



INTEGRATING BIODIVERSITY INTO NATURAL CAPITAL ASSESSMENTS

Framing Guidance

Part of a series of Biodiversity Guidance to accompany the Natural Capital Protocol



**CAPITALS
COALITION**

CambridgeConservationInitiative

Key messages

- This Guidance, aimed at businesses and financial institutions, explains why biodiversity requires additional consideration when you conduct a natural capital assessment using the Natural Capital Protocol.
- Natural capital is the stock of renewable and non-renewable natural resources (e.g., plants, animals, air, water, soils, minerals) that combine to yield a flow of benefits to people. Biodiversity refers to the variety within and between the living parts of this stock.
- All businesses impact and depend upon biodiversity. This leads to costs and benefits for your business and also for wider society.
- In general, higher levels of biodiversity generate a greater quantity and quality of goods and services, and more resilience to change.
- Integrating biodiversity values into a natural capital assessment allows you to identify risks and opportunities for your business or financial institution that might otherwise be hidden or missed.
- Failing to consider biodiversity values can result in your business's impact and dependencies on biodiversity being underappreciated. This can lead to inadequate business responses to the results of your natural capital assessment.

FRAME STAGE



What is the Frame Stage?

The **Framing Guidance** helps you to establish why you should conduct a **natural capital** assessment that incorporates biodiversity. This includes providing clarity on the links between natural capital and **biodiversity**, why biodiversity may be missed from natural capital assessments, and why this is relevant to business.

This Guidance also helps you to identify and describe biodiversity-related impacts/dependencies and risks/opportunities relevant to your business. To prepare for the Scope Stage of your assessment, the Frame Stage ends with guidance on identifying potential Business Applications for your assessment results. It helps to identify the decision you are attempting to inform and how your business may benefit from better information on natural capital and biodiversity.

What additional biodiversity guidance is provided for the Frame Stage?

Table F.1 provides an overview of the questions and actions under Step 01 of the Frame Stage in the Protocol that relate to why you should undertake a natural capital assessment. It also outlines the actions for which the Biodiversity Guidance provides additional information.

This Guidance has been developed to explain **why you should conduct a natural capital assessment that incorporates biodiversity**.

Table F.1:
Key questions addressed and their relation to the Natural Capital Protocol

| Protocol Step | Questions this Step will answer | Protocol Actions | Additional biodiversity guidance included? |
|-----------------------|--|--|--|
| 01 Get Started | Why should you conduct a natural capital assessment that incorporates biodiversity? | 1.2.1 Familiarize yourself with the basic concepts of natural capital [and biodiversity] | Yes See action 1.2.1 |
| | | 1.2.2 Apply these concepts to your business context | Yes See action 1.2.2 |
| | | 1.2.3 Prepare yourself for a natural capital assessment | Yes See action 1.2.3 |



01 Step 01 Guidance: Get started

1.2.1 Familiarize yourself with the basic concepts of natural capital [and biodiversity]

a. What is biodiversity and how does it relate to natural capital?

Natural capital is a concept used for describing our relationship with nature. The presence of, and interactions between, **natural capital stocks** generates a flow of goods and services. These goods and services create **value** through the benefits they provide to business and society (Natural Capital Coalition 2016).

The flows of benefits from ecosystems to people are often described as **ecosystem services** (MA 2005). Ecosystem services result from **ecosystem function**, which describes the flow of energy and materials through ecosystems (IPBES 2019), and is the process by which ecosystems maintain their integrity (MA 2005).

Businesses and financial institutions often already evaluate environmental risk from specific issue perspectives (e.g., energy use, waste, pollution, climate change, natural resource use, and biodiversity). Natural capital encompasses all of these environmental issues and helps to describe how they are interrelated. The application of a natural capital approach builds on the **environmental, social, and governance (ESG)** and risk initiatives already in use, providing additional benefits such as understanding these as a set of interrelated issues with trade-offs.

So where does biodiversity come in? Biodiversity plays an integral role, underpinning the goods and services that natural capital stocks generate (figure 1.1).

Biodiversity describes the variety of life and is the living component of what can be thought of as natural capital stocks. It plays an important role in the provision of the services we receive from nature. Biodiversity can refer to the level of genetic variation, the variety of species present, or the variety of groups of species or ecosystems. In general, more biodiversity equates to a higher **quantity, quality, and resilience** of ecosystems and the services they provide, which underpin the benefits to business and society. As such biodiversity can be an indicator of the condition and resilience of natural capital stocks. It also contributes benefits to business and society in its own right, for example through **direct** and **intrinsic** value of species, **nature-based solutions**, and by enriching other benefits such as nature-based recreation.

Glossary :

Biodiversity

"The variability among living organisms from all sources including, inter alia, terrestrial, marine, and other aquatic ecosystems and the **ecological complexes** of which they are a part; this includes **diversity within species, between species, and of ecosystems**" (Art. 2, CBD 1992). Multiple characteristics of living systems are encompassed within the term biodiversity and it is difficult to capture everything within a single definition. Biodiversity includes, but is not limited to, functional, taxonomic, and genetic diversity, diversity in space, time, and population demographics, and endemic, threatened, and charismatic species and ecosystems.

Natural capital

"The **stock** of renewable and non-renewable **natural resources** (e.g., plants, animals, air, water, soils, minerals) that combine to yield a **flow of benefits** to people" (Natural Capital Coalition 2016).

Ecosystem services

The **flows of benefits** to people from ecosystems, commonly divided into the following categories: provisioning, regulating, cultural, and supporting (MA 2005). Examples of ecosystem services include providing food, materials, and energy (provisioning), preventing soil erosion (regulating), and enhancing recreation (cultural). The terms ecosystem services and "nature's contributions to people" have very similar meanings. Nature's contributions to people has been defined as "all the contributions, both positive and negative, of living nature to the quality of life for people," and is the terminology used in key biodiversity documents including the IPBES Global Assessment (IPBES 2019) and zero draft of the post-2020 global biodiversity framework (CBD 2020).

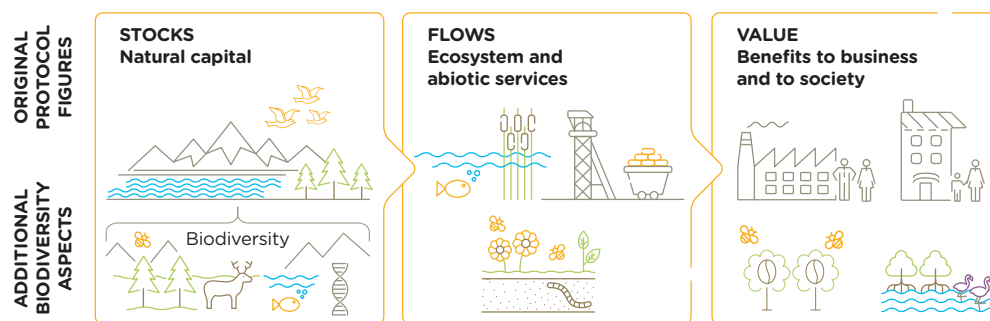


Figure 1.1
Relationship between biodiversity and natural capital stocks, flows, and values
(adapted from figure 1.1 of the Natural Capital Protocol 2016)

Figure 1.1 expands on figure 1.1 in the Protocol to illustrate how biodiversity underpins healthy natural capital stocks. The figure provides further examples of biodiverse ecosystem service flows and highlights how biodiversity underpins the value flowing to business and society using the examples of pollinators providing benefits to a coffee production business and mangroves/flamingos providing flood mitigation/wildlife viewing for society.

Biodiversity is in unprecedented decline on a global scale. The rate of species extinction is already tens to hundreds of times higher than in the past and is increasing. The majority of natural ecosystems are deteriorating or have been destroyed. For example, over 85% of wetland habitats present in 1700 had been lost by 2000 (IPBES 2019).



Biodiversity's decline has important negative implications for business and society. The current rate of loss exceeds a **planetary boundary** (Steffen et al. 2015) meaning that it poses a high risk of deleterious or even catastrophic environmental change. Biodiversity loss will prevent us from achieving international objectives such as the **Sustainable Development Goals** (UN 2015) and is considered to be one of the greatest risks facing humanity on a global scale, in terms of both likelihood of occurring and the potential magnitude of negative impact (WEF 2020).

There is an important and complex relationship between biodiversity and the delivery of ecosystem services. In many cases, biodiversity affects the quantity, quality, and resilience of the goods and services delivered from natural capital stocks:

- **Quantity:** More biodiversity, in general, has the potential to deliver a greater number of ecosystem services to a wider range of beneficiaries. For example, a biodiverse woodland may have high cultural and recreational values, deliver regulating services like water filtration, soil stabilization, and carbon sequestration, and be sustainably harvested for timber. In comparison, a plantation woodland made up of a small number of species might only provide timber and some regulating services.
- **Quality:** In many instances, biodiversity is linked with the quality of ecosystem service delivery. For example, a plantation woodland is likely to provide a lower level of ecosystem services such as water filtration, soil stabilization, and carbon sequestration than a biodiverse woodland.
- **Resilience:** Biodiversity also contributes to the resilience of natural capital stocks and the stability of ecosystem service provision. For example, biodiverse coral reefs (which contribute to ecosystem services such as maintaining fish stocks and defending coastlines against storms and erosion) are more resilient to changes in ocean temperature. The variety and genetic diversity of species and ecosystems present affects the ability of a reef to resist and adapt to the effects of climate change and other disturbances.

Thinking about it in this way, you can broadly equate the benefits of biodiversity to the benefits of a diverse portfolio of financial stock. The more diverse the stock, the greater the spread of risk.

See box 1.1 for frequently asked questions about biodiversity and natural capital.



Box 1.1: Frequently asked questions

Is biodiversity the same as natural capital?

No. Natural capital refers to a stock of living and non-living components that combine to yield a flow of benefits to people. Biodiversity refers to the variety within the living components of this stock, and can be seen as an indicator of its condition.

Is biodiversity just about threatened species and protected areas?

No. The term biodiversity applies to the variety of all living organisms. Threat status or delineation as a protected area are specific designations granted to species or habitats that are considered important or threatened, to support their conservation. However, taking account of all components of biodiversity is challenging, so threatened species, protected areas, and other measures of the area and integrity of ecosystems are often used when attempting to measure biodiversity.

How does biodiversity relate to ecosystem services?

Ecosystem services are provided by the presence and interactions of natural capital stocks. Biodiversity forms a fundamental part of natural capital stocks and their ability to deliver goods and services to business and society. In many cases, the relationship between biodiversity and the goods and services produced is complex. In general, more biodiversity equates to a higher quantity, quality, and resilience of ecosystem service provision. Less biodiverse natural systems can still yield ecosystem goods and services but they are generally fewer, of lower quality, and more vulnerable to change.

I have included ecosystem services in my natural capital assessment. Doesn't that mean I've automatically included biodiversity?

No. Ecosystem services are flows of goods and services, while biodiversity refers to the variety of the living component of a natural capital stock. Natural capital assessments that focus only on the flow of benefits (ecosystem services) rather than the condition of the stock (biodiversity) can lead to poor business decisions. For example, a sole focus on ecosystem services could lead to investments in maximizing highly valued flows in the short-term while stocks are left to deteriorate. Biodiversity's contribution to ecosystem services is complex, and often poorly understood. Natural capital assessments need to explicitly include biodiversity as the stock that generates benefits.

b. What are the values of biodiversity?

Despite the benefits biodiversity provides to business and society, many of its values are often underappreciated in natural capital assessments (see box 1.2 for more discussion of value).

The values of biodiversity can be summarized as follows:

1. **Direct value:** In some instances, biodiversity itself has value to business's bottom line, for example through providing food, or in tourism based on wildlife watching.
2. **Underpinning value:** More commonly, biodiversity has value through its role in the delivery of ecosystem services. Systems such as water cycles, carbon cycles, and crop production rely on the interactions of living things, and the diversity of these living things will influence the quantity and quality of the services delivered.
3. **Insurance and options value:** Some goods and services can be delivered with relatively low biodiversity, but are vulnerable to change from factors such as pests, diseases, or climatic instability. Biodiversity increases the resilience of a system, enabling it to continue providing ecosystem services despite changes in conditions that may occur in the future, which are often uncertain. Biodiversity provides options for delivery of ecosystem services from alternative sources in the future (for example new crop species that might be domesticated for agriculture or new medicines). Biodiversity also provides options for new ecosystem services, for example benefits from biodiversity that are not yet recognized (i.e., where biodiversity is currently providing benefits to business and/or society that we are not yet aware of) or services that will only become beneficial in the context of future technological or societal innovations (i.e., where biodiversity contributes to processes that are not currently beneficial but become beneficial due to future changes to the natural environment or changes to the way people live or what they value).
4. **Intrinsic value:** Biodiversity has value independent of human use of the goods and services it provides. This value is associated with the moral right of living things to exist. Some people consider intrinsic biodiversity values to also be intertwined with other values, such as bequest value (knowing that future generations will continue to benefit



from biodiversity), altruist value (knowing that other people of the same generation can benefit from biodiversity), and existence value (connected to our desire to protect biodiversity irrespective of whether we derive any value from it other than associated with our knowledge of its existence).

You may also come across the terms “**use value**” and “**non-use value**” to describe and categorize biodiversity values. Use values encompass the direct values, underpinning values (also sometimes called indirect values), and insurance and options values outlined above. Non-use values relate to biodiversity’s intrinsic value, bequest value, altruist value, and existence value (TEEB 2010).

The relevance of biodiversity to your business relates to both the values it provides to your business and the value of biodiversity to wider society. Often, the value of biodiversity will be realized from the perspective of wider society, rather than solely for your business.

Box 1.2: What is meant by value?

In the Protocol, value is defined as the importance, worth, or usefulness of something (Natural Capital Coalition 2016).

The concept of value represents what something is worth to someone. Biodiversity may have different values to different groups of people, and the value of biodiversity may be different from a business perspective and from a societal perspective.

Value is not the same as cost or price. Cost represents the amount incurred through an action (or lack of action), while price is the amount paid for something (Olajide et al. 2016).

Valuation is the process of estimating the relative importance, worth, or usefulness of natural capital to people (or to a business), in a particular context. Valuation may involve **qualitative, quantitative, or monetary approaches**, or a combination of these (Natural Capital Coalition 2016). See the **Valuing Guidance** for further information on valuing biodiversity as part of your natural capital assessment.

c. Why are some of these values often underappreciated in natural capital assessments?

The full value of biodiversity may be overlooked in your natural capital assessment if links have not been identified between your business activities and biodiversity. For example, your business might depend on water extracted from a natural water source, and the quality and quantity of water available might be affected by biodiversity in the upstream watershed. This link between biodiversity and delivery of water needs to be recognized to identify and include the value of this business dependency on biodiversity within your natural capital assessment. Furthermore, your business may not have identified all impacts on biodiversity. For example, abstraction of water may have impacts on species in downstream wetland areas, and these impacts cannot be included in your natural capital assessment if they have not been identified.

Another reason why biodiversity might be underappreciated is due to the multitude of different components (e.g., species, habitats, ecosystems, genes) that make up biodiversity, and upon which your business might have impacts and/or dependencies. For example, the impacts of your business activities on some species might be minimal, however other species might be more sensitive. Lack of knowledge and understanding associated with these different components of biodiversity, and the interactions between them, may lead to underappreciation of some biodiversity values in natural capital assessments.



In addition, the Protocol focuses primarily on flows of ecosystem services from natural capital, and their value to business and society. Capturing flows is important, however the full contribution of biodiversity to the quantity, quality, and resilience of ecosystem service delivery can be unclear when using this approach (CCI 2016, Mace 2019). The biodiversity values likely to be underappreciated when focusing on flows of benefits are outlined below.

- **Underpinning value:** By focusing on flows of final benefits, assessments may fail to recognize the role of biodiversity in delivery of ecosystem services. Recognizing this underpinning value can be challenged by the difficulty of untangling the specific contribution of biodiversity to ecosystem service delivery, particularly given time lags between the loss of biodiversity and the decline in delivery of goods and services. Furthermore, underpinning value can be underappreciated where biodiversity contributes to goods and services that we are unable to measure, or may even fail to recognize as providing us with benefits in the first place.
- **Insurance and options value:** By focusing on flows of immediate and tangible benefits, natural capital assessments may overlook future benefits that biodiversity could provide. These benefits could include biodiversity's role in providing a stable and resilient flow of ecosystem services under changing environmental conditions (insurance value), and/or delivering other benefits in the future that may not yet be known, such as new medicines, materials, or crops (options value).
- **Intrinsic value:** Biodiversity's intrinsic value is independent of any use of goods and services by people and therefore will be overlooked when focusing on ecosystem service flows.

Better recognition of the importance of biodiversity can be achieved through improvements in assessment methodologies. However, it is important to recognize that gaps will remain and some values will continue to be underappreciated. For example, this may be due to limitations in scientific understanding of the relationships between biodiversity and delivery of goods and services. You should usually consider the values of biodiversity identified in a natural capital assessment as minimum estimates and take a precautionary approach in business decision-making, considering biodiversity values alongside other information and in consultation with stakeholders.

1.2.2 Apply these concepts to your business context

Every business and financial institution depends, to some degree, on biodiversity. Business activities often have negative impacts on biodiversity (e.g., through inputs to production processes, or outputs resulting from business activities). These impacts and dependencies result in economic costs and benefits for business and society (e.g., related to air, water, and soil pollutants, or habitat destruction or preservation). While these generate **risks** to your business, good management can also create **opportunities**, either directly or indirectly through the **costs/benefits** experienced by society (figure 1.2).

As figure 1.2 shows, the risks and opportunities experienced by business and society are transferred to the financial sector through banking, insurance products, and investments such as corporate bonds, stocks, and financial derivatives.

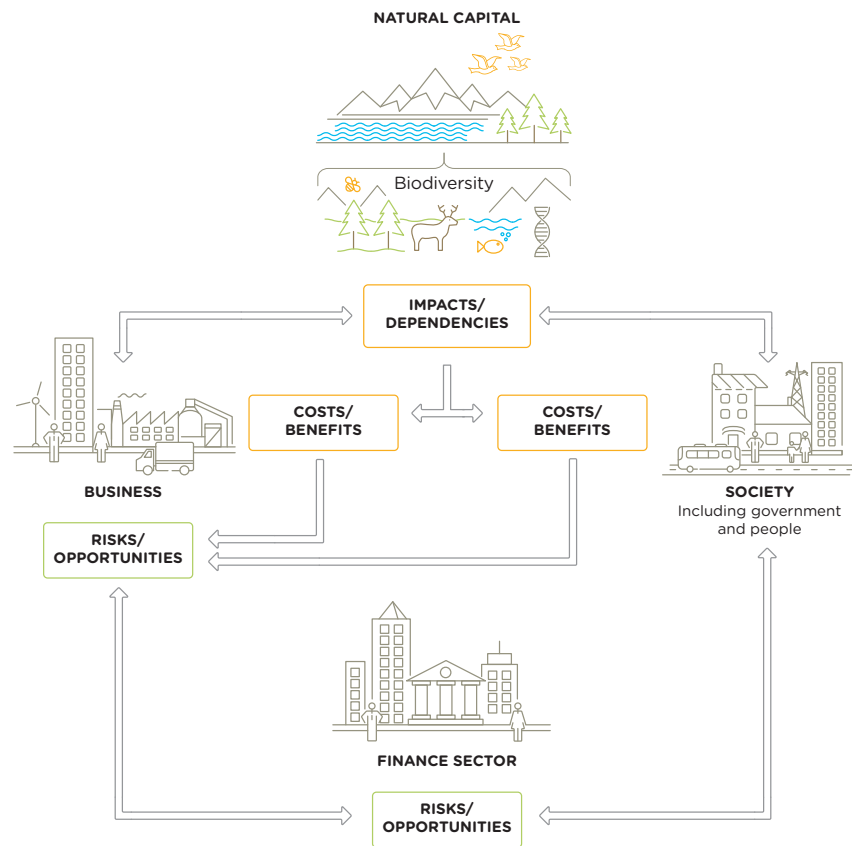


Figure 1.2

Biodiversity impacts and dependencies: conceptual model for business, the finance sector and society (adapted from figure 1.2 of the Natural Capital Protocol 2016)

a. Business impacts and dependencies on biodiversity

Impacts

Your business activities may have numerous impacts on biodiversity and natural capital, which can have positive or negative effects. As with other aspects of natural capital, your business impacts on biodiversity occur through impact drivers, which include:

1. Business use of natural resources as inputs to production processes, such as water use, terrestrial ecosystem use, or marine ecosystem use;
2. Non-product outputs resulting from business activities as well as the use and disposal of products that the business creates, such as air pollutants, solid waste, or disturbances.

Your business impacts on biodiversity may be **direct**, **indirect**, and/or **cumulative**. Indirect impacts are triggered in response to the presence of your business projects or operations, rather than being directly caused by them. Cumulative impacts arise from the combined impacts of your operations, those of other organizations (including other businesses, governments, and local communities), and other background pressures and trends (BBOP 2012). Similarly, impacts can accumulate over time, so that relatively small impacts of each subsequent activity can add up to a large overall impact. Your business impacts on biodiversity, particularly your indirect and cumulative impacts, may often be non-linear and difficult to predict (this is covered in more detail in the **Measuring and Valuing Guidance**).



A single business production process may have impacts on biodiversity through multiple direct, indirect, and/or cumulative mechanisms. For example, production of natural fibers in the textiles industry requires use of water and large areas of land for growing crops, and may produce air, water, and soil pollutants, as well as solid waste (ENCORE 2020). In this example, direct impacts on biodiversity could occur through converting habitats for crop production. Indirect impacts could occur in downstream areas when water is abstracted from natural sources and used for crop production. Cumulative impacts could occur through pollutants; even if the pollution from a single fiber producer is minimal, when combined with the pollution from other producers and industries operating in the landscape, there could be substantial negative impacts on sensitive species.

Dependencies

The ecosystem services provided by natural capital stocks, such as clean air and water, healthy soils, and raw materials, are ultimately the basis of all economic activity. Biodiversity underpins many of these ecosystem services. More than half of global gross domestic product (GDP) is highly or moderately dependent on nature, with business activities depending heavily on nature both in direct operations and in supply chains (WEF 2020a).

In the Protocol, a dependency is material if consideration of its value, as part of the set of information used for decision-making, has the potential to alter that decision. Some business activities have material dependencies on the presence of aspects of biodiversity, such as species or habitats. For example, the natural rubber industry depends on sap collected from specific species of tree. In contrast, some production processes depend on the diversity of habitats or species. For example, agricultural crops depend on a diverse range of animal pollinators for benefits such as being able to grow crops requiring pollination by different species, and being able to grow crops throughout the year when different pollinator species are active.

b. Business risks and opportunities

Natural capital thinking provides businesses and financial institutions with a more detailed understanding of the significance of impacts and dependencies on biodiversity and other aspects of the environment by framing them as risks and opportunities. This can strengthen your business's consideration of interconnections and trade-offs between different environmental, social, and economic issues, leading to more informed decision-making. For financial institutions, understanding the value of impacts and dependencies on biodiversity leads to better insight on the magnitude, reliability, and resilience of financial returns, due to biodiversity's role in supporting delivery of ecosystem services.

Risks

Biodiversity loss can pose direct risks to your business operations where you have dependencies on the goods and services that biodiversity generates, either directly and/or within supply chains. The risk of disruption will continue to intensify if biodiversity continues to be lost.

In many instances, the majority of the benefits from biodiversity are received by society rather than directly by your business. As a result, where your business activities (or the activities of businesses in your financial portfolio) impact on biodiversity, you face risks associated with societal relationships, reputation, marketing, laws, regulations, and access to finance.

Reputational risks to business are increasing as biodiversity continues to decline, and as pressure from consumers to slow and reverse this decline continues to grow. For example, impacts on charismatic species affect societies who place value upon them for cultural, ethical, and/or philosophical reasons. Threats to these species resulting from business operations can create reputational risks for business. For example, clearing rainforest habitats to grow oil palm may destroy the habitat of the orangutan, a culturally important species. Including societal values in the scope of a business's natural capital assessment is therefore needed to identify reputational risks.



Financial institutions are exposed to multiple types of biodiversity-related risk, including risk of default by clients, lower returns from investees, and increasing insurance liabilities. Understanding the contribution of biodiversity enhances understanding of natural capital risks across your portfolio, enabling more informed risk management decisions. Financial institutions can turn risks into opportunities by managing investments sustainably to mitigate impacts on biodiversity (UNEP et al. 2020). An investment manager, for example, could promote sustainable land use practices that result in positive biodiversity and socioeconomic impacts through blended finance (where public money is used to increase private investment in projects that can have positive development while producing financial returns).

It is important that you apply a broad approach to natural capital assessments that considers the multiple ways in which biodiversity has value to different stakeholders. You should carry out assessments over a suitable scale and time period for your impacts to be identified, including impacts that accumulate over time, and direct and indirect impacts (e.g., overexploitation of resources, habitat loss, contributions to climate change), as well as impacts that occur as a result of the interaction of activities of different organizations operating in a landscape (cumulative impacts).

- For example, the contribution of a farm's pesticide use could add to the cumulative impacts of surrounding farms, which in aggregate can affect the ecosystem's predator-prey balance, risking future pest outbreaks or a decline in access to wild pollinators and associated pollination services.
- Another example is overfishing. Overfishing can reduce fish biomass, affecting marine biodiversity and the sustainability of fisheries (Sumaila et al. 2020). In the case of the North Atlantic cod stock, this resulted in the collapse of six populations of cod leading to a moratorium where fishers were no longer allowed to harvest the species (Myers et al. 1997, Pederson et al. 2017).

Inclusion of cumulative impacts in the scope of a business's natural capital assessment is important to ensure risks such as declining fish stocks, future crop losses, or increased pest control costs can be mitigated.

Finally, biodiverse ecosystems are more resilient to unpredictable changes. In the example of a tropical island experiencing a greater number of cyclones over a five-year period due to climate change, an island with a greater number of tree species of different heights, with the roots reaching to varying depths, is more likely to be able to withstand high wind speeds with minimal damage. An island covered with a single species of tall trees, however, is more likely to experience damage, and a lengthened recovery period. For this reason, biodiverse natural surroundings are better able to mitigate against unpredictable weather events. Biologically diverse communities are more likely to contain species that confer resilience of that ecosystem to change. As a community accumulates species, there is a higher chance of any of them having traits that enable them to adapt to a changing environment (Cleland 2011).

[Click here to see how a fashion company has integrated biodiversity as part of a natural capital assessment to identify risks in their operations and supply chain.](#)

Opportunities

Understanding biodiversity as an integral part of natural capital stocks, as well as its role in underpinning the goods and services that stocks generate, allows you to identify and manage potential new business opportunities, business models that are viable in the long term, cost savings, and increases in operational efficiency. If your business is able to demonstrate minimal impacts, or biodiversity enhancements, you are likely to secure benefits such as preferential access to resources and financing, better relationships with stakeholders, maintaining a social license to operate, and retaining employees. For example, adopting sustainable fishing practices to prevent overfishing would require a reduction in the number of catches made annually and result in a reduction in short-term profit. However it would better ensure sustainability of resources and a maintained social license to operate in the long term. This is especially true in the case of fishing companies who have a high impact on fisheries in their catchment area and local communities.



Click here to see how a financial institution has integrated biodiversity as part of a natural capital assessment to identify opportunities for sustainable and socially responsible investment.

Business models and activities that promote biodiversity can present an opportunity for enhancement of natural capital stocks. Examples of these activities include implementing regenerative agriculture to reduce fertilizer costs, or adopting nature-based solutions to increase resilience to natural disasters. In both cases these activities would offer sustainable opportunities for benefits to a business while enhancing natural capital stocks, with resulting benefits for wider society.

Financial institutions can make investment decisions based on impacts and dependencies on biodiversity, and therefore realize reputational benefits while reducing risks within a portfolio.

Further examples of potential business risks and opportunities relating to biodiversity are provided in table 1.2.

Table 1.2
Examples of biodiversity risks and opportunities for business*

| Category | Risk example | Opportunity example |
|---|---|--|
| <i>Operational</i> Regular business activities, expenditures, and processes | Overexploitation in an important fishery has caused depletion of fish stocks. The reduction in fish population has had a cascading effect through the ecosystem, leading to conditions that are no longer suitable for development of juveniles. The fishing industry has collapsed, with knock-on implications for fishers, processing plants, distributors, and seafood retailers. | Climate change threatens to reduce the dry-season water supply to a hydroelectric dam. The energy company operating the dam has adopted a nature-based solution through funding restoration of wetlands high in the watershed with diverse native vegetation in order to increase water storage. This is expected to improve the reliability of downstream water flows throughout the year, despite climate uncertainty. |
| Legal and regulatory Laws, public policies, and regulations that affect business performance | A chemical used in pesticides is harmful to bees and other insects that pollinate agricultural crops. New laws have been brought in banning its use. Agrochemical companies that were using the chemical are no longer able to manufacture and sell several of their products. | A major supermarket is supporting new legislation to reduce use of single-use plastics in food packaging, due to concerns about impacts on marine biodiversity. The supermarket already exclusively uses suppliers who minimize single-use plastics in their packaging. Therefore, this legislation will give an advantage over competing supermarkets who have not adapted their approach to packaging. |
| <i>Financing</i> Costs of, and access to, capital including debt and equity | A mining company is seeking investment to expand its operations in a mineral-rich forest. The forest has high biodiversity value and supports the livelihoods of local communities by providing services such as food, fuel, and water. The company lacks systematic information on their impacts on biodiversity and ecosystem services. Financial organizations are unwilling to lend to or invest in the company as risks are unknown. | A small forestry company has become the first operator in a developing country to receive environmental certification. These environmental credentials have enabled the company to access a long-term loan to monitor and report on their sustainable forestry practices, and make investments to improve the efficiency of forestry management. |
| <i>Reputational and marketing</i> Company trust and relationships with direct business stakeholders, such as customers, suppliers, and employees | A multinational oil company has suffered a spill around an offshore drilling rig, causing extensive damage to surrounding ecosystems and mass mortality of seabirds and turtles. Public and investor confidence has fallen rapidly, with the company seeing a huge reduction in market value. | For the first year following release of a new range of products, a cosmetics company is donating part of their income from each purchase to a biodiversity conservation project focused on protecting habitat for a charismatic eagle. Through linking the product range to this culturally important species the company are expecting to attract new customers into their stores. |
| <i>Societal</i> Relationships with the wider society (e.g., local communities, NGOs, government agencies, and other stakeholders) | A development bank is supporting a road-building project through a remote area of tropical forest. The biodiversity impacts of this project are expected to be negative, particularly for large mammals which are harvested by local communities for food and rituals. The bank is under pressure from an alliance of international NGOs and local communities to abandon the project. | A water company has restored habitat for wetland bird species around the margins of one of its reservoirs. The area is now well used by both local and more distant visitors for nature-based recreation, benefiting the company's public image and stakeholder relationships. |

*The typology of risks and opportunities in table 1.2 is the same as in the Natural Capital Protocol. Other similar typologies are also used, such as the biodiversity-related financial risk categories in the "Nature is too big to fail" report (PwC & WWF 2020).

Definitions of regenerative agriculture and nature-based solutions

Regenerative agriculture:
"A holistic land management practice that leverages the power of photosynthesis in plants to close the carbon cycle and build soil health, crop resilience, and nutrient density" (Regenerative Agriculture Initiative 2017).

Nature-based solutions:
"Actions to protect, sustainably manage and restore natural and modified ecosystems in ways that address societal challenges effectively and adaptively, to provide both human well-being and biodiversity benefits" (IUCN 2016).



1.2.3 Prepare yourself for a natural capital assessment

A key step to framing your natural capital assessment is to identify the **Business Application** or the intended use of the results of the assessment. Framing a natural capital assessment to incorporate biodiversity will focus the selection of the Business Applications. The Aligning Biodiversity Measures for Business collaboration sets out eight Business Applications specifically for biodiversity assessments (EU Business @ Biodiversity Platform 2019) based on work on the development and use of biodiversity indicators in business by the International Union for the Conservation of Nature (Addison et al. 2018). Table 1.3 lists how these biodiversity-inclusive Business Applications map to the applications listed in the Protocol, with examples of the types of decisions that can be informed when biodiversity is included in an assessment.

Table 1.3
Business Applications for a biodiversity-inclusive natural capital assessment

| Business Applications (table 3.4 in the Protocol) | Business Applications from Aligning Measures (EU Business @ Biodiversity Platform 2019) | Relevance of Business Application to your biodiversity-inclusive natural capital assessment |
|---|---|--|
| <i>Assess risk and opportunities</i> | BA7: Screening and assessment of biodiversity risks and opportunities | Assessing business risk, for example for due diligence assessments as part of mergers and acquisitions, or assessments undertaken by investors to differentiate between investment options, either based on the biodiversity performance or return on investment of different companies. This might also be undertaken by financial institutions to assess biodiversity risk and inform pricing credit. Assessing business opportunities related to nature restoration, for example investing in nature-based solutions. |
| <i>Compare options</i> | BA4: Comparing options | Comparing the impact and dependency of different business options on biodiversity, including economic considerations. |
| <i>Assess impacts on stakeholders</i> | BA1: Assessment of current biodiversity performance BA3: Tracking progress to targets | Demonstrating to stakeholders that your company is doing well in terms of biodiversity performance, or simply to know the company's current performance in relation to biodiversity. Setting targets which are important to specific stakeholder groups, or relate to fulfilling stakeholder expectations. |
| <i>Estimate total value and/or net impact</i> | BA1: Assessment of current biodiversity performance BA2: Assessment of future biodiversity performance BA5: Assessment/rating of biodiversity performance by third parties, using external data BA6: Certification by third parties BA3: Tracking progress to targets | Knowing the current net biodiversity impact of your company. Assessing future biodiversity performance as a result of, for instance, positive impact actions (e.g., restoration actions and/or actions that reduce pressures on biodiversity) or changes in your activities. Comparing company biodiversity performance across a sector, based on criteria and external data by a third party. Third-party certification based on auditing of a clearly established methodological approach. Periodic tracking of targets on biodiversity performance. |
| <i>Communicate internally and/or externally</i> | BA8: Biodiversity accounting for internal reporting and/or external disclosure BA1 to BA7 | Compiling consistent, comparable, and regularly produced data using an accounting approach framework, such as the Biological Diversity Protocol. Communicating the findings of your assessment. |



The results of a natural capital assessment can also inform the setting of corporate biodiversity targets. This might include commitments to “no net loss” and “net gain” of biodiversity (box 1.3), and/or commitments in response to regulatory drivers, such as the targets in the EU Biodiversity Strategy for 2030 (European Commission 2020). There are also a number of other global biodiversity target-setting initiatives (table 1.4).

Understanding alignment and contributions to these targets could be the objective of your natural capital assessment. By not incorporating biodiversity commitments within your natural capital assessment objective, you may miss a strategic opportunity to clearly demonstrate the value of your net contributions to biodiversity to both your business and to society, and/or miss potential risks associated with links to other environmental issues such as climate or water.

Table 1.4
Example target-setting initiatives for biodiversity

| Biodiversity target | Description |
|---|---|
| <i>Science Based Targets for Nature</i> | Targets which define and promote best practice for businesses by responding to five Earth systems; climate, fresh water, land, ocean, and biodiversity (SBTN 2020). Interim guidance on science based targets for nature, including biodiversity, will be launched in late 2020. |
| <i>Global Apex Goal for Nature</i> | A proposal for a clear, science-based Global Apex Goal that is measurable, communicable, and provides the direction and the destination that the global community must embrace and converge towards: Zero Net Loss of Nature from 2020, Net Positive by 2030, Full Recovery by 2050 (Apex Goal 2020). This draft goal is supported by 14 conservation and business organizations. |
| <i>CBD post-2020 biodiversity framework</i> | The Convention on Biological Diversity’s post-2020 global biodiversity framework will replace the Aichi Targets to provide a pathway towards achieving the 2050 Vision of “Living in harmony with Nature” (CBD 2020). |
| <i>UN Sustainable Development Goals (14 and 15)</i> | SDG Goals 14 and 15 focus on the protection of biodiversity and ecosystems within the marine and terrestrial environments (UN 2015). |

See the **Application Guidance** for more information on setting biodiversity targets as part of your natural capital assessment.

Financial institutions have a key role in achieving biodiversity targets, as they can catalyze behavior changes and influence economic pathways, and business models and practices. A report from the UN Environment Programme, released in 2020, addresses biodiversity-related target setting by the finance sector (UNEP et al. 2020).



Box 1.3: Potential Business Application for a biodiversity-inclusive natural capital assessment—tracking progress towards “no net loss” and “net gain” commitments.

The concepts of “no net loss” and “net gain” rely on the mitigation hierarchy to ensure preventative mitigation measures, principally avoidance, are prioritized to achieve these goals (CSBI 2015). This hierarchy has most often been applied to manage the biodiversity impact of development projects, including extractive and infrastructure projects, but has also been considered for managing the impacts of many business operations, including those along a supply chain. For companies already adopting the mitigation hierarchy, a biodiversity-inclusive natural capital assessment can strengthen the business case for action by clearly demonstrating the value of biodiversity at all stages of its implementation.

The mitigation hierarchy consists of four stages comprising a sequence of actions, in order of priority, to anticipate and mitigate impacts on biodiversity:

1. **Avoid** biodiversity impacts during business operations, by first anticipating the potential impacts of a business activity, then putting in place measures to prevent these adverse impacts. This may include, for example, selecting alternative raw materials that do not have negative impacts upon biodiversity, developing in alternative locations to avoid sites of high biodiversity value, or working with suppliers so they avoid non-sustainable practices.
2. **Minimize** any impacts where they cannot be immediately avoided. This could include for example measures to maintain habitat connectivity at the site level.
3. **Restore** biodiversity that has been impacted at the site level, for example through reforestation or the enhancement of important habitats.
4. **Offset** impacts in areas not affected by the project, when residual impacts occur on-site. This could include protection of habitat off-site that is under threat, or the restoration of habitat previously impacted, for example, restoring coastal saltmarsh to offset impacts of a coastal development. Note that offsetting should be used as the lowest priority step in the mitigation hierarchy and with caution, as it often cannot substitute for the complexity of biodiversity at the original site. This has led to criticism of offsets as a “license to trash” creating potential for reputational damage to businesses that rely heavily on offsetting.

After planning and implementing the mitigation hierarchy, “no net loss” refers to the point at which project-related impacts on biodiversity are balanced by mitigation measures, so that no net loss remains. Where gains are greater than losses, “net gain” targets are achieved.

The relationships between biodiversity, natural capital, and risks and opportunities for business may be quite complex. However it is important that the role of biodiversity is explicitly considered within a natural capital assessment.

Continue to the **Scoping Guidance** to read more about how biodiversity can be integrated as part of a natural capital assessment.



Case studies

Company example: Supply chain (fashion industry)

Kering S.A. has developed an Environmental Profit and Loss (EP&L) accounting methodology for measuring and quantifying the impacts of its activities on natural capital. The methodology aims to capture both the impacts of the Group's direct operations and those of its supply chain. The methodology measures carbon emissions, water consumption, air and water pollution, land use, and waste production. These impacts are converted into monetary values for comparison and use in guiding sustainability decisions (Kering 2013).

Ecosystem services supported by biodiversity sit at the base of the supply chain for many of Kering's products. The EP&L has a broad scope, and although it does not quantify biodiversity as a separate indicator, many of the impacts that it seeks to manage have consequences for biodiversity. Impacts on biodiversity are included in the methodology primarily through indicators of land-use change, which take into account areas of habitats (such as tropical forests, wetlands, etc.) that have been converted for different production systems, and the associated reduction in the value of ecosystem services. Specifically, to estimate the impact on ecosystem services, the EP&L looks at three indicators: above-ground biomass, species richness, and soil organic carbon (the latter is a strong proxy for overall soil health).

Kering's methodology is continually evolving, and more explicit integration of impacts on biodiversity is a key priority for the organization. Given that it is not appropriate or possible to place an economic value on all aspects of biodiversity, Kering is exploring separate biodiversity indicators to sit alongside and complement the EP&L (CISL 2020; CISL 2016).

To date, application of the methodology has provided insights and increased transparency around the environmental impacts of different aspects of Kering's business. For example, it has revealed that the majority of impacts lie in their supply chain. This has enabled Kering to prioritize strategies that can lead to improved environmental outcomes, such as regenerative agriculture in the production of raw materials. By integrating biodiversity as part of the methodology, Kering will be able to identify and implement actions to reduce biodiversity impacts, hence reducing the risk of disruption to their supply chains.

Company example: Finance

ASN Bank is a finance organization committed to sustainable and socially responsible investment. Using natural capital thinking they have developed ambitious, long-term goals associated with a three pillar sustainability framework: climate change, biodiversity, and human rights. Consistent with their natural capital approach, ASN Bank sees important interconnections between these three pillars, for example they recognize that investing in biodiversity can also create benefits associated with mitigating climate change and human rights.

ASN Bank acknowledges that their operations might be contributing to the loss of biodiversity. Their goal is to reverse this, where "all investments and loans of ASN Bank result in a net positive effect on biodiversity in 2030." To assess progress against this goal, they need to be able to measure their biodiversity impacts. They have developed a methodology for calculating the biodiversity footprint of their loans and investments, which was first applied in 2014 and subsequently refined in annual assessments. Insights from this assessment can be used to tailor ASN Bank's investment portfolio to its long-term biodiversity goal, through identifying "impact hotspots" (risks), and sectors and investments that will have a positive impact on biodiversity (opportunities).

Furthermore, ASN Bank are planning to establish a Partnership for Biodiversity Accounting Financials initiative (PBAF), which aims to bring together financial institutions to develop and refine methodologies for biodiversity footprinting. This will draw upon the bank's experience of establishing and running a similar initiative for assessing greenhouse gas emissions, the Partnership for Carbon Accounting Financials (PCAF), which is a global initiative adopted by 50+ financial institutions.



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