedness of climate, nature and human health. GSK is publicly committed to a net zero, nature positive, healthier planet, with ambitious climate and nature goals set for 2030 and 2045. In November 2020, it set ambitious twin goals on climate and nature and it is taking action to achieve those goals.

GSK has a clear pathway to a net zero impact on climate and aims to reduce carbon emissions across the full value chain by at least 90% by 2045. Its plan to contribute to a nature positive world is in line with the goal of the post-2020 Global Biodiversity Framework to halt and reverse biodiversity loss by 2030. GSK's approach is through four focus areas which are aligned to the 'realms' of nature as defined by TNFD and SBTN. These are the major components of the natural world – freshwater, land, oceans and atmosphere – including the biodiversity of living species across these realms.

GSK is taking action by:

1. avoiding and reducing impacts on nature across the full value chain,
2. investing in the protection and restoration of nature and
3. helping to drive collective action for nature.

GSK has deepened its understanding of its full value chain nature impacts and dependencies and continues to align with evolving practices and guidance. For example, in 2022 GSK followed the TNFD LEAP (Locate, Evaluate, Assess and Prepare) methodology to better understand its nature-related risks and opportunities.

It is also part of the first group of companies working with the Science Based Target Network (SBTN) to set validated science-based targets for nature starting with targets for freshwater and land, followed by targets for oceans and biodiversity. These targets will focus on locations across GSK's value chain where nature is particularly under pressure. GSK expects to set its first science-based targets for nature in 2024.

GSK approach to NbS

- Investing in nature protection and restoration within and outside its value chain is a key part of GSK's ambition and commitment to achieve a net zero, nature positive, healthier planet.
- While continuing to reduce its impact, to support its net zero impact on climate goal, GSK is investing in high quality nature protection and restoration, including Nature-based Solutions equivalent to 20% of its 2020 carbon footprint.
- GSK recognizes that carbon credits and Nature-based Solutions are a key part of the solution but are complicated and difficult to get right. That's why it really matters that projects and credits are genuine and high-quality.

INGKA:

Wild gardens for local biodiversity at IKEA Timisoara

Value drivers

- Business performance
- Strategic priorities & ESG

NbS type

- Creation of urban green spaces

Corporate strategy connections with NbS

- INGKA Group's main priority areas are circularity, reducing climate impact and supporting vulnerable communities
- INGKA is currently working on developing its sustainability strategy including and amplifying nature and biodiversity
- All IKEA buildings (including those under INGKA's management) follow the BREEAM sustainable building certification requirements but INGKA aims for further positive impact

Challenges

- High water and maintenance cost of existing green gardens
- Low biodiversity and insect population

Opportunity

- Reduce water and maintenance cost while improving biodiversity and employee health

Context

IKEA's policy requires all shops (including those managed by INGKA) to landscape with grass and trees. To increase biodiversity and reduce water and maintenance costs, IKEA Timisoara implemented a project pilot partnering with InsectRespect to transform one of the existing gardens into a wild local vegetation biodiversity hotspot. The primary goal and business case was to reduce maintenance cost and water use, especially in a climate change scenario where extreme weather events significantly increase. The garden included local insect-friendly shrubs and bushes in the outer margin, structure elements for habitat, hibernation, and shelter and local flowering insect-friendly herbs and flowers. The pilot project was extremely successful in reducing water use and maintenance costs but additional positive impacts on employee and customer wellbeing were also apparent. In general terms a biodiversity garden offers diverse habitats for a broad range of insects, small mammals, reptiles, and amphibians, as well as food sources and a wider variety of flowering plants (compared to traditional landscaped gardens). Furthermore, a biodiversity garden requires less maintenance as flowering areas are cut only once a year, which leads to cost savings.

Additional sources of value:

- Increased happiness and mental health of employees
- Customers were also happy to see more diverse biodiversity
- Reduced maintenance costs

Project evaluation / project metrics:

- Number of flowering species
- Period of flowering
- Number of insect species
- Diversity in habitat and shelter

Project partner:

InsectRespect

Duration:

2023 - ongoing

NbS Blueprint case studies

→ *INGKA: Wild gardens for local biodiversity at IKEA Timisoara*

Context and additional information

INGKA Group

INGKA Group consists of three business areas:

- The core business is IKEA Retail which consists of 379 IKEA stores including city stores across 31 markets and counting.
- INGKA Centres creates meeting places where each center is anchored by an IKEA store. So far, Ingka has established 44 experience-oriented shopping centers across Europe and China – and more are on the way.
- INGKA Investments allows IKEA to expand the retail business by partnering with companies that share similar values.

Sustainability strategy at IKEA

IKEA's three major focus areas are:

- Healthy & sustainable living
- Circular & climate positive
- Fair & equal

Nature commitments are being developed as IKEA is working towards setting SBTi targets and looking at SBTN for guidance.

INGKA & IKEA approach to NbS

- An initial materiality assessment identified hotspot locations; Nature-based Solutions are being identified to mitigate risks and reduce impact.
- The pilot project in Timisoara was a great success with both customers and employees and generated a stronger push to implement similar solutions across multiple IKEA facilities.



Reckitt: *Sustainable cultivation of rubber farms in Thailand*



Value drivers

- Risk management & mitigation
- Business performance
- Strategic priorities & ESG

NbS type

- Sustainable agriculture and farming practices

Corporate strategy connections with NbS

- Biodiversity strategy aimed at protecting and restoring nature by assessing top-priority materials, identifying risks and opportunities
- Ensuring access to key input materials for products (resilience to safeguard business continuity)

Challenge

- Reduce supply chain risk (upstream; materials/ingredients)

Opportunity

- Add to a framework for strategic supply development including NbS, mitigating nature-related risks in the supply of key raw materials

Context

Reckitt is collaborating with external partners to develop a “good” practice approach to assess, manage and report on environmental factors with the aim to identify impactful NbS investments. Reckitt worked with Nature based Insights (Nbi – a spinoff of Oxford University), smallholder farming communities and local NGOs (including Earthworm Foundation) to build an analytical framework for the rubber farming landscape in southern Thailand. The framework is designed to estimate the impacts of Reckitt’s operations on biodiversity and livelihoods in this region which forms part of Reckitt’s supply network and is related to a material input (latex). Impact estimation is supported by the Nbi Analytics model which relies on the best available models and datasets to estimate a Biodiversity Impact Metric (BIM) and is then used to establish biodiversity baselines. Once a baseline is set, the Analytics model simulates scenarios to project and address impacts through Nature-based Solutions activities, identifying ecologically-sound investment strategies which will have a positive impact for both farmer communities and biodiversity. By providing a comprehensive and multidimensional perspective, this approach informs strategies for mitigating and adapting to nature-related risks.

Additional sources of value:

- Measurable biodiversity impacts from latex farming and from implementing NbS on and off-farm in the latex production landscape
- Improving Reckitt’s TNFD disclosure

Tools:

- Bespoke Analytical Framework supported by the Nbi Analytics model; designed to estimate Reckitt’s impacts, risks and opportunities associated with biodiversity, and monitor and evaluate the biodiversity impacts of NbS as they are implemented
- Biodiversity Impact Metric (BIM): estimates biodiversity impacts as a function of land use, land cover, the proportion of biodiversity lost and the importance of local biodiversity

Project evaluation / project metrics:

- Improved BIM (in km²)
- Farm/landscape footprint
- Farming activity, soil/aquatic eutrophication, carbon emissions

Project partners:

Nature-based Insights; Earthworm Foundation, Sustainable Rubber Association of Surat Thani

Duration:

3 years with ongoing interventions and measurement

Context and additional information

Reckitt's approach to biodiversity

Reckitt's purpose is "to protect, heal and nurture in the relentless pursuit of a cleaner, healthier world". It is working on a biodiversity strategy that supports a nature-positive future. To do so, it partnered with Nature-based Insights (Nbi) to measure the impact of its priority natural raw materials such as latex. The resulting framework and results will guide Reckitt's actions to reduce greenhouse gas emissions, address biodiversity priorities and enhance people's livelihoods. Reckitt has also applied the TNFD recommendations, which provided insights on material nature-related risks and will help to inform the biodiversity strategy.

Challenges and lessons learned

Framework development

Key challenges:

- **Localized data:** need to develop local data at a quantitative level to assess impacts and interventions from a broader initial qualitative evaluation.
- **Time scale and scope for updating and monitoring data:** annual assessments do not always support an effective change in nature as biodiversity takes longer to be measured. Data analysis cycles also need to align with program implementation schedules for findings to be implemented efficiently.
- **Social aspect** is a **crucial** part of implementation and needs to be part of evaluation as well. Therefore, working with local supply chain to improve data granularity is key.

Lessons learned:

- Pragmatic approach is needed due to scale of landscape and with limited specific localized data at the outset (in this case from ~800 smallholder farmers). Impact assessment is also still evolving and will have various options as more approaches are defined at landscape level (in support of disclosure at company level) such as:
 - **Measuring direct impact on project or near-project activities** with robust metrics that can be applied to consider impact and to other interventions/projects
 - **Measuring/assessing indirect impact to the landscape or company** to provide context and support for principles of land use, interventions developed and impact to the company
- Robust methodology and similar metrics are needed to establish a representative sample size and establish confidence for NbS project implementation (and investment).
- TNFD will be the framework referenced in the future by Reckitt with disclosures and further development of the methodology. This reflects the company's existing approach on climate-related disclosures (TCFD).

The business value of NbS

- Clear understanding among senior management that dependence on natural resources can pose a risk to operations.
- Evidence for senior management where NbS reduce supply and quality risks (e.g. latex quality, yield).

- Buy-in from management regarding nature-related risks including development of the assessment framework and NbS investment.
- Assessing the current and avoided nature-related and supply chain risks within a framework that allows performance management of interventions to strengthen biodiversity and offer potential climate solutions.
- Building stronger quantification of risks in an emerging area.



Appendix

Appendix

Appendix A: Example nature metrics and monitoring tools

Tool and framework	Description
Case Study company tools	
Ecosystem Intelligence Tool (previously Ecosystem Services Identification & Inventory, or ESII)	<ul style="list-style-type: none"> → Licence-based, developed by Ecosystem Intelligence in partnership with Dow and The Nature Conservancy → Designed as a comprehensive quantification platform for Nature-based Solutions to help the user identify and measure benefits → Outputs are available using various metrics (percent performance, functional, area, etc.) that provide different ways of understanding ecosystem services or benefits → Processes company field data with robust ecological models to analyze how nature is performing on-site → Includes a data collection tool for use in Ecosystem Services Assessments and during field work, the EI Tool App
Biodiversity Impact Metric (BIM) tool	<ul style="list-style-type: none"> → Bespoke methodology developed by Reckitt in partnership with Nature-based Insights (a spin-out of Oxford University) → Used by Reckitt to measure impact on biodiversity and ecosystems, informing sustainable sourcing → Provides an analytical framework for assessing biodiversity, carbon and social impacts in five key supply chains, which include latex and palm oil → The framework includes robust, science-based metrics for biodiversity, resulting in a Biodiversity Impact Metric score (BIM) to quantify these impacts (based on the Biodiversity Intactness Index)
Other company tools	
Integrated Valuation of Ecosystem Services and Tradeoffs (InVEST)	<ul style="list-style-type: none"> → Open-source software including a suite of models used to map and value the goods and services from nature that sustain and fulfil human life. → These models project how changes in ecosystems can lead to changes in the flows of many different benefits to people → Uses maps as information sources and produces maps as outputs.
Kering Environmental Profit & Loss (EPL)	<ul style="list-style-type: none"> → Publicly available methodology developed by Kering; was not directly developed to design or measure NbS but can help with translating impact into monetary values to make the business case → EPL measures carbon emissions, water consumption, air and water pollution, land use and waste production along the entire supply chain, thereby making associated environmental impacts visible, quantifiable, and comparable → These impacts are then converted into monetary values to quantify the use of natural resources
The Capitals Approach	<ul style="list-style-type: none"> → Frameworks supporting companies in identifying, measuring and valuing impacts and dependencies on natural, social, and human capital, translating some aspects of NbS activities into useful metrics for assessment and decision-making → Includes guidance on integrating decision-making across multiple forms of capital and initial suggestions on addressing trade-offs

Appendix B: NbS benefit evaluation methods

Benefit Accounting of Nature-Based Solutions for Watersheds Guide (Version 2) includes methods for evaluating/quantifying a wide range of NbS benefits. The following benefits are covered:

→ Water Quantity

- Reduced/avoided surface runoff and associated erosion
- Improved/maintained surface water storage
- Increased/maintained groundwater recharge and storage
- Improved/maintained flow regime
- Improved/maintained flood protection and mitigation (inland and coastal)

→ Water Quality

- Improved/maintained surface water quality
- Improved/maintained groundwater quality

→ Carbon

- Improved/maintained carbon sequestration
- Reduced carbon emissions

→ Biodiversity and Environment

- Improved/maintained terrestrial habitat availability and quality (including soil health)
- Improved/maintained aquatic habitat availability and quality

- Improved/maintained terrestrial habitat connectivity
- Improved/maintained aquatic habitat connectivity
- Improved/maintained support for local pollinators
- Improved/maintained natural pest control
- Increased/maintained abundance and diversity of native plant species
- Increased/maintained abundance and diversity of native animal species

→ Socio-Economics

- Improved/maintained climate adaptation and mitigation
- Improved/maintained livelihood opportunities
- Improved/maintained human health
- Improved/maintained agriculture/agricultural output
- Expanded/maintained religious/spiritual settings
- Enhanced/maintained microclimate regulation
- Improved/maintained opportunities for education/scientific study
- Increased/maintained food security
- Improved/maintained recreation/tourism opportunities
- Increased/maintained property/land value

Below are five tables (A1-A5), taken from Benefit Accounting of Nature-Based Solutions for Watersheds Guide (Version 2), that list metrics and calculation methods for evaluating the benefits listed above.

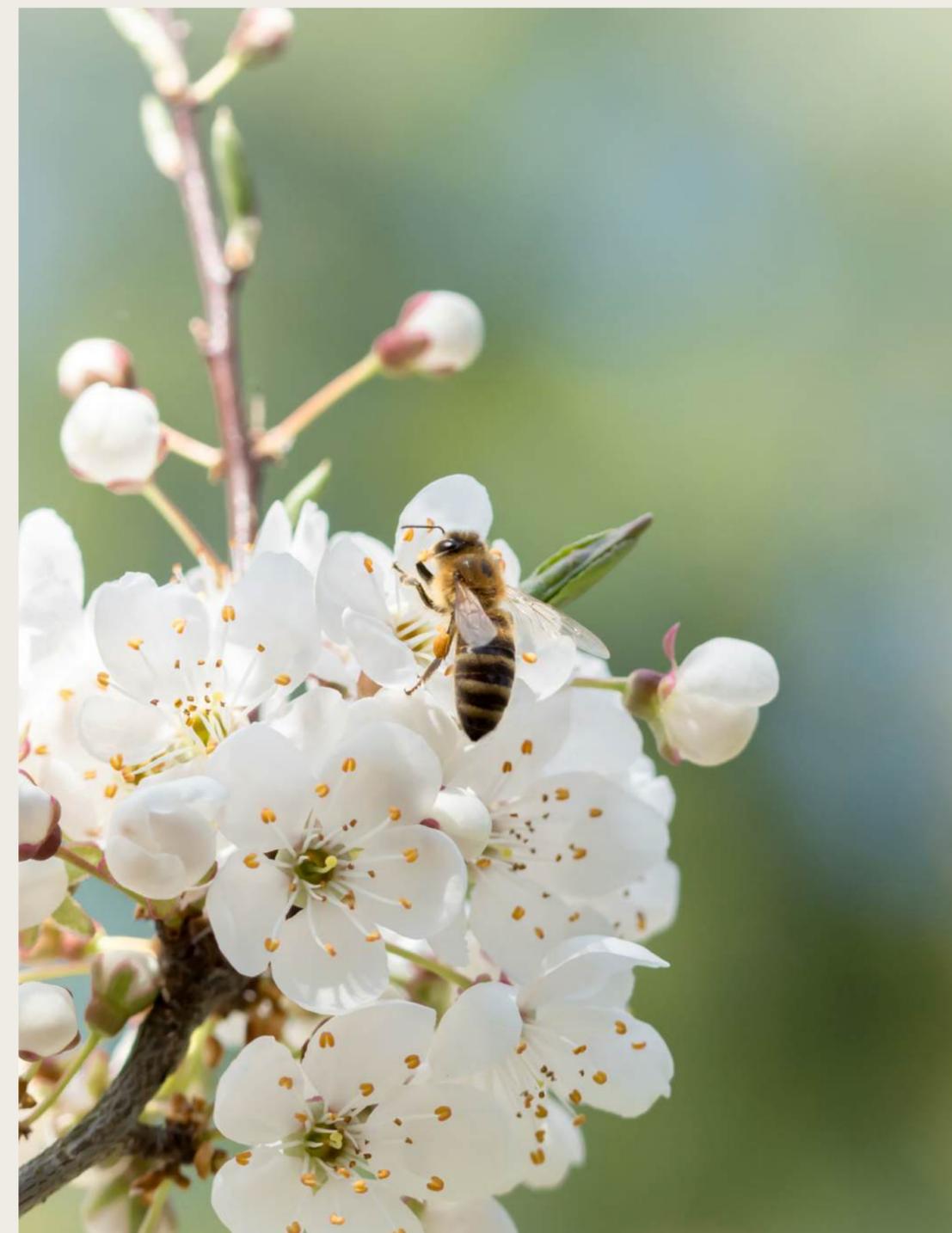


Table A1: Water quantity benefits and associated activities, indicators and calculation methods

Benefit	Habitat Intervention	Activity	Indicator	Calculation Method
Reduced/Avoided Surface Runoff and Associated Erosion	Terrestrial protection	Avoided habitat conversion	Avoided runoff	Curve number method
	Terrestrial restoration and management	Plant/restore native vegetation	Reduced runoff	Curve number method
Improved/Maintained Flood Protection and Mitigation (Inland and Coastal)	Agricultural management	Agricultural NBS (e.g. plant vegetation buffers including cover crops)	Reduced runoff	Curve number method
Improved/Maintained Surface Water Storage	Wetland creation (artificial or introduced)	Construct treatment systems (treatment wetlands, rain garden treatment systems)	Volume treated	Volume treated method
	Urban habitat creation, wetland creation	Store rainwater (retention/ detention ponds, rain gardens, etc.)	Volume captured	Runoff reduction method
	Terrestrial and wetland restoration	Remove invasive and aggressive indigenous species	Reduced evapotranspiration*	Evapotranspiration method
Improved/Maintained Flood Protection and Mitigation (Inland and Coastal)	Aquatic restoration and management	Re-establish hydrologic connection (floodplain inundation, rewetting of historical wetland)	Increased inundation volume	Inundation method
Increased/Maintained Groundwater Recharge and Storage	Wetland protection	Avoided habitat conversion (wetland)	Maintained recharge	Recharge method
	Urban habitat creation, agricultural creation	Store rainwater and recharge aquifers	Increased recharge	Capture and infiltration method or recharge method
Improved/ Maintained Flow Regime	Aquatic restoration	Reduced/avoided resource abstraction	Reduced withdrawal or consumption	Withdrawal or consumption method
	Aquatic restoration	Remove hard structures (instream barrier removal)	Improved flow regime	Hydrograph method
	Terrestrial and aquatic restoration	Remove invasive and aggressive indigenous species	Reduced evapotranspiration*	Evapotranspiration method

Source: Volumetric Water Benefit Accounting (VWBA): A Method for Implementing and Valuing Water Stewardship Activities (Reig et al., 2019)

*Where site-specific modeling or monitoring data are available to support the analysis, volumetric benefit associated with invasive species removal may be quantified based on improved flow regime.

Table A2: Activities that contribute to improved water quality and corresponding indicators and calculation methods

Benefit	Habitat Intervention	Activity	Indicator	Calculation Method
Improved/Maintained Surface Water Quality	Terrestrial protection	Avoided habitat conversion	Avoided pollutant load	Modified simple method; Revised Universal Soil Loss Equation (RUSLE)
	Terrestrial restoration and management	Plant/restore native vegetation	Reduced pollutant load	Modified simple method; RUSLE
		Remove hard surfaces	Reduced pollutant load	Modified simple method; RUSLE
	Aquatic restoration and management	Restore/improve/stabilize substrates (streambank stabilization)	Reduced pollutant load	Stream bank recession rate
	Aquatic restoration management	Agricultural NBS (e.g. restore/improve soil health, grazing management systems, terraced/contour planting, mulching and fertilizing)	Reduced pollutant load	RUSLE or agricultural best management practice models under development (e.g. Nutrient Tracking Tool)
		Agricultural NBS (e.g. plant vegetation buffers)	Reduced pollutant load	Pollutant reduction efficiency method
	Wetland creation	Construct treatment systems (constructed wetland treatment systems, stormwater capture/ treatment systems with well-defined inlets and outlets (e.g. bioswales))	Reduced pollutant load	Direct monitoring
		Construct treatment systems (stormwater capture/ treatment systems without well-defined inlets and outlets: rain gardens, conservation landscaping, bioretention, green roofs)	Reduced pollutant load	Modified simple method

Table A3: Carbon benefits and associated activities, indicators and calculation methods

Benefit	Habitat Intervention	Activity	Indicator	Calculation Method
Improved/Maintained Carbon Sequestration	Terrestrial restoration, wetland and mangrove restoration	Plant/restore native vegetation, introduce grazing management systems	CO2 removals by above- and below-ground biomass and soil	Stock-change or gain-loss methods
	Agricultural management	Agricultural NBS (introduce grazing management systems, plant vegetation buffers)	CO2 removals by above- and below-ground biomass and soil	Stock-change or gain-loss methods
Reduced Carbon Emissions	Terrestrial (forest, grassland) protection	Avoided habitat conversion (forest, grassland)	Avoided CO2 emissions (metric tons) from above- and belowground biomass and soil	Stock-change or gain-loss methods Land cover and climate altering land cover indicator
	Agricultural management	Agricultural NBS (activities relating to rice management like restoring/improving soil health)	Avoided CH4 emissions from soil (rice fields)	Stock-change or gain-loss methods
	Wetland protection	Avoided habitat conversion	Avoided CH4 emissions from soil at wetlands	Stock-change or gain-loss methods Land cover and climate altering land cover indicator

Table A4: Biodiversity benefits, indicators and calculation methods

Benefit	Habitat Intervention	Activity	Indicator	Calculation Method
Improved/Maintained Terrestrial Habitat Availability and Quality	Terrestrial management, protection	Avoided habitat conversion	→ Total protected habitat → Protected habitat in high priority or highly threatened areas	Measured or estimated hectares of land protected
	Terrestrial restoration, management, protection	→ Plant/restore/maintain native vegetation; → Restore/improve/stabilize substrates	→ Total restored habitat → Available habitat for species	Measured or estimated hectares of land restored
	Terrestrial restoration, management, protection, creation	→ Remove hard surfaces → Remove hard structures/barriers → Restore/improve soil health → Restore/improve/stabilize substrates → Plant/restore/maintain native vegetation → Manage/repopulate native fauna → Remove invasive (or aggressive indigenous) species → Undertake brush control → Undertake fire management → Avoid/limit habitat conversion → Reduce/avoid resource abstraction	Extent/coverage and condition of habitats	→ Species habitat index → Biodiversity habitat index → Biodiversity intactness index → Proportion of land degraded over total land area → Global ecosystem restoration index (GERI) → Coverage of protected areas
	Terrestrial management	→ Remove hard surfaces → Remove hard structures/barriers → Restore/improve soil health → Restore/improve/stabilize substrates → Plant/restore/maintain native vegetation → Manage/repopulate native fauna → Remove invasive (or aggressive indigenous) species → Undertake brush control → Undertake fire management → Avoid/limit habitat conversion → Reduce/avoid resource abstraction	Area of habitats under sustainable management	→ Species habitat index → Biodiversity habitat index → The species threat abatement restoration metric (STAR) → GERI → Coverage of protected areas

Benefit	Habitat Intervention	Activity	Indicator	Calculation Method
Improved/Maintained Terrestrial Habitat Connectivity	Terrestrial restoration, management, protection	<ul style="list-style-type: none"> → Remove hard structures/barriers → Restore/improve/stabilize substrates → Plant/restore/maintain native vegetation → Remove invasive (or aggressive indigenous) species → Avoid/limit habitat conversion → Reduce/avoid resource abstraction 	Habitat connectivity/fragmentation	<ul style="list-style-type: none"> → Species habitat index (a proxy for habitat connectivity) → Biodiversity habitat index → Proportion of land degraded over total land area → GERI → Coverage of protected areas
Improved/ Maintained Aquatic Habitat Availability and Quality	Aquatic protection	Avoided habitat conversion	<ul style="list-style-type: none"> → Total protected area, shoreline or river length → Protected area or length in high priority or highly threatened areas 	<ul style="list-style-type: none"> → Measured or estimated protected area or river length
		Restore/improve/stabilize substrates	<ul style="list-style-type: none"> → Total restored area, shoreline or river length → Restored area or length in high priority or highly threatened areas 	<ul style="list-style-type: none"> → Measured or estimated restored area or river length → Proportion of land degraded over total land area
		Plant/restore/maintain native vegetation	<ul style="list-style-type: none"> → Total restored area, shoreline or river length → Restored area or length in high priority or highly threatened areas 	<ul style="list-style-type: none"> → Measured or estimated restored area or river length
	Aquatic restoration, management, protection	<ul style="list-style-type: none"> → Remove hard surfaces → Remove hard structures/barriers → Restore/improve soil health → Restore/improve/stabilize substrates → Dredge substrate → Plant/restore/maintain native vegetation → Manage/repopulate native fauna → Remove invasive (or aggressive indigenous) species → Undertake brush control → Undertake fire management → Avoid/limit habitat conversion → Reduce/avoid resource abstraction 	Extent/coverage and condition of habitats	<ul style="list-style-type: none"> → Species habitat index → Biodiversity habitat index → Biodiversity intactness index → Proportion of land degraded over total land area → Coverage of protected areas

Benefit	Habitat Intervention	Activity	Indicator	Calculation Method
Improved/ Maintained Aquatic Habitat Availability and Quality <i>(continued)</i>	Aquatic management	<ul style="list-style-type: none"> → Remove hard surfaces → Remove hard structures/barriers → Restore/improve soil health → Restore/improve/stabilize substrates → Dredge substrate → Plant/restore/maintain native vegetation → Manage/repopulate native fauna → Remove invasive (or aggressive indigenous) species → Undertake brush control → Undertake fire management → Avoid/limit habitat conversion → Reduce/avoid resource abstraction 	Area of habitats under sustainable management	<ul style="list-style-type: none"> → Species habitat index → Biodiversity habitat index Area of habitats under sustainable management → STAR → GERI → Coverage of protected areas
Improved/ Maintained Aquatic Habitat Connectivity	Aquatic restoration, management, protection	<ul style="list-style-type: none"> → Remove hard structures/barriers → Restore/improve/stabilize substrates → Dredge substrate → Plant/restore/maintain native vegetation → Remove invasive (or aggressive indigenous) species → Avoid/limit habitat conversion → Reduce/avoid resource abstraction 	Habitat connectivity/fragmentation	<ul style="list-style-type: none"> → Species habitat index (proxy for habitat connectivity) → Biodiversity habitat index → Proportion of land degraded over total land area → GERI → Coverage of protected areas
Improved/ Maintained Support For Local Pollinators	Agricultural management	<ul style="list-style-type: none"> → Plant/restore/maintain native vegetation → Plant vegetation buffers → Undertake brush control 	Number of plant species	Estimated count and/or number of species based on field counts before and after project
		<ul style="list-style-type: none"> → Plant/restore/maintain native vegetation → Plant vegetation buffers → Undertake brush control 	Number of pollinators	Estimated or modelled number of pollinators

Benefit	Habitat Intervention	Activity	Indicator	Calculation Method
Increased/ Maintained Abundance and Diversity of Native Plant and Animal Species	Terrestrial and aquatic management, restoration and protection	Plant/restore/maintain native vegetation	Variety and number of native species	Estimated count and/or number of species based on field counts before and after project
		Manage/repopulate native fauna	Abundance and distribution of selected species	<ul style="list-style-type: none"> → Wildlife picture index → Species habitat index (proxy for abundance) → Biodiversity habitat index (proxy for abundance) → Biodiversity intactness index → Shannon and Simpson's diversity indices
			<ul style="list-style-type: none"> → Change in status of threatened and/or protected species → Change in status of priority or indicator species 	<ul style="list-style-type: none"> → Wildlife picture index → Species habitat index → Biodiversity intactness index → Shannon and Simpson's diversity indices → Red List index → STAR
	Agricultural restoration, management, protection	<ul style="list-style-type: none"> → Plant/restore/maintain native vegetation → Manage/repopulate native fauna 	Genetic diversity in native breeds of farm animals and cultivated varieties of agricultural and horticultural crops	<ul style="list-style-type: none"> → Biodiversity intactness index → Shannon and Simpson's diversity indices → Red List index

Table A5: Benefits and indicators for socio-economic benefits

Benefit	Indicator	Calculation Method
Improved/Maintained Climate Adaptation and Mitigation	Reduction in number or percentage of climate-related hazards/disaster risk reduction (heatwaves, flooding, drought)	<ul style="list-style-type: none"> → Reduction in Climate-Related Hazards → Compare records of climate-related hazards from pre- and post-project implementation → Risk Reduction → United Nations Office for Disaster Risk Reduction - National Disaster Risk Assessment → United Nations Office for Disaster Risk Reduction - Disaster Resilience Scorecard for Cities → World Bank Urban Risk Assessment
	Reduction in number or percentage of infrastructure/property damage after extreme events	<ul style="list-style-type: none"> → Compare records of infrastructure/property damage from extreme events from pre- and post-project implementation → Use formal surveying processes to gauge levels of damage, such as FEMA Preliminary Damage Assessment
	Reduction in health impacts from climate-related conditions/ diseases	(See health benefits)
	Reduced loss of lives due to extreme weather events	Compare records of loss of life from extreme weather events from pre- and post-project implementation
	Reduced impacts on water quality and quantity	(See water benefits)
	Avoided greenhouse gas emissions	(See avoided carbon emissions)
	Reduced impacts of climate change on agricultural outputs	(See food security)
	Reduce urban heat island effects	(See microclimate regulation)
Improved/Maintained Livelihood Opportunities	Change in poverty rate	The Poverty Probability Index , typically used by organizations and companies, is a series of 10 questions regarding a household's characteristics and asset ownership, which are scored to compute the likelihood that the household is living below the poverty line. Through repeated use of this index, the project team can have a clearer picture of how an NBS project has impacted poverty rates.
	Total job availability by job type	US Bureau of Labor Statistics
	Job retention	Employee retention rates can be determined by dividing the number of employees who stayed during a given time by the number of employees that were at the start of the period; multiply this result by 100. The company Built In also provides an Employee Retention Rate Calculator (Heinz & Urwin, 2022).

Benefit	Indicator	Calculation Method
Improved/Maintained Livelihood Opportunities (<i>continued</i>)	Shadow wage benefits	Estimating Shadow Wage Rates for Economic Project Appraisal
	Reduce time burdens	<ul style="list-style-type: none"> → Reduced time spent collecting water, food, fuel and fiber in households and in unpaid care, particularly for women and girls → To calculate reduced time burdens, residents can be surveyed on how much time they spent doing certain activities (collecting water/food/fuel/fiber, unpaid care, etc.) before the NBS project was developed and for subsequent years after the project is completed
Improved/Maintained Human Health	Physical health metrics (e.g. blood pressure)	Physical health metrics can be assessed via questionnaires, such as: <ul style="list-style-type: none"> → PROMIS measures → RAND's Medical Outcomes Study 36-Item Short Form Health Survey → CDC's HRQOL-14 Healthy Days Measure → The YOUTHREX International Physical Activity Questionnaire specifically to track changes in physical activity for a population
	Perceived public safety	<ul style="list-style-type: none"> → Analyze changes to public crime rate data → Survey the public regarding their perceived sense of safety, via questionnaires such as the University of Sydney's Perceptions of Crime and Safety survey
	Mental and emotional health metrics (e.g. improvement in mood, workplace satisfaction, quality of life)	Mental health metrics can be assessed via questionnaires, such as: <ul style="list-style-type: none"> → Oxford Brookes University's Oxford Happiness Questionnaire → World Health Organization's Well-being Index (WHO-5) → Warwick Medical School's Warwick-Edinburgh Mental Wellbeing Scale → Ohio State University's Perceived Stress Scale
Improved/Maintained Agriculture/ Agricultural Output	Increased crop yields and quality	Crop yield is typically expressed as kilograms of harvested crop per hectare of harvested area. There are a several ways to calculate or estimate crop yield, including whole plot harvest, the crop cut method, sampling of harvest units, farmer recall, farmer prediction, and crop modeling. Measuring crop yields can be complex, depending on the spatial scale that is being measured and whether multiple crops are planted within the same plot (FAO, 2017b).
Expanded/Maintained Religious/ Spiritual Settings	Increased spiritual well-being	Spiritual well-being can be recorded via surveys and questionnaires. The types of questions that are asked should be reflective of the types of spiritual, religious and cultural traditions that exist within the population being surveyed.
Enhanced/Maintained Microclimate Regulation	Change in peak air temperatures	To confirm changes to the microclimate of an NBS project, the project team will want to routinely measure and record air temperature and humidity. Depending on the site, other parameters, such as wind, light intensity, rainfall, and slope can also be measured.

Benefit	Indicator	Calculation Method
Improved/Maintained Opportunities for Education/Scientific Study	Adult or child eco-literacy	<ul style="list-style-type: none"> → Eco-literacy can be measured via surveys, which can contain questions that range from testing scientific knowledge about local ecosystems and general ecological concepts, through perceived beliefs and awareness regarding nature and environmental issues (Pitman and Daniels, 2016; Ha et al., 2022). → The Environmental Identity Scale (Clayton et al., 2021) is a reputable survey instrument when seeking to understand how a group of people feel connected to the environment (European Commission, 2021). → Other data to be collected may include counting the number of people that attend public environmental education programs (either in the NBS project location or within a determined spatial scale), or the number of people that engage with the NBS project site (European Commission, 2021).
Improved/Maintained Recreation/Tourism Opportunities	Distance to recreation	<ul style="list-style-type: none"> → One way to determine the distance to recreation can be to assess the per cent of a population that lives within a designated buffer (1 mile, 10 miles, etc.) of the project boundary (Merriam, 2016). → Alternatively, the project team can identify areas of high traffic/population (urban/community centers, public transportation stations) and measure the average distance to the project site from these locations (European Commission, 2021).
	Total recreation time	Residents can either be surveyed regarding the amount of time they spend at recreation sites, or project team members can perform observational studies to calculate the average time spent at recreation sites (Cohen and Han, 2018).
	New tourism	There are several ways to calculate whether an NBS project has led to the creation of new economic and tourism opportunities. Metrics to be tracked include the number of visitors to the NBS project, counting the number of new tourism-related activities or companies in the area, calculating the annual gross profit of companies working in nature-based tourism, and counting the number of new jobs in tourism-related activities (European Commission, 2021).
Increased/Maintained Food Security	Access to and availability of food	<p>Local access to and availability of food is best measured through household surveys administered at the local, municipal and watershed levels. There are many reputable surveys that the project team can utilize, including:</p> <ul style="list-style-type: none"> → UN Food and Agriculture Organization's Food Insecurity Experience Scale, which measures food-related behaviors and experiences associated food inaccessibility due to resource constraints → World Food Program's Food Consumption Score, which looks at the diversity and frequency of food groups that have been consumed over the previous seven days
Increased/Maintained Property/Land Value	Nominal value and price	Changes in mean and median land and property prices, including rental and market prices for homes and commercial spaces, can indicate changes in property/land value of the NBS itself. High-quality green spaces typically lead to increases in surrounding property values. For agricultural habitats, land productivity, or calculating the average economic return of the agricultural activity per hectare, can be a method for calculating property/land value (European Commission, 2021).

Note: Where possible, these socio-economic benefits should be disaggregated by sex, ethnicity and population group to understand the distribution of the benefits for excluded and vulnerable groups.

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WBCSD's Nature Action Imperative supports members to accelerate credible corporate action and mainstream nature in business strategies & decision-making: building the tools and guidance needed to define credible business contributions to Nature Positive (halt and reverse nature loss by 2030); preparing to engage with the emerging performance and accountability system for nature; and, catalyzing investments into nature assets. To learn more about the Imperative and related projects, visit www.wbcsd.org/Imperatives/Nature-Action.

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The World Business Council for Sustainable Development (WBCSD) is a global community of over 220 of the world's leading businesses, representing a combined revenue of more than USD \$8.5 trillion and 19 million employees. Together, we transform the systems we work in to limit the impact of the climate crisis, restore nature and tackle inequality.

We accelerate value chain transformation across key sectors and reshape the financial system to reward sustainable leadership and action through a lower cost of capital. Through the exchange of best practices, improving performance, accessing education, forming partnerships, and shaping the policy agenda, we drive progress in businesses and sharpen the accountability of their performance.

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