

TECHNICAL GUIDANCE



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  - The terms “*required*,” “*shall*,” or “*must*” are used throughout this document to indicate what is required for targets to conform with the criteria.
  - The terms “*recommended*” and “*should*” are used to indicate a recommendation, but not a requirement.
  - The related terms “*may*” or “*can*” are used to indicate an option that is permissible or allowable.



The five-step process for setting science-based targets for nature.

# Letter from SBTN's Technical Director

Dear Reader,

On behalf of the Science Based Targets Network (SBTN), I am pleased to share with you this new release of our methods for science-based targets for nature. These enhanced methods mark a critical step forward for corporate action on the mounting environmental and social crises associated with nature and biodiversity loss.

SBTN is a unique collaboration of over 80 leading global non-profits and mission-driven organizations. We are working together to co-develop scientifically rigorous and actionable methodologies for companies to set science-based targets for nature, complementing SBTi's science-based targets for climate.

SBTN's methods and guidance are intended to empower companies to deploy a clear, analytical approach, tested and vetted by scientific experts and end-users, for assessing and addressing their environmental impacts. Our work aims to align and build on related sustainability frameworks, data and tools to increase efficiency and drive action for nature through target setting.

Building on our methods first released in 2023, this updated and strengthened version reflects the learning from our validation pilot (conducted from fall 2023-spring 2024) and the insights of our non-profit partners and collaborators as well as the companies and consultancies that are part of the network.

The pilot process highlighted key benefits for target setting and reinforced that SBTN is closing a critical gap in corporate sustainability including:

- Increasing ambition and driving action on nature
- Leading to strategic discussions at a leadership level and generating value
- Providing credibility and a common language to advance engagement with stakeholders
- Acting as a trusted compass for company action

By definition science-based targets for nature are ambitious, focusing on place-based action where nature needs it most. As we turn toward the development of the next generation of targets, we will continue to respond and adapt to improve the feasibility and actionability of the methods while maintaining the scientific rigor at the heart of our work at SBTN.

These methods are ready for use by companies to set ambitious science-based targets for nature. As SBTN builds improvements in the target-setting methods, companies should be prepared to learn and incorporate updates as our science grows and environmental conditions change. In future versions, you will see a more comprehensive scope of coverage for freshwater and land methods, additional biodiversity integration, enhanced stakeholder engagement guidance, new methods for acting and tracking progress on targets (Steps 4 and 5), and new ocean and cities targets.



*Thank you for your interest and support for our work.*

**Varsha Vijay, Ph.D.**  
Technical Director  
Science Based Targets Network



*By taking enough of the right actions, in the right places, and at the right time through science-based targets, companies can contribute toward an environmentally safe and socially just future.*

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# Additional resources

YOU CAN FIND THESE IN THE [RESOURCES LIBRARY](#) IN OUR WEBSITE:

## RESOURCES TO ACCOMPANY STEP 1

- [Toolbox](#)
- [Materiality Screening Tool](#)
- [High Impact Commodity List](#)

## OTHER METHODS

- [Step 2: Interpret & Prioritize](#)
- [Step 3: Measure, Set & Disclose—Freshwater](#)
- [Step 3: Measure, Set & Disclose—Land](#)

## GENERAL RESOURCES

- [Glossary](#)
- [SBTN FAQs](#)
- [SBTN Consolidated Data Needs Table \(Steps 1–3\)](#)

## CONVENTIONS USED IN THIS DOCUMENT

- Numbers in parentheses, for example (1), indicate citations which can be retrieved in the bibliography



An aerial photograph of a wetland or marsh area. The landscape is characterized by a complex network of winding, narrow water channels and canals that meander through the terrain. The water appears light blue or greyish, contrasting with the surrounding green and brownish vegetation. The overall pattern is organic and irregular, typical of natural water flow in a flat, low-lying area.

## General Overview



## The SBTN method development process

SBTN has been working in collaboration with a number of organizations and initiatives to build on and align with existing frameworks, regulations, and standards. Links between the SBTN methodology and the core principles and guidance of other key initiatives are indicated in the Appendix 2 "Connections between SBTN and other sustainability frameworks and initiatives."

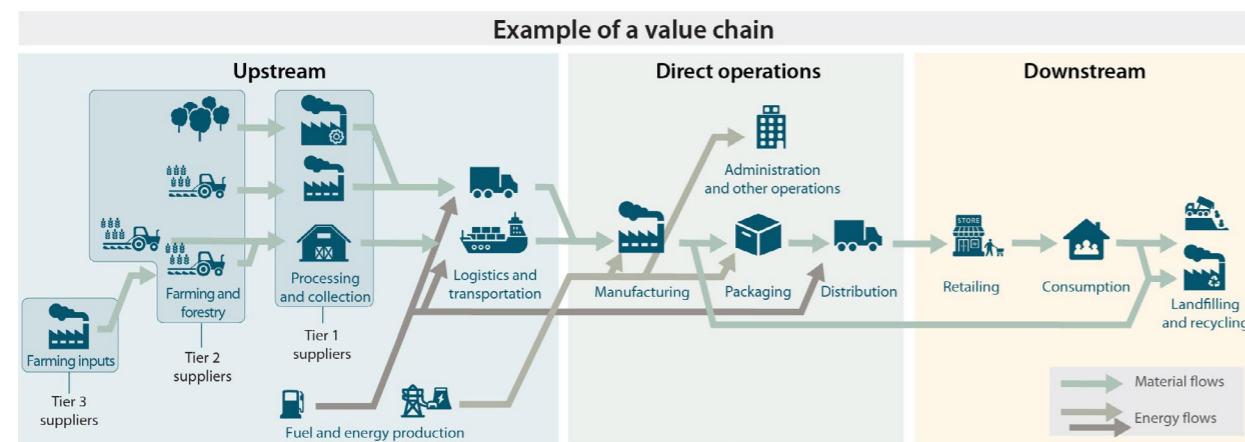
The technical documents published by SBTN have been developed through rigorous review and piloting involving SBTN's NGO and corporate partners, as well as a public consultation process. SBTN guidance is developed iteratively, constantly evolving through feedback from partners, stakeholders, and experts in our multi-stakeholder review process. All science-based targets for nature methods have undergone the following stages

of review: internal technical consultation; corporate engagement consultation; public consultation; and an external expert review panel.

These methods endeavor to address that feedback while balancing rigor with end-user feasibility. SBTN outlined this review process and released the themes and related responses from the first release of methods in 2023 in a blog entitled "[How SBTN's consultation process shapes science-based targets for nature.](#)"

The current version of the Step 1 and 2 methods, v1.1, reflects the learnings of the SBTN validation pilot conducted with 17 pilot companies from 2023-2024.

Users of SBTN methods should expect this document to be updated on an annual basis, in conjunction with updates to the target-setting methods.



**Figure 1:** Illustrative example of a company's value chain. Green arrows represent the primary flows of material through the value chain, starting at the initial stage of extraction, and the production of implements needed for those activities, and ending with landfilling and recycling. Gray arrows represent flows of energy that contribute toward a company's Scope 2 emissions. The two different shades of gray are intended to show different types of energy inputs. The boundaries between value chain segments are shown with the white lines between the blocks labeled "Upstream," "Direct operations," and "Downstream." Different tiers in the company's upstream supply chain are labeled to clarify the scope of assessment required in Step 1.

## Applicability of SBTN Methods to business activities

All companies other than consultancies and financial institutions are encouraged to apply the v1.1 methods developed by SBTN to assess material pressures (Step 1), and prioritize locations and business components for target-setting (Step 2). Some aspects of the methods, including the language used in the guidance and recommended tools, may be more easily understood and used by certain types of companies depending on the complexity of their operations and value chains. Other aspects of the methods, including the scope of pressures covered and value chains, may result in some companies needing to consult additional resources to address other material pressures. The sector applicability for Step 3 land and freshwater methods for setting science-based targets for nature is noted within the respective method documents.

Drawing from current practice, SBTN requires that companies assess and address their impacts occurring within not just their direct operations, but also other parts of their value chain. Following from other frameworks, the value chain can be divided into three segments: upstream, direct operations and downstream as illustrated in Figure 1.

Version 1.1 of the SBTN methods has limited application over these three value chain segments, reflecting current limitations in general guidance for impact accounting for nature in some segments (in particular, downstream), but also a desire to have companies prioritize those segments where they have the most capacity to act (i.e., their direct operations), and where impacts on nature are most often concentrated (i.e., upstream sections, in particular primary production for major commodities).

Coverage of downstream value chain impacts is out of scope for SBTN's current method release. Companies that have significant downstream environmental impacts are encouraged to implement the methods for their direct operations and upstream value chain segments and to seek additional solutions to address their downstream impacts.

The specific scope of the methods in each value chain segment is further described in this guidance document. This value chain scope has been selected for the following reasons:

- There is ample evidence that companies must manage not only the impacts occurring at the sites they manage within their direct operations, but also those occurring in their upstream value chains (1) (2).
- At present, there are many widely tried and tested methods available for assessing impacts from companies' direct operations and upstream supply chains.
- The methods available for assessing direct and upstream operations yield impact estimates in which there is greater confidence than for the downstream value chain (3).
- The SBTN community has greater clarity on how target-setting can occur for impacts within companies' direct and upstream operations than for those downstream.

## Stakeholder engagement

Stakeholders, including Indigenous Peoples, other local stakeholders impacted by company activities (e.g., community members, workers and others), civil society, academics, and local government, are critical partners in place-based action. Companies should use SBTN's stakeholder engagement guidance alongside the technical methods (Step 1-5). The guidance found therein complements the technical guidance provided in this and other documents, and will enable companies to engage in more equitable, just, and rights-based implementation of science-based targets for nature.

## Environmental topic scope and conceptual framework underpinning the methods

The SBTN methods utilize the drivers, pressures, state, impact, and response (DPSIR) framework. Beyond SBTN, DPSIR is a well-known framework used to summarize the relationship between different variables influencing environmental trends and outcomes, often used by policymakers to assess problems and design interventions, as well as by organizations developing methods for impact assessment and management. This framework has been adopted in academic research (4) (5) (6) (7) (8) (9) (10) as well as in practice and implementation by leading environmental NGOs (e.g., World Wide Fund for Nature (11) (12), and Capitals Coalition (13)); disclosure frameworks (e.g., the Taskforce on Nature-related Financial Disclosures (14)); and international organizations (e.g., European Commission and European Environment Agency (15), Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (16), United Nations Environment Programme (17) (18), Food and Agriculture Organization (19), Convention on Biological Diversity (20), and Organization of Economic Cooperation and Development (21)).

The DPSIR framework examines the social and economic drivers (D) that exert pressures (P) on the environment and result in changes to the state (S) of nature. The relating impacts (I) on humans and environments may cause or require a societal response (R). This is not a linear framework but instead one that may contain feedbacks throughout the system. Of the DPSIR variables, SBTN methods for Steps 1, 2, and 3 focus primarily on pressures and states (or the state of nature (SoN)).

Pressures are anthropogenic activities that change the state of the environment and ecosystem, including the addition or removal of substances or organisms to the environment, or direct changes to the structure, function, or composition of ecosystems. State of nature (SoN) indicators describe the general conditions of nature in physical, chemical, or biological terms.

Together these can be used to describe key elements in the dynamics of nature loss that are relevant to companies at a global level, as well as more locally, in the landscapes where businesses operate. Both variables are needed, as pressures can often be viewed as “leading indicators” for eventual changes in the SoN, such as changes in biodiversity, and impacts that may arise from this, such as changes in ecosystem services or nature’s contributions to people (22) (23). Evaluating how different actors respond to these changes, and how they can work to control them through proactive target setting, is also at the core of the SBTN methods, and is introduced in later steps (starting with Step 3: Measure, Set & Disclose).

The SBTN methods use an integrated approach to understanding corporate environmental impacts and develop a plan for managing them with science-based targets for nature. By taking a more holistic view of the environmental pressures within the scope of SBTN v1.1 methods, companies start their SBTN journey with a greater ability to take urgent action in line with global goals for nature and society. This approach increases their potential to maximize co-benefits, and minimize tradeoffs for nature, biodiversity, and broader corporate sustainability efforts.

**Table 1:** Pressures managed with science-based targets for nature. This table presents the SBTN pressure categories, descriptions, and coverage in Steps 1 to 3 of the methods. This table highlights the primary connections between pressures and target-setting methods, though due to interactions between targets there are often multiple mechanisms for actions on pressures. These pressure categories are derived from the IPBES assessment and are currently in alignment with the 2018–2023 version of the web-based tool Exploring Natural Capital Opportunities, Risk and Exposure (ENCORE), which is the underlying dataset for the Materiality Screening Tool (MST) used in the Step 1a screening. The notes "req", "opt", and "-" describe whether the pressure category is required, optional, or not currently in scope in each step of the SBTN methods.

IPBES Pressure Category	SBTN Pressure Category	Description	Coverage in v1.1 of the SBTN methods			
			1a	1b	2	3
Ecosystem use and use change	Land use and land use change	Examples include: area of agriculture by type; area of forest plantation by type; area of open cast mine by type; etc.	Req	Req	Req	No Conversion of Natural Ecosystems. Land Footprint Reduction. Landscape Engagement.
	Freshwater ecosystem use and change	Examples include: area of wetland, ponds, lakes, streams, rivers or peatland necessary to provide ecosystem services such as water purification, and fish spawning; areas of infrastructure such as bridges, dams, flood barriers, etc.	Req	-	-	-
	Marine ecosystem use and change	Examples include: area of aquaculture by type; area of seabed mining by type; etc.	Req	-	-	-
Resource exploitation	Water use	Examples include: volume of groundwater consumed; volume of surface water consumed; etc.	Req	Req	Req	Freshwater quantity
	Other resource use	Examples include: volume of wild-caught fish by species; number of wild-caught mammals by species; etc.	Req	Req	-	-
Climate change	GHG emissions	Examples include: volume of carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), sulphur hexafluoride (SF6), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), etc.	Req	Climate targets through SBTi		
	Non-GHG air pollution	Examples include: volume of fine (PM2.5) and coarse (PM10) particulate matter; volatile organic compounds (VOCs); mono-nitrogen oxides (NO and NO2, commonly referred to as NOx); sulphur dioxide (SO2); carbon monoxide (CO); etc.	Opt	-	-	-
Pollution	Water pollution	Examples include: volume of nutrients (e.g., nitrates and phosphates) or other substances (e.g., heavy metals and chemicals) discharged to water bodies.	Req	Req	Req	Freshwater quality
	Soil pollution	Examples include: volume of waste matter discharged and retained in soil over a given period.	Req	Req	Req	Landscape engagement
	Solid waste	Examples include: volume of waste by classification (i.e., nonhazardous, hazardous, and radioactive); by specific material constituents (e.g., lead, plastic); or by disposal method (e.g., landfill, incineration, recycling, specialist processing).	Opt	-	-	-
Invasives and other	Other ecological disturbances	Examples include: decibels and duration of noise; lumens and duration of light; at the impacted site.	Opt	-	-	-
	Biological alterations and interferences	Examples include: the introduction and spread of invasive species and diseases.	Opt	-	-	-



**General requirements for implementation**

Companies wishing to make claims must submit their SBTN targets for validation, including documentation of their implementation of the SBTN methods (currently Steps 1, 2, and 3). When communicating about their science-based targets for nature, companies must follow the associated claims guidance.

Companies must implement the steps of the SBTN methods sequentially and iteratively, by improving data coverage and quality over time, in order to be validated and make claims on science-based targets for nature.

Companies must reassess their environmental impacts every five years in line with current SBTN guidance and the best available science, tools, and data. This reassessment must reflect any relevant changes in their business operations. These data must be resubmitted, in alignment with all relevant validation requirements for Step 1 and 2.

**Table 2:** State of nature (SoN) indicators relevant for the SBTN methodology. The variables in this list are illustrative of SoN variables used in SBTN Version 1.1 methods. Guidance on the use of specific indicators is provided in Step 1b: Value Chain Assessment and Step 3: Measure, Set & Disclose. This list is not comprehensive but highlights those SoN variables that best relate to SBTN’s current coverage of pressures. This list omits those SoN datasets that may only be relevant to pressures currently outside of SBTN’s current scope for target-setting methods, like biotic and abiotic components of soil and water quality outside the nutrients listed below. Please reference SBTi methods for SoN datasets linked to GHG emissions.

**SBTN SoN Variables**

Ecosystem extent, structure, composition, and function

Species biodiversity (e.g., population dynamics, richness, extinction risk, and loss)

Nature’s contributions to people (i.e., ecosystem services)

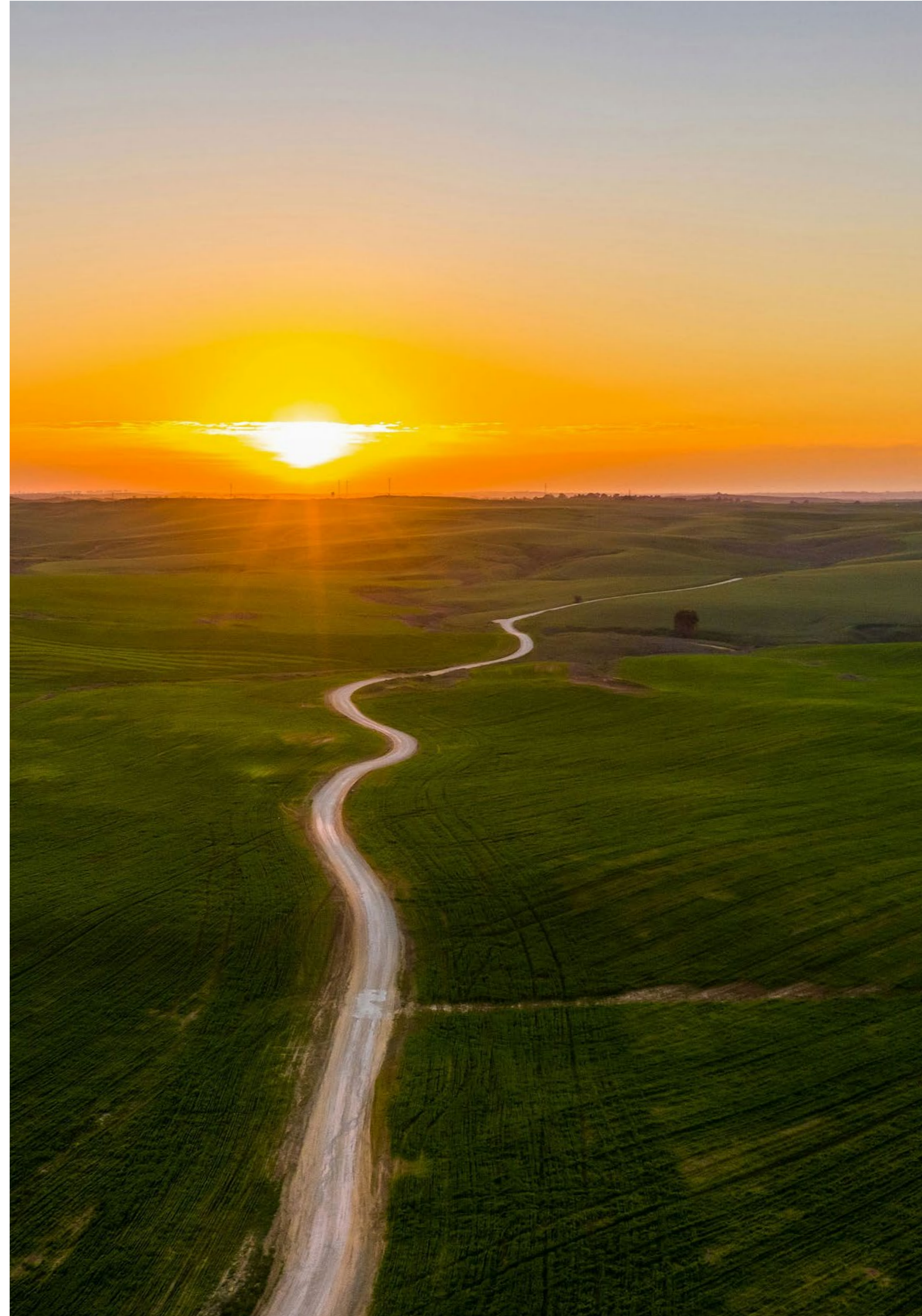
Soil quality (nitrogen and phosphorus)

Water quality (nitrogen and phosphorus)

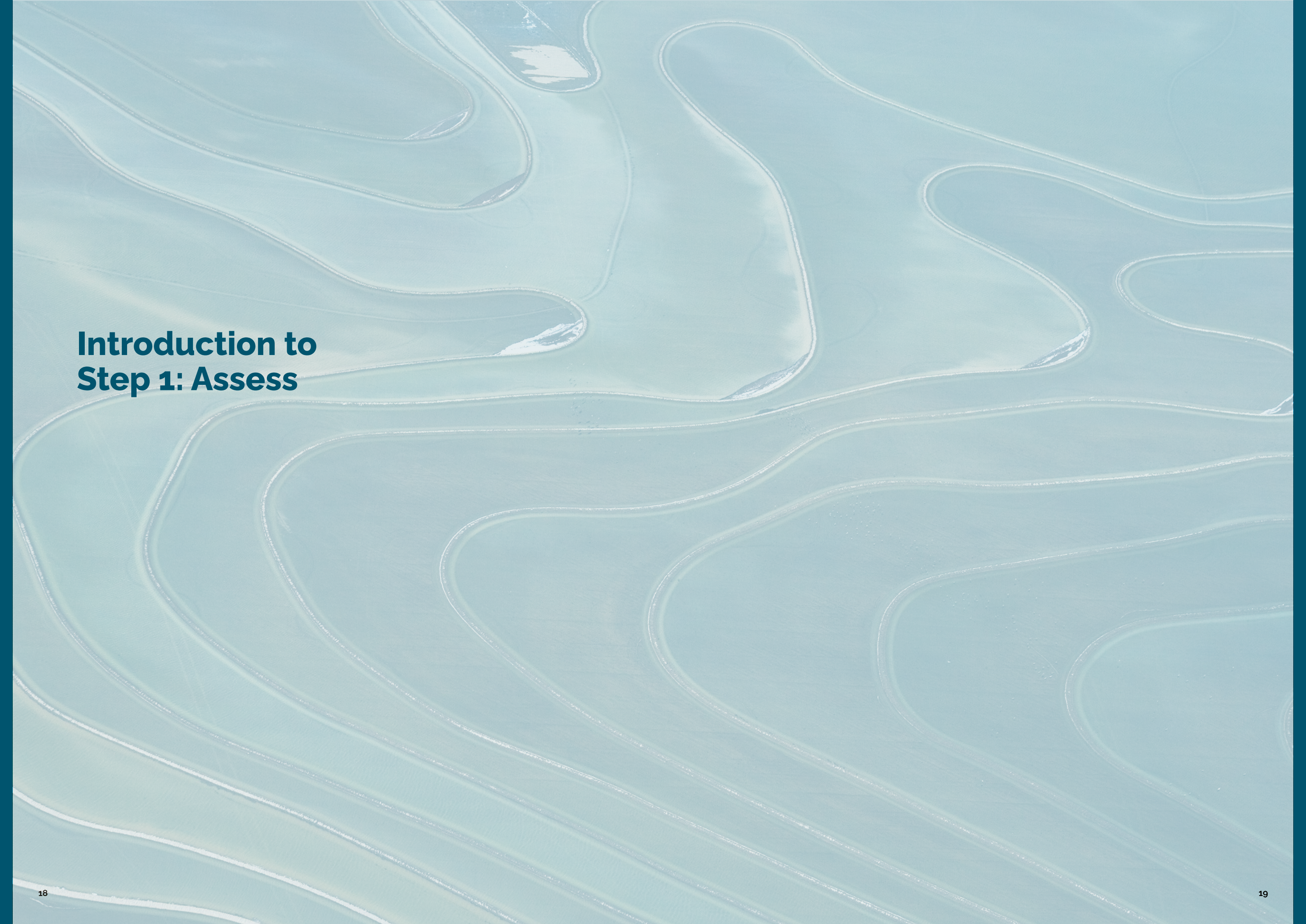
Water availability

Targets are specific to the data that companies hold on each value chain segment and pressure. Therefore, companies must treat data for these segments and pressures separately as they progress through the five steps of the SBTN target-setting method, except when a combination of data is called for in the guidance documents.

Companies are not expected to set targets for the entirety of their operations simultaneously. The methods are designed to allow a sequence for setting and achieving science-based targets. This will allow companies to focus their efforts and resources where they are most needed, in order to increase the feasibility of the methods. However, to make overarching claims, companies are expected to eventually set targets for all material pressures and portions of their value chain.







## **Introduction to Step 1: Assess**



## Introduction

The SBTN target-setting process follows five core steps for setting science-based targets for nature.

In Step 1 of the five-step SBTN methodology, companies screen their portfolio of economic activities for materiality (Step 1a: Materiality Screening), and then estimate their contributions toward key issues through an assessment of pressures and states/impacts associated with each category of activity (Step 1b: Value Chain Assessment).

Using the Step 1 Technical Guidance, companies can determine which pressures they most likely need to address with targets, and which parts of their business are the highest priority to address.

In the full methodology for setting science-based targets, Step 1 gives companies a sense of where they will need to invest their time and energy in the target-setting process. Regardless of their sector, geographic location, or level of sustainability experience, all companies should be able to complete Step 1 and meet the required validation criteria to move forward with the target-setting process.

## Data requirements for Step 1

To provide companies with a clear view of the data needed for the v1.1 (2024) methods, SBTN has developed a set of tables outlining the data requirements for each step.

Table 3 contains an overview of the Step 1 data requirements, but the requirements can be found in each method document.

Table 4 contains the spatial requirements for Steps 1, 2, and 3 for each “target boundary” (introduced in Step 2) for both direct and upstream operations.

Where needed, additional details on data requirements and value chain category are provided in the methodology document. The data needed for each step of the target-setting process builds on what is collected and used for the previous step, so companies must collect the required data for Step 1a before proceeding to Step 1b.

## Building from existing work

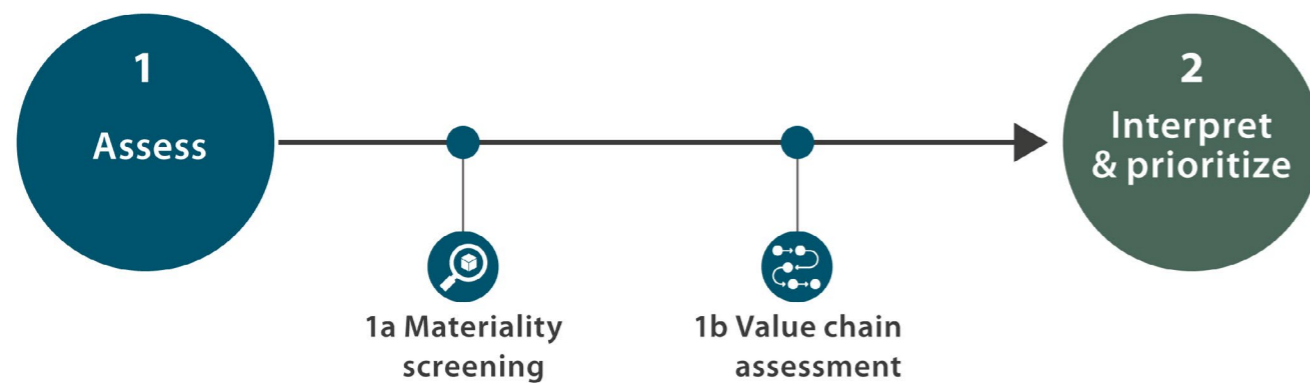
Companies that are working to understand and act on their impacts on climate and nature through the use of frameworks for assessment, accounting, and target-setting (e.g., Science Based Targets initiative (SBTi), Taskforce on Nature-related Financial Disclosures (TNFD), Greenhouse Gas Protocol (GHGP), CDP, Natural Capital Protocol (NCP), Corporate Sustainability Reporting Directive (CSRD), and Global Reporting Initiative (GRI)), may be able to leverage the data, resources, and capacity needed to set science-based targets for nature. *Likewise, companies using the SBTN methodology can anticipate leveraging their data and analyses toward these same frameworks.*

SBTN has provided pathways within the target-setting methodology that allow companies to draw upon existing experience and information, including:

- Environmental management systems and internal environmental data infrastructure (for collection, processing, management, and learning)
- Environmental inventories
- Reports prepared for other globally recognized standards or disclosure frameworks
- Upstream transparency and traceability
- Commodity certification standards
- Experience with tools and models appropriate for use in the SBTN methods.

Relationships with other stakeholders may help companies with target setting and ensure the durability of their efforts. Companies may draw from, and seek to reinforce, the following:

- Existing partnerships (with NGOs or consultancies)
- Existing stakeholder relationships
- Leadership (C-suite or board) support
- Relationships between sustainability and financial/procurement teams
- Supplier engagement or partnership
- Industry coalitions and cooperative/collaborative action with other companies.



**Figure 2:** Overview of Step 1. This step comprises two methodological parts: the high-level materiality screening using global, sector-level information (Step 1a); and the in-depth value chain assessment using company-specific information and/or global models (Step 1b).

Table 3: Overview of data requirements for Step 1.

STEP 1: ASSESS				
	Step 1a: Materiality Screening	Step 1b: Value Chain Assessment		
<b>Objective</b>	Determine the material pressures most likely to require target-setting by a company, based on sector-level information.	Estimate a company's contributions to key environmental pressures across its operations and value chains, and screen the SoN to inform decisions about what to set targets on, for which parts of the business, and where in the value chain.		
<b>Direct operations</b>	<p><b>Data needs</b></p> <p><b>Requirements</b></p> <ul style="list-style-type: none"> <li>List of economic activities involved in the company's direct operations, aligned with the International Standard Industrial Classification of All Economic Activities (ISIC).</li> </ul>	<p><b>Requirements</b></p> <ul style="list-style-type: none"> <li>Estimates of pressures for locations within the company's organizational boundary at a subnational level.</li> <li>Secondary estimates of SoN values per location.</li> </ul> <p><b>Recommendations</b></p> <ul style="list-style-type: none"> <li>Measurements (rather than estimates) of pressure data for all locations within the company's organizational boundary.</li> <li>Estimates of pressures for all sites and locations within the company's organizational boundary at level necessary to set targets in Step 3 (Table 5) (rather than only subnational).</li> </ul>		
	Associated with what parts of the company's data?	All locations within the company's organizational boundary (i.e., locations of company sites and main off-site activities).		
	Inputs and outputs	<p><b>Input from companies:</b> List of all directly owned or operated sites, location, and the activity or product/commodity involved; locations of main off-site activities and the activity involved.</p> <p><b>Output from the method:</b> Estimates of pressures and SoN scores associated with each directly owned or operated sites, location, and the activity or product/commodity involved.</p>		
<b>Upstream</b>	<p><b>Data needs</b></p> <p><b>Requirements</b></p> <ul style="list-style-type: none"> <li>List of High-impact commodities in production inputs.</li> <li>List of economic activities associated with the company's production inputs.</li> </ul>	<p><b>Requirements</b></p> <ul style="list-style-type: none"> <li>List of all goods procured from upstream suppliers (Tier 1).</li> <li>List of high-impact commodities, noting the commodities form i.e., raw or transformed/processed form, in the company's sourcing and upstream activities.</li> <li>List of threatened species according to the International Union for Conservation of Nature (IUCN) and listed species according to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) Appendices I, II, and III in the company's sourcing, noting the respective appendix.</li> <li>Estimated volume on high-impact commodities for each pressure and other production inputs procured from upstream suppliers.</li> <li>Estimated or modeled locations for each activity, associated with the highest-impact activity, for each relevant pressure.</li> <li>Estimates of SoN values per location, at least to country level.</li> </ul> <p><b>Recommendations</b></p> <ul style="list-style-type: none"> <li>Secondary data on pressures for all other commodities and activities, beyond the minimum required coverage (i.e., &gt;67% of volume).</li> <li>Cradle-to-gate assessment for all upstream activities and purchased goods.</li> </ul>		

STEP 1: ASSESS			
	Step 1a: Materiality Screening	Step 1b: Value Chain Assessment	
<b>Upstream (continued)</b>	Associated with what parts of the company's data?	Production inputs and sourcing locations associated with the company's procurement.	
	Inputs and outputs	<p><b>Input from companies:</b> List of procurement (commodities/goods and activities) paired with known or expected sourcing location, and volume on each category.</p> <p><b>Output from the method:</b> Estimate of pressures and SoN per commodity/good and activity at each known or expected location.</p>	



**Table 4:** Overview of spatial data requirements and associated target boundaries in Steps 1–3.

Target	Value chain segment	Target Boundary	Step 1 Data Requirement	Step 2 Data Requirement	Step 3 Data Requirement
Freshwater quantity					Companies must demonstrate that targets protect thresholds at either the resolution of local models or at each of the Pfafstetter Level 5 hydrobasins where they use the global model.
Freshwater quality	Direct operations and upstream				If companies have access to local models, companies must demonstrate that targets protect thresholds at each of the Pfafstetter Level 5 hydrobasins. If companies cannot find an accurate local model, companies must use Level 4 basins for setting Freshwater Quality targets, consistent with the scale of data provided by the global nutrient modeling of McDowell et al. (2020).
No Conversion of Natural Ecosystems	Direct Operations	A	Subnational (or finer) spatial resolution	Data level 1: Spatial granularity necessary for Step 3.	All production units and project sites are demarcated by georeferenced boundaries (i.e., polygons), with the exception of small sites (less than 10 ha), for which one point coordinate near the center of production is sufficient.
	Upstream			Data level 2: Subnational (or finer) spatial resolution	Subnational (or finer) spatial or statistical data.
Land Footprint Reduction	Direct Operations				For producing companies with an agricultural land footprint in direct operations: statistical (nonspatial) data on quantities of land-based products produced, and statistical or spatial data allowing for calculation of total surface area of working lands producing those products.
	Upstream				For purchasing companies with an upstream agricultural land footprint: statistical (non-spatial) data on quantities of land-based products sourced, locations (e.g., countries and/or subnational jurisdictions) if known, and yield (output per hectare) of each product for each location.
Landscape Engagement	Direct operations and upstream				Operational or sourcing locations at ecosystem level.
All targets	Direct operations and upstream	B	National or less granular	Data level 3: National or less granular	Improve traceability and transparency. Further guidance in Step 2.







## **Step 1a:** Materiality Screening

Screening for material pressures in Step 1a enables companies to identify which pressures they will likely need to set targets on. This information can be used to set expectations for the company about the level of effort needed to address its key environmental pressures and to be compliant with SBTN validation requirements.



## Overview

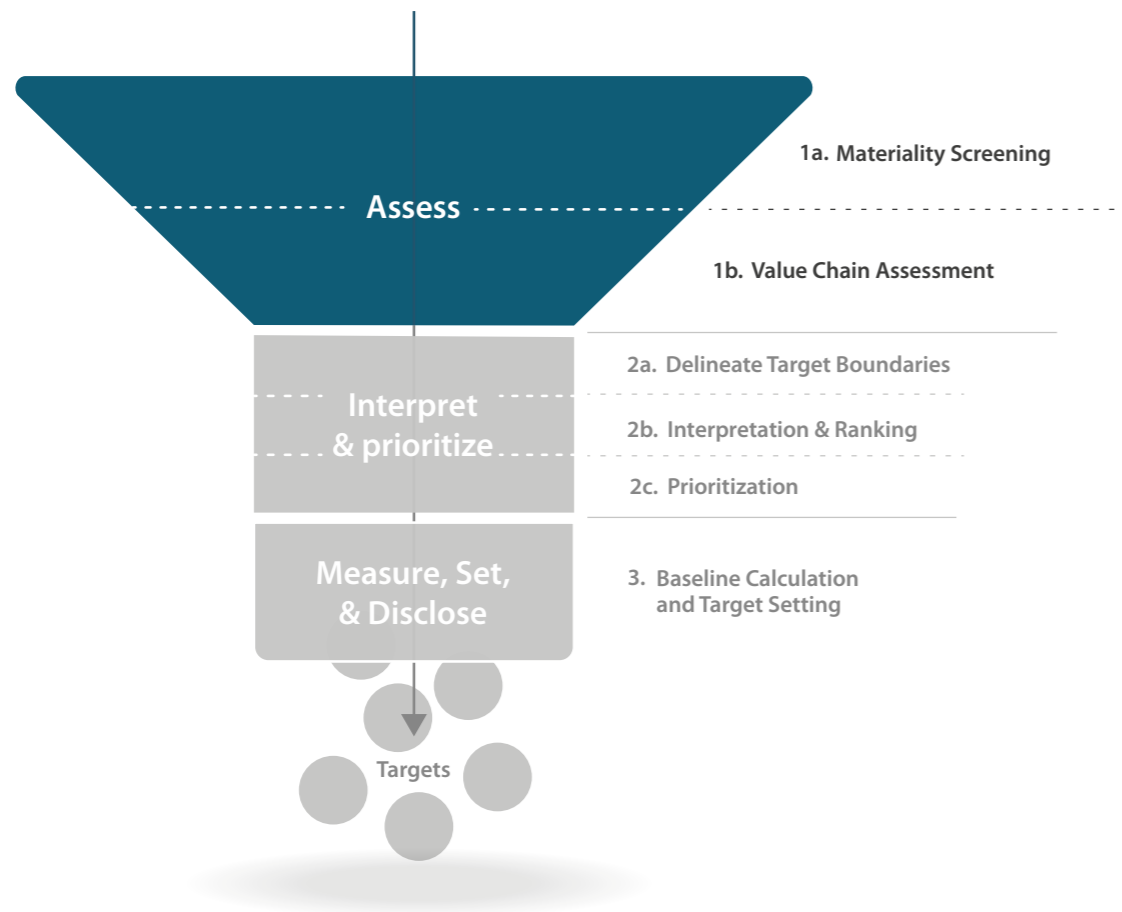
Screening for material pressures in Step 1a enables companies to identify which pressures they will likely need to set targets on. This information can be used to set expectations for the company about the level of effort needed to address its key environmental pressures and to be compliant with SBTN validation requirements.

The guidance for the screening step is foundational for companies preparing to set targets for nature. This guidance introduces companies to the pressures that will likely be managed by science-based targets and encourages companies to get a better understanding of their business activities and their environmental impacts.

The information used for this step is based on sector-level, global averages, so will not provide an exact representation of a company's impact in any given pressure category. Instead, the screening process is designed to help companies focus the scope of their target-setting efforts on subsequent steps of the SBTN methodology (such as data collection in Step 1b and baselining in Step 3), and to give them enough information to begin communicating internally about what the target-setting process and scope.

As an output from this substep, companies will have a list of pressures by sector, activity, and/or associated commodities relevant to the company.

Throughout the target-setting process, the scope of pressures and the scope of the business become more focused based on materiality and potential for effective interventions.



**Figure 3:** Narrowing the scope of the target-setting process. In Step 1a, the process of setting science-based targets for nature requires companies to start with as broad a scope as possible. The range of economic activities to be evaluated and managed through science-based targets becomes narrower as companies move through the subsequent steps of the methodology, becoming more focused on the activities and locations that matter the most for nature and society as well as their businesses' target-setting strategies.

## Task 1: Define your organizational boundary

The broadest scope of the company's direct operations to be covered in the assessment can be referred to as the organizational boundary. This boundary defines which business operations are owned or controlled by the company implementing the methods at the time of submission and thus considered to be in scope for its science-based targets for nature. In this context, "business operations" refers to entities such as the company implementing the methods, subsidiaries, and affiliated or associated companies, as well as joint ventures and partnerships, fixed asset investments, or franchises. Note that whether any one of these operations is determined to be within the organizational boundary or not depends on the approach used to define the boundary (as explained below).

Consistent with current best practice, companies must include the broadest possible coverage of their corporate activities as they start using the SBTN methods. This scope will narrow as companies progress through the five steps of the process for setting science-based targets. Many companies will have experience in defining an organizational boundary if they have used this for greenhouse gas (GHG) accounting and financial reporting, or if they have engaged in measuring, disclosing, or actively managing their environmental footprints through other initiatives, such as: the Science Based Targets initiative (SBTi); Greenhouse Gas Protocol (GHGP); the Accountability Framework initiative (AFi); context-based water targets; the CDP; the Global Reporting Initiative (GRI); or the Taskforce on Nature-related Financial Disclosures (TNFD).

Companies that have previously defined an organizational boundary for setting climate science-based targets are strongly recommended to use the same approach for setting nature science-based targets. Where SBTN guidance on organizational boundaries is more ambitious than current practice, companies should seek to expand their organizational scope by the next five-year target-setting period for both climate and nature science-based targets.

For companies that have not used the GHG Protocol or SBTi methods, there are three primary approaches for defining the organizational boundary (24):

1. Under the *financial control* approach, the organizational boundary will include all business operations over which the company has the ability to direct the financial and operating policies with the intention of gaining economic benefits from these activities. For example, the company may have the right to majority benefits or it may retain the majority of financial risks and rewards of the operation.
2. Under the *operational control* approach, the organizational boundary will include all business operations over which all business operations the company, or a company subsidiary, has the authority to introduce and implement operating policies.
3. Under the *equity share* approach, the organizational boundary will include the share (%) of the company's economic interest in, or legal ownership of, each business operation.

Refer to the Greenhouse Gas Protocol's Corporate Accounting and Reporting Standard, Revised Edition (2004) for additional guidance on the distinctions between the three approaches.

The choice of approach will dictate which subsidiaries and other activities are included within the organizational boundary and hence in scope of the target-setting process. As examples:

- A holding company or parent company of a company group will have significant financial and operational control over their subsidiaries, even if they don't run their day-to-day business. Holding or parent companies will thus include their subsidiaries within their organizational boundary.

- On the other hand, a subsidiary implementing the SBTN methods will not have financial or operational control over its parent company or its sister companies in the company group, and would thus exclude these entities from its organizational boundary.

In defining the organizational boundary, teams working on target-setting can find information specific to the company in annual and financial reports, as well as internal reporting systems for procurement and environmental management. In cases where companies have joint financial or operational control over a business operation, the specific contractual arrangements can help determine whether the operation falls within the organizational boundary.

Depending on the approach chosen, companies must indicate their organizational boundary as the list of business operations determined

to fall within their ownership or control at the time of submission, detailing the name of the operation, their legal or organizational structure, main geographic area of activity, and a brief description of their economic activities. Companies following the equity share approach must also indicate the equity share (%) held over each operation. Companies should prepare internal organizational documentation to demonstrate the list of operations defined as the organizational boundary is comprehensive of their organization.

For the purposes of setting science-based targets for climate and GHG accounting, companies use the organizational boundary for accounting and creating a precise impact inventory. In the SBTN methods, the organizational boundary defines the scope of materiality screening and is the basis for creating an inventory of direct operations and upstream value chain activities.

## Task 2: Identify your direct operations and upstream activities



### DIRECT OPERATIONS

Companies will need basic information on the types of activities that characterize their business. Information on economic activities is commonly used to assess materiality, to manage data on impacts, and to convey information on impacts to users of those resources. This information (basic data on activities) will also be used by SBTN to verify comprehensive coverage of a company's activities with the greatest environmental impact in the short term.

To complete Step 1a: Materiality Screening, companies must list all economic activities carried out in their business operations (e.g., the business entities within their organizational boundary) in the five years preceding the submission (see SBTN data requirements in Table 3), classifying them according to the group-level categories found in the fourth International Standard Industrial Classification of All Economic Activities scheme (ISIC 4) (26). This list of activities represents its direct operations value chain segment. Economic activities that take place on an irregular basis but are expected to continue into the future must be included in the list, but those that have been discontinued may be excluded. If there are multiple business operations within the organizational boundary (as in the case for company groups), companies are recommended to provide a separate list for each (e.g., one list for each subsidiary in the group).

Economic activities classified using other common schemes such as the Global Industry Classification Standard (GICS) (27) must be translated to ISIC classifications using the provided crosswalk tables within the Materiality Screening Tool (MST) (28). See below for further guidance.



### UPSTREAM

Once companies have specified the activities that fall within their direct operations, they will need to define which activities within the other parts of their value chains need to be included within the assessment for Step 1 of the target-setting process. Companies must assess all value chain activities included in the SBTN data requirements outlined in Table 3.

To identify upstream activities, companies must use the MST, which uses companies' input data on direct operational activities to automatically generate a list of economic activities expected to be in their upstream. The list of upstream activities generated by the MST will be expressed using ISIC group level classifications. Companies should review this automated output for accuracy, adding and removing activities as relevant to match their procurement data and any previous analyses.



### DOWNSTREAM

Companies are not currently required to screen impacts associated with their downstream activities.

#### REQUIREMENTS AND RECOMMENDATIONS ORGANIZATIONAL BOUNDARY

##### ◆ Requirement 1. Definition of the organizational boundary.

- Companies must indicate their organizational boundary and determine whether each of their business operations is part of it following one of the three approaches laid out by the GHGP. Companies must demonstrate that, depending on the approach selected, their organizational boundary is comprehensive of all their business operations at the time of submission.

##### ◇ Recommendation 1. Preferred organizational boundary approaches for science-based targets for nature.

- Companies that have already set science-based targets for climate using the GHG Protocol are recommended to use the same organizational boundary for setting science-based targets for nature. This means that if a company is using the equity control approach for its science-based targets for climate, then it may use the same one for its science-based targets for nature.
- Companies that have not defined an organizational boundary in the past are recommended to use either the financial or operational control approach.



### Task 3: Identify high-impact commodities in your activities

At this point, companies must indicate whether they are engaged in the primary production or extraction of high-impact commodities (HICs) or conversion-driving commodities as part of their direct operations activities listed in Task 2. Companies must also identify whether any of their purchased goods in the five years preceding the submission are derived from or contain high-impact or conversion-driving commodities, as well as the state or form in which they were purchased.

Companies sourcing animal derived products (e.g. meat, dairy and eggs) must also indicate whether the associated animal feed contains any of the seven commodities included in EUDR – cocoa, coffee, soy, palm oil, wood, rubber, and cattle. SBTN will continue to evaluate embedded commodity traceability and may update these guidelines with the learnings of the method rollout.

For example, companies sourcing meat or dairy should indicate whether soybeans or palm oil are known or expected to be present in cattle feed.

Companies will need to reference the SBTN High-Impact Commodity List (HICL) (29) for guidance on interpretation, and give an indication of expected traceability (relevant for Step 2).

Companies should focus only on purchased goods that are used as production inputs for their activities and may ignore those that are used for other purposes—refer to Task 7 to understand the different categories in which SBTN classifies purchased goods.

SBTN defines high-impact commodities as raw and value-added materials used in economic activities that are known to have material links to the key drivers of biodiversity loss, resource depletion, and ecosystem degradation. Commodities on this list exert material pressures on at least one node within their production chain. Each commodity is associated with ISIC production processes, sectors, and traceability scores, which can

also be found in the tool. The tool shows which of these commodities can be found in the Regulation on Deforestation Free Products (EUDR) and in the Taskforce on Nature-related Financial Disclosures (TNFD). Commodities included in both the HICL and EUDR are prioritized for assessment and target-setting within the SBTN methodology.

Activities associated with high-impact commodities include: extraction of these commodities (e.g., mining, farming); clearing of lands for extraction; processing of commodities (into refined or value-added forms); manufacturing commodities into complex products (with additional inputs); distribution of commodities; and the procurement of commodities (in their raw, value added, or final form). Given their higher impacts on nature, these commodities require greater coverage in the Step 1b: Value Chain Assessment.

Conversion-driving commodities are material in the pressure categorization of land use and land use change; they require additional traceability and assessment for land impacts (in Step 1b) as they must be included in the companies' land targets (in Step 3). A list of these commodities and an explanation of the distinct requirements of these and other high-impact commodities can be found in the High-Impact Commodity List.

The HICL used for this analysis is based on novel SBTN research and expert input from the SBTN network. The linkages between commodities and sectors are based on the ISIC classification system. This approach is explained in the documentation for the tool and is informed by peer-reviewed literature, expert opinion, and gray literature. SBTN is continuing to conduct research to identify additional commodities and their environmental impacts.

#### REQUIREMENTS AND RECOMMENDATIONS HIGH-IMPACT COMMODITIES

##### ◆ Requirement 3. High-impact and conversion-driving commodities.

- Companies must report all high-impact commodities and conversion-driving commodities (as defined by SBTN's High-Impact Commodity List) that they produce or extract as part of their direct operations activities.
- Companies must also report all HICs and conversion-driving commodities in their production inputs procured in the last five years, indicating whether they are in raw or processed forms, as well as any EUDR-listed commodities used as feed in the production of any animal-derived products in the production inputs.



## Task 4: Screen for materiality

The concept of materiality is commonly used to describe the environmental, social, or financial significance of companies' business activities. The SBTN methods emphasize environmental materiality from a societal perspective, henceforth referred to in the methods as "environmental materiality." This is a measure of the impact of a company's operations and value chain on nature, including people. This includes impacts such as biodiversity and ecosystem services loss, climate change, resource availability and resulting impacts on human health, wellbeing and rights.

This perspective differs from, but complements, the financial perspective of materiality typically used by companies, which emphasizes how environmental impacts affect the company (e.g., through disruptions of supply chains, exposure to lawsuits or media campaigns, and loss of social license to operate). However, some aspects of financial materiality are included in Step 2, meaning that companies are able to incorporate a "double materiality" understanding into their strategy for setting science-based targets for nature (30).

After conducting a materiality screening using the SBTN methodology, companies will understand which of their activities are likely to lead to environmental impacts, and thus will require further assessment in Step 1b of the methods.

Companies must use the Materiality Screening Tool (MST) (28), currently based on the 2018-2023 version of ENCORE, and the High-Impact Commodity List (HICL) (29) developed by SBTN to conduct a quick screening of the pressures linked to their core activities and high-impact commodities and identify those that are most likely to be material for target-setting. SBTN and ENCORE partners (UNEP FI, UNEP-WCMC and Global Canopy) are exploring how the updated ENCORE knowledge base can be added to the SBTN MST.

Companies must use the following process:

- List the company's activities using a preferred economic activity classification scheme (e.g., ISIC4 (26) or GICS (27)) from Task 2 and relevant production processes if known or applicable.
  - Activities should be selected based on the best available description, e.g., rice growing, rainfed agriculture, etc. Companies should separately assess the material contributions of each activity in the company's direct operations and upstream (e.g., manufacturing of steel should be assessed separately from the construction of buildings).
  - If using GICS or the Statistical Classification of Economic Activities in the European Community (NACE) for economic activities, the provided sectoral crosswalk table within the MST should be used to find the relevant ISIC Group classification.
- Select the relevant sector and production process categories within the direct operations tab of the MST.
  - These categories are provided as ISIC Groups (the three-digit score in the hierarchical ISIC classification).
  - Companies can use either ISIC Groups or the Production Processes from Exploring Natural Capital Opportunities, Risks and Exposure (ENCORE) to complete their materiality screening using the MST.
  - Companies must use the ISIC Group or Production Process materiality rules consistently in their screening (i.e., companies cannot apply one rule for one activity, and the other rule for another).
- Review the pressure estimates generated by the tool for each of the activities within the company's direct operations and consult the Interpretation Guidance provided within the tool to interpret the scores as needed.
  - MST indexed pressure scores are calculated based on the ENCORE (33) impact materiality database, thus both the MST and the ENCORE database contain the same underlying ratings for direct operations.

- Retrieve the list of upstream activities built with the MST in Task 2.
  - The MST automates the assessment of upstream economic activities to direct operations using EXIOBASE (34).
  - Within the tool, pressure scores for upstream sectors are linked to spending by the direct operations sector. For the direct operations portion of the tool, the underlying pressure scores are derived from ENCORE.
  - The tool follows the logic that the scores for the impact of a given economic activity is consistent regardless of where in the supply chain it occurs.
- Review the tool-generated list of upstream activities and refine them, based on the particularities of the company.
  - For example, companies can exclude oil and gas production from upstream energy sources if the company is only sourcing from renewables.
  - Documentation will be required to explain the exclusion of activities flagged as material.
- List the high-impact commodities (HICs) linked to the company's direct operations and upstream activities.
  - The HICL must be used both by companies purchasing commodities, and those involved directly in the growing, processing, or other life cycle steps of commodity production.
  - Companies should note that, as a secondary resource, the MST links HICs to direct operations and upstream activities based on existing environmental activity and trade data. This may be useful for high level

screening but should not replace the data found within the HICL which contain more commodity-specific evaluations of pressures.

- Review the list of HICs highlighted by the tools as being most relevant and refine them, based on the particularities of the company.
  - Companies should sense-check whether the commodities listed are truly part of their economic activities.
- Use the interpretation guidance provided by SBTN in the HICL and MST to determine which pressure categories must be included in the Step 1b: Value Chain Assessment and will likely require targets to be set in Step 3.
  - Companies should record the pressures associated with high-impact commodities found in the HICL Excel tool. It is in the responsibility of the company to identify, for each commodity, the most impactful node per pressure for each commodity, referencing the guidance in Step 1b.
  - The MST uses thresholds, calculated as the median value by pressure, to determine which activities and pressures the company must continue to assess. Based on the outputs of the MST, companies can ascertain which activities/commodities and pressures are likely to require the company to set science-based targets.
  - To be certain of which activities and pressures require setting targets, companies will complement their high-level screening with spatially explicit and company-specific information in Step 1b: Value Chain Assessment.

ISIC Group (Alphabetical)	Production process (associated with each 'group')	Land/Water/Sea use change		Resource Use		Climate change		Pollution					
		Terrestrial use		Freshwater use		Water use		GHG emissions		Water pollutants		Soil pollutants	
		Indexed pressure score	Materiality rating (0 or 1)	Indexed pressure score	Materiality rating (0 or 1)	Indexed pressure score	Materiality rating (0 or 1)	Indexed pressure score	Materiality rating (0 or 1)	Indexed pressure score	Materiality rating (0 or 1)	Indexed pressure score	Materiality rating (0 or 1)
Business support service activities n.e.c.	Infrastructure holdings	ND	ND	ND	ND	8.0	1	ND	ND	7.0	1	7.0	1
Growing of non-perennial crops	Large-scale irrigated arable crops	9.0	1	9.0	1	9.0	1	ND	ND	8.0	1	7.0	1
	Large-scale rainfed arable crops	9.0	1	ND	ND	ND	ND	ND	ND	7.0	1	7.0	1
	Small-scale irrigated arable crops	9.0	1	8.0	1	8.0	1	ND	ND	7.0	1	6.0	1
Manufacture of other food products	Small-scale rainfed arable crops	9.0	1	ND	ND	ND	ND	ND	ND	6.0	0	6.0	1
	Processed food and drink production	ND	ND	ND	ND	8.0	1	9.0	1	6.0	0	6.0	1

Figure 4: Snapshot of Ursus Nourishment, a fictional company applying the SBTN methods, results for direct operations using the MST to generate sector-level scores. All scores are indicative of a typical company in that sector, and may not accurately represent the materiality of a given company's specific activities. For more information on materiality scores please refer to the "Overview" and "Interpretation guidance" tabs in SBTN's MST.



9. Companies must separately record the outcome of the assessment of impacts material to the business for direct operations and upstream activities.
10. Record outputs for Step 1a: Materiality Screening (see example in Box 1).

**Box 1:** SBTN approach to evaluating materiality. The information provided in this section is intended to improve readers' understanding of materiality in the context of setting science-based targets for nature.

Conceptually, “materiality” is a way of distinguishing importance or significance. In the context of financial reporting and corporate disclosure, information is considered material if it will influence decisions made in relation to the company. Materiality can be based on various factors, depending on the objective of the assessment. In the MST and underlying ENCORE dataset, the following aspects were examined in determining whether the (potential) impacts of an economic activity should be considered material:

- Severity (e.g., number of people affected, species affected, or extent of area impacted). The impact (in terms of people, financial assets, and natural assets affected) is often required in cost-benefit analyses used to inform economic decisions. (25) (35) (36) (30) (37) (38) (39)
- Frequency of impact (e.g., number of times the impact is expected to occur as a given economic activity occurs). (25) (36) This may be captured in an estimate when it accounts for the impacts of the activity as a whole rather than as singular processes.
- Timing of impact (e.g., whether the impact will occur within 1 year of the activity taking place, 1–10 years, or more than 10 years). (36)

Companies may be familiar with other aspects of environmental materiality not included in the tool, such as:

- Irreversibility (i.e., difficulty of remediating impacts). In jurisdictions around the world\*, irreversibility is often a required component of environmental impact assessments (EIAs) and environmental impact statements (EIS). (25) (36) (30) (38) (39)
- Likelihood of impact (e.g., confidence that an impact will occur, based on what is known about the economic activity; following EFRAG, this should not be weighted on par with severity when human rights are impacted by the activity). Likelihood is often associated with assessments of risk, rather than evaluation of impact, but helps to screen where impacts are likely to occur and precedes detailed evaluation. (25) (36) (30) (37)

While companies must use the MST for screening their impacts, they may provide justification for refining the results of their screening using additional aspects of environmental materiality (such as those outlined here).

Any company seeking validation of science-based targets for nature (see Step 3) must follow the Step 1 guidance for determining materiality.

\* See the US Code of Federal Regulations: <https://www.ecfr.gov/current/title-40/chapter-V/subchapter-A/part-1502> and Basics of Environmental Assessment under CEAA 2012: <https://www.canada.ca/en/impact-assessment-agency/services/environmental-assessments/basics-environmental-assessment.html>.

#### REQUIREMENTS AND RECOMMENDATIONS MATERIALITY SCREENING

##### ◆ Requirement 3. Screening of full scope of business in direct operations.

- Companies must begin setting science-based targets by first screening for material pressures across the entirety of their business, as determined using the organizational boundary.

##### ◆ Requirement 4. Screening of upstream value chain segment.

- Companies must identify their upstream activities and their associated material pressure categories from the MST. Companies must ensure, with appropriate justification, that this list contains any activities associated with their production inputs (as defined in Task 7).

##### ◆ Requirement 5. Screen all required pressure categories.

- Companies are required to screen their activities against eight pressure categories: land use and land use change; freshwater ecosystem use and change; marine ecosystem use and change; water use; other resource use; GHG emissions; water pollution; and soil pollution. Companies that have validated (or have submitted for validation) SBTi targets may forgo screening of GHG emissions.

##### ◇ Recommendation 2. Screen additional pressures if possible.

- Companies should screen their activities against the pressure categories of non-GHG air pollution, solid waste, other ecological disturbances, and biological alterations and interferences.



## Task 5: Refine and interpret the screening results

The MST is built from the ENCORE database (version 2018–2023) (33), resulting in shared underlying scores between the tools, though the interpretation guidance is specific to the MST. The ENCORE dataset was developed through a qualitative literature review that surveyed the typical impacts of different sectors on different aspects of the environment. The scores in the ENCORE dataset and in the MST reflect a high-level understanding of impacts at a global or non-spatially explicit level and are expressed as a sectoral average based on the typical impact profile of a company in the given sector. This approach has some methodological limitations including sample size (impacting sector representativeness), lack of availability or accuracy of studies, and geographic bias.

Therefore, companies using the MST may find that the materiality of their particular activities is not well represented in the current tool and may wish to refine the results of Task 4. In those cases, companies must provide data justifying the inclusion or exclusion of activities and/or pressures, as well as the rationale and justification, including relevant methodologies.

If companies use data, tools, qualitative literature reviews, or targeted studies to include additional aspects of materiality, they must provide both a methodological explanation and a justification (with relevant data and citations) of how these additional aspects of materiality inform their decision to proceed with the assessment of a given pressure or economic activity (Step 1b).

If the information provided is not seen as sufficient justification by SBTN validators, SBTN may either recommend or require that the company continue to assess and evaluate impacts for that activity or pressure.

“No data” or “ND” within the MST does not indicate non-materiality, nor does it imply materiality. Instead, it is an indication of the current lack of evidence for that ISIC group and its associated impacts on nature. For this reason, companies are strongly recommended to submit evidence supporting the inclusion or exclusion of relevant pressures with no data values in the MST.

If the justification is deemed sufficient to support the inclusion or exclusion of an activity or pressure because it reflects company-specific (and not global sectoral average) information, then the data provided by the company may be anonymized and used in further revisions of the SBTN materiality screening methods and tool development.

Step 1a: Materiality Screening is based on global, sector-level information, and can be used to indicate the broadest scope of activities and pressures that are likely to be the focal point of companies’ target-setting efforts. Companies will continue to refine their understanding based on the data collected as part of the Step 1b: Value Chain Assessment, which guides companies through the collection of spatially explicit, company-specific information on pressures and states. As data may vary for different models and datasets, companies must use the most recent data representative of current business, societal, and environmental conditions. Data collected by the company (primary data) must be collected no earlier than five years before the date of the method application, unless evidence is submitted showing the last five years to be non-representative.

### REQUIREMENTS AND RECOMMENDATIONS INTERPRETING MATERIALITY SCREENING RESULTS

#### ◆ Requirement 6. Pressures to carry forward to value chain assessment.

- For each value chain segment, companies must continue to assess all pressures within the current SBTN methods scope, for which they have any activities whose materiality values are greater than or equal to the given threshold for materiality in the MST, using either the Production Process- or Group-level scoring thresholds (prescriptive approach), also noted as material (1) in the MST.

#### ◆ Requirement 7. Restrictions on use of ISIC Group level materiality threshold for direct operations.

- Though companies using the ISIC Group level materiality rules (calculated as the mean of all relevant production processes for each group in scope for the screening) to interpret the MST can submit scores at the ISIC Group level, they must note which production processes in their direct operations exceed the materiality threshold at the ISIC Group level. This scenario may occur when the Group is eliminated from further screening (materiality score = 0), but one or more production processes within that group are determined to require further screening (materiality score = 1).
- Companies may only eliminate a required production process (materiality score = 1) from the value chain assessment if they can provide additional evidence that the production process is not relevant to the company and meets validation requirements.

#### ◆ Requirement 8. Submission of evidence for exclusion of pressures.

- Companies that have determined that a pressure category is not material must submit evidence as specified by SBTN.

#### ◇ Recommendation 3. Interpretation of “no data” values in the MST.

- “No data” values are an indication of the current evidence level for a given sector and pressure category in the tool and not an indication of a lack of environmental impact. For this reason, companies should submit evidence supporting the inclusion or exclusion of relevant pressures with no data values in the MST.

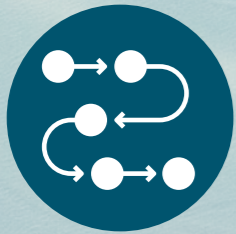




After completing the materiality screening, companies will know what pressure categories are material and what targets they need to set for their activities.







## **Step 1b:** Value Chain Assessment

The objective of Step 1b is to estimate the pressures on nature that a company generates and to identify the geographic areas in which these pressures are particularly harmful to SoN.



## Overview

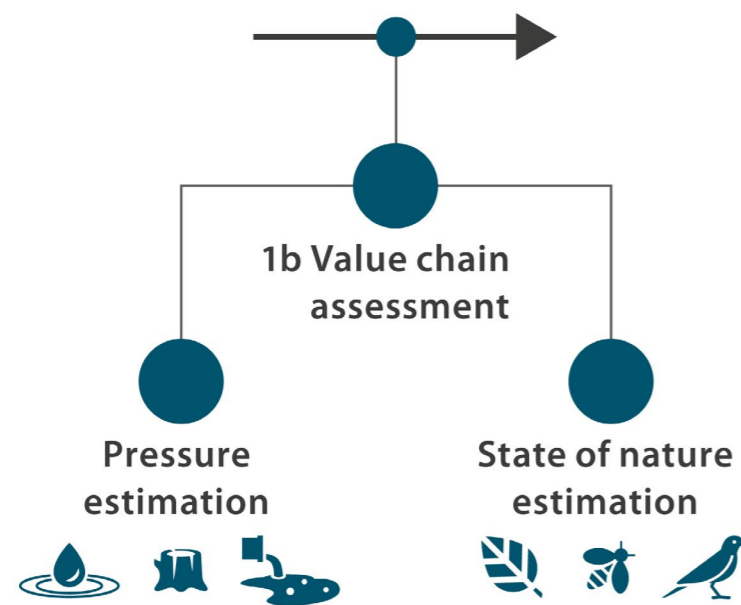
The objective of Step 1b is to estimate the pressures on nature that a company generates and to identify the geographic areas in which these pressures are particularly harmful to SoN.

As noted in Step 1a, companies that have already made progress in their sustainability journey may wish to use existing data, tools, and resources to fulfill the requirements for this assessment. The information compiled during this exercise may be utilized by companies throughout the target-setting process, enabling more rapid calculation of their target baseline in Step 3, and appropriate resourcing and prioritization for target-setting.

To estimate their contributions toward pressures, companies can use data on material or commodity purchasing, extent and type of economic activities, and production quantities, to generate representative values for the footprint of different activities.

The methods used for pressure estimation will in most cases require that companies provide location information (e.g., about the state from which they are sourcing), or will include, if companies do not have this information, default assumptions about likely locations associated with economic activities. In this sense, all pressure estimates will be underpinned by location data, although the variable degree of certainty/precision associated with these locations will influence the subsequent prioritization and target-setting approaches.

During Step 1b: Value Chain Assessment, companies may associate estimates for multiple pressures (e.g., water pollution, water withdrawals, and land use) with each different activity, commodity, and location included in the assessment. However, companies are required to analyze the data for each pressure separately, within each of the value chain segments assessed in Step 2: Interpret & Prioritize in the SBTN methodology. To facilitate the completion of Step 2, companies should use a structure that allows for easy separation of data by pressure category.



**Figure 5:** Overview of Step 1b: Value Chain Assessment. In the value chain assessment, companies collect data and estimate their contributions toward material pressures, and then estimate SoN in the locations where they operate.

## Task 6: Select business units for target setting

Companies may use the Business Unit Approach (BUA) to focus on discrete parts of their business (i.e., business units) for Steps 1b, 2, and 3 of the methods. The objective of the BUA is to allow large, complex companies to get started on target-setting by focusing on the most prepared and/or impactful parts of their business.

SBTN strongly recommends that companies use the target-setting process with the ambition to expand business unit coverage over time, once the feasibility of the process has been assessed. It is therefore recommended that companies complete a value chain assessment for all business units where they have the required data, while continuing to collect data to address gaps in the remaining business units.

Business units may not be formed solely for the purpose of setting science-based targets, but must be documented in either public financial reporting (e.g., 10-K report required by the U.S. Securities and Exchange Commission where they may be referred to as “business segments”) or relevant internal company documentation.

Companies must submit criteria and justification used in selecting the business unit(s) for validation. The following are non-exhaustive guidelines for defining business units for SBTN:

- Business units must correspond to organizational entities with sufficient operational autonomy (or strong support from the C-suite) to allow target setting.
- The BUA should not be applied to business units that have been delineated solely for the purpose of setting science-based targets for nature.

- The BUA may only be considered after companies have completed the materiality screening (Step 1a) for their full organizational boundary.
- The business unit(s) selected must have material elements identified in Step 1a screening.
- Companies using the BUA will still need to comply with all requirements of the value chain assessment.

The criteria used by the company to select the business unit(s) should be clearly described and accompanied by appropriate documentation for validation. Evidence supporting the delineation of a business unit may include profit-and-loss statements, the existence of a chief operating decision-maker (e.g. CEO), or some budget, resource, and investment authority. As justification for the business unit selection, companies must also submit any feasibility considerations underpinning the selection of business units.

For transparency, the business units chosen for target setting will be disclosed alongside any claims the company makes about their science-based targets for nature. Companies wishing to use the BUA must also submit and disclose the following supporting data:

- The relative size of the chosen business unit(s) relative to the overall business (e.g. % revenue).
- Inclusion of material issues (as determined in Step 1a) in the chosen business unit(s) vs the rest of the business.

Using the BUA will limit the claims a company can make about the application of science-based targets for nature. Please consult the claims guidance document to review all the claims requirements for BUA.



#### REQUIREMENTS AND RECOMMENDATIONS BUSINESS UNIT APPROACH

##### ◆ Requirement 9. Documentation and Justification of the business unit(s) selection.

- Companies must complete the materiality screening (Step 1a) for their full organizational boundary, ensuring that the selected business unit(s) has material elements applicable for target setting.
- Companies must provide evidence of the business unit's capacity to drive the science-based targets process: e.g. sufficient operational autonomy (P&L authority, decision-making authority), leadership buy-in, and the relative size of the business unit (% revenue); and justify their selection following the criteria laid out in the methods or other evidence specific to their company operations

##### ◇ Recommendation 4. Criteria for business unit(s) selection.

- Companies should select the business unit(s) based on environmental impacts

##### ◇ Recommendation 5. Traceability improvements for excluded business unit(s).

- Companies are encouraged to expand and improve the traceability of other business units, where possible starting with the most material ones.

#### Task 7: Map your value chain activities and locations

Companies will use the activity scope defined in Step 1a: Materiality Screening as their starting point for Step 1b: Value Chain Assessment, but may narrow this further by using some of the options described below. Any value chain activity (direct operations or upstream) that

was identified as material (for any pressure category) in Step 1a must be assessed for its pressures and the SoN in its location. As a starting point, companies must identify the locations of all direct operations sites and the locations of upstream value chain suppliers. See Box 2 for a description of the value chain segments relevant to the SBTN methods.

##### Box 2: Value Chain Segments

The direct operations value chain segment is equivalent to the organizational boundary defined in Task 1. In other words, direct operations are those that are either owned or controlled by the company, depending on the approach used in Task 1 to define the organizational boundary (i.e., operational control, financial control, or equity share).

The upstream value chain segment includes all value chain activities that produce goods or services that are eventually procured by the company. SBTN distinguishes four types of procurement relevant to the definition of the upstream value chain segment:

1. **Production inputs** are goods that the company acquires to process, transform, or integrate into new products, including those that are consumed in the process and become waste or byproducts, as well as packaging materials. For companies in the wholesale and retail sectors, production inputs are those goods that are acquired to be resold. Typical production goods in agriculture, forestry, and fishing include fertilizers, feed, pesticides and antibiotics, while reagents, explosives, solvents, and leaching agents are common in mining and quarrying.
2. **Other goods** (excl. production inputs and capital goods) include all goods consumed by the company for purposes such as enabling operations, management, or maintenance. This may include office supplies and small equipment, furniture, food and drinks for employees, uniforms and safety equipment, and spare and replacement parts for the company's machinery.
3. **Capital goods** are durable goods intended for long-term use to produce, process, transform, manufacture, store, and distribute other goods, to provide services, or otherwise to enable internal operations and supporting activities. These can include industrial machinery and equipment, vehicles, infrastructure and buildings, and computing and telecommunications equipment.
4. **Services** include any service acquired by the company, including travel, transportation and distribution, outsourced management, food and accommodation, plus financial and insurance services.

The downstream value chain segment includes all activities related to the further processing and sale of products sold by the company as well as their use (or consumption) and their end of life. Other activities that generate financial income for the company, such as investments, leases, and franchises are also part of the downstream segment.

Acknowledging that companies have the highest capacity to gather data, set targets, and implement actions in their direct operations segment, and that upstream and downstream value chain segments pose unique challenges in terms of value chain traceability, impact assessment, and stakeholder relations, targets are often set and monitored separately for each of these segments.



## Direct operations

For the direct operations segment, companies must compile a list of all sites within their organizational boundary and provide basic information as part of the validation submission, including: name of the site; location; and a brief description of the activities at the site.

Companies that undertake significant economic activities outside of their sites, e.g., in the fishing, extraction, construction, and transportation sectors, must also provide a list of all off-site activity locations where they have regularly worked or completed projects in the five years preceding their submission in each of their business operations. Companies should link each of these off-site activities to the site where the operations center coordinating these activities is located.

While precise location data, consistent with target-setting requirements, is strongly recommended for all direct operations activities, where that information is not available companies may also use subnational data to complete this mapping. Please review Table 4 for more information about the scale of target setting in Step 3 Freshwater and Land.

Companies must also indicate which of the direct operations and group-level ISIC4 economic activities from Step 1a are carried out at each activity location (i.e., locations of sites and off-site activities). This information is necessary to confirm which pressure categories will be assessed in the following task.

## Upstream: Production inputs

For the upstream segment, only goods classified as production inputs are in scope in this version (1.1) of the SBTN methods. Companies must provide a consolidated list of all goods procured as production inputs for all their activities within each business operation during the five years preceding their submission, as well as their procurement volumes (measured in tonnage or an equivalent metric). Production inputs associated with discontinued economic activities should be excluded from this list.

Companies that source animal-derived products as part of their production inputs must also indicate and quantify the volumes of any EUDR-listed commodities known or expected to be used as animal feed in the value chains producing those goods. To quantify these commodities companies must:

1. estimate the quantity of livestock necessary to produce the products they are sourcing;
2. estimate the necessary feed intake by the livestock; and
3. estimate the soy or palm oil content in this feed expressed in raw equivalent volumes.

Companies should use statistical or sector-average data to attribute a proportion (%) of the livestock and feed to their procurement. Economic allocation approaches are recommended when there are multiple products and byproducts associated with the livestock.

Companies sourcing recycled materials or co-products that use HICs may also use similar allocation approaches to account for their responsibility.

From this list of production inputs, companies must identify the associated economic activity related to the most recent (production or transformation) stage in the production of these goods, using the group-level names and codes defined in ISIC4. For example, raw materials should be associated with a primary production activity in ISIC4 Categories A or B and intermediate and final goods with a manufacturing activity in ISIC4 Category C. As with the list of direct operations, this information is necessary to confirm which pressure categories will be assessed in Task 8.

For most companies, procurement data for production inputs will be readily available from their internal operations, procurement, or supply chain management teams. Companies must compile a list of their production inputs procurement, including the volumes (measured in tonnage or an equivalent metric) of each of these inputs.

Companies must also identify the following location data:



- For any production input that is, or contains, high-impact commodities (HIC), the location of the most impactful stage (for each pressure category defined as material in Step 1a for that commodity) in the value chain of that commodity. For most commodities, the raw material extraction or sourcing is the highest-impact activity for a given pressure unless there is evidence to prove otherwise. For some value chains, such as those that involve sectors like metals processing or chemicals manufacturing, companies should assess whether other value chain segments (other than primary production) are more impactful for a particular pressure category. Note that the most impactful value chain stage may be different depending on the pressure category that is assessed, so for one commodity multiple locations may have to be defined. Companies may wish to consult life cycle inventory databases to ascertain the most significant point of production to use when estimating impacts and generating location data.

- For any production input that is not or does not contain any high-impact commodities, the location of any production or transformation stage in the value chain of the goods is accepted to complete the assessment. This can be the most recent production or transformation stage (e.g., the last manufacturing process where the production input took the form in which it was acquired by the company) or, ideally, a location higher up in the value chain that is associated with more impactful processes.

Companies should use the most granular spatial level possible in all cases but may use any level necessary to complete the mapping (including “global” or “unknown”). Variation in the spatial resolution of data used in this analysis will be addressed in Step 2.

Tasks 8 and 9 will require assessing the pressures and SoN values associated with at least 67% of all production volumes (incl. the high-impact commodities) and at least 90% of the high-impact commodity volumes for each pressure category. The location data compiled in Task 7 will be necessary to complete these assessments. Companies are recommended to collect all spatial data possible at this point, with the most refined spatial granularity, to facilitate the following tasks and completion of Step 1b: Value Chain Assessment.

**Table 5:** Assessment boundaries for value chain segments in the pressure and SoN assessment. Data should be classified using the data levels in Table 4.

Value chain segment	(Minimum) required scope of assessment	Minimum spatial resolution for assessment
 <b>Direct operations</b>	100% of material activities  where “material” means “material for any pressure category in the results of Step 1a”.	Location of each site or off-site activity, defined at subnational level or if possible at the most precise level
 <b>Upstream</b>	≥67% of material production input volumes (incl. HIC volumes) and ≥90% of all high-impact commodity volumes in production inputs including 100% of volumes of commodities that fall under EUDR  where “material” means “material for any pressure category in the results of Step 1a”.  The 67% and 90% thresholds are counted per pressure category. The list of assessed volumes will thus change from pressure category to pressure category.	Location of any stage in the production and transformation value chain of the production input. or Location of the most impactful stage in the value chain of the HIC.  Data for both should be defined at the most precise level possible but may also include national or coarser global data.



## Temporal variability in value chain activities

Given that value chain activities may vary from year to year, when selecting the time period covered by the data used in the value chain assessment (e.g., for the upstream volumes and supplier locations), companies must select a “representative year.” This must be a 12-month period, occurring as recently as possible, that is representative of their business, as well as of societal and environmental conditions.

The representative year must be no earlier than five years before the date of the method application unless evidence is submitted showing the past five years as non-representative. Explanation of the year selected may be requested in the validation process for Step 1. The year associated with the models and data used in the assessment may vary but should align with the choice of representative year as closely as possible. Companies should collect primary data within the representative year. Companies may also produce representative data by averaging the data from all representative years within the last five years of operations.

Table 5 summarizes the minimum scope requirements of the value chain assessment. This is the basic scope of activities that companies are required to include in their assessment but all companies are recommended to go beyond this minimum scope.

### Downstream and other upstream categories

Step 1b: Value Chain Assessment is currently not readily applicable to the remaining three procurement categories described in Box 2 (i.e., everything other than production inputs) nor to any downstream activities.

While companies are welcome to interpret and use the method to cover these other value chain activities, these will not be reviewed in the target validation process.

### Box 3: Threatened and trade-regulated species.

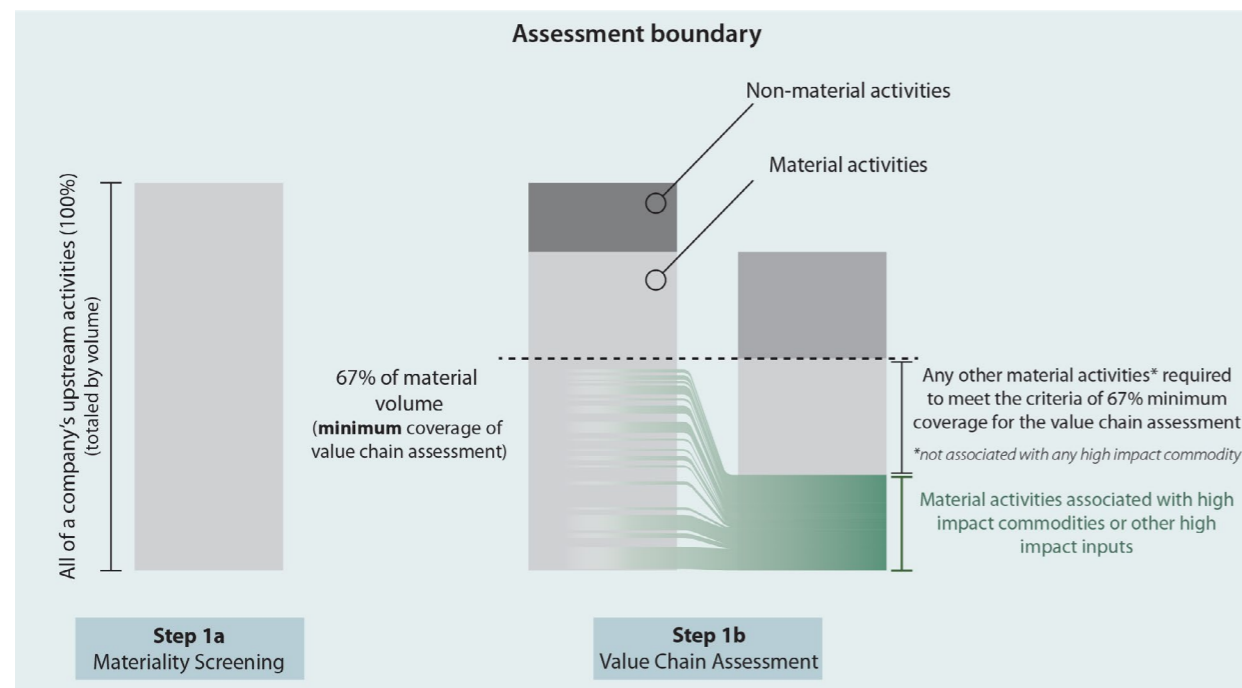
Flora and fauna species of commercial interest and facing threats to extinction are equally subject to higher traceability and assessment requirements. SBTN refers to two internationally recognized biodiversity conservation mechanisms to identify these species:

- The International Union of Conservation of Nature (IUCN) Red List of Threatened Species, which includes all species that face different levels of extinction risk and thus require targeted management strategies to prevent their further decline.
- The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) Appendices I, II, and III, which list species threatened by international trade and thus subject to strict trade regulations.

Companies that extract (in their direct operations) or source (as part of their production inputs) any IUCN red-listed species (40) classified as vulnerable (VU), endangered (EN), or critically endangered (CR), or any CITES trade-regulated species listed in Appendices II or III (41) must indicate species names, status and/or appendix in these lists, volumes or quantities, and extraction (or sourcing) locations associated with their representative year.

Examples of endangered or CITES listed species include those known in the lumber trade as Ipê or Brazilian Walnut (*Handroanthus impetiginosus*: IUCN Near Threatened/CITES Appendix II) and *Handroanthus serratifolius*: IUCN Endangered/CITES Appendix II) or Southern bluefin tuna (*Thunnus maccoyii*: IUCN Endangered).

Overexploitation of threatened and trade-regulated species is not covered in the current suite of Step 3 methods, but SBTN requires transparency on sourcing volumes and locations as part of the value chain assessment to lay the groundwork for the development of future target-setting methods.



**Figure 6:** Assessment boundary. This figure depicts the reduction of upstream scope of economic activities and goods/commodities from the Materiality Screening Step 1a to Step 1b: Value Chain Assessment. Companies may reduce their coverage of material economic activities to a minimum of 67% of volumes in Step 1b but the 67% must include at least 90% of all high-impact commodities (Including 100% of volumes of EUDR commodities) per pressure in scope.



## REQUIREMENTS AND RECOMMENDATIONS VALUE CHAIN MAPPING

### ◆ Requirement 10. Direct operations inventory.

- Companies must identify and describe all sites and off-site activities within their direct operations (i.e., within their organizational boundary, depending on the approach selected in Step 1a) and provide at least subnational locations for all activities (although precise locations are strongly recommended, especially for on-site activities).

### ◆ Requirement 11. Upstream value chain mapping.

- Companies must identify sourcing locations for any value chain stage (such as the most recent production and transformation stage) for at least 67% by total volume of their production inputs (including that of high-impact commodities) material for each pressure category for their representative year.
- Companies must identify sourcing locations for the most impactful value chain stage in each pressure category (in general, primary production) for at least 90% of their total combined volume of procured high-impact commodities for their representative year.

### ◆ Requirement 12. Include IUCN threatened and CITES listed species.

- Companies that source IUCN threatened species (40) (species that are classified as vulnerable: VU; endangered: EN; or critically endangered: CR), or CITES listed species (41) must include these in their scope of assessment. When compiling their data, companies should prepare to submit the species' names, quantities, and sourcing location for their representative year.

### ◆ Requirement 13. Spatial resolution of activity location data.

- Companies must provide activity location data at a minimum of subnational scale for direct operations. Conducting Steps 1 and 2 at this scale will satisfy SBTN requirements but may mean a more difficult transition to Step 3 target-setting methods, which must be conducted at a finer spatial resolution (Table 4).
- For upstream activity location data, it is required that companies attempt to collect or model location data to at least a subnational level. Companies may only use data at country level or coarser when locations cannot be refined past a geographic region or set of possible countries of origin (this may be the case when sourcing commodities through a wholesaler) but must include an explanation in their submission.

### ◇ Recommendation 6. Retrieve precise location data if possible.

- Traceability is critical for setting science-based targets for nature. Companies that are able to quantify pressures and state values at the appropriate resolution for target setting, should use this data in Step 1b to obtain the most accurate results for prioritization in Step 2 and target-setting in Step 3.

### ◇ Recommendation 7. Suggestions for retrieving upstream location data.

- Companies are encouraged to model these sourcing locations using information from suppliers (solicited through questionnaires) or global datasets reflecting typical sourcing profiles for certain commodities (e.g., FAOSTAT (46) or Trase (47)). For upstream activities, data gaps on likely sourcing locations can also be addressed by modeling data using environmentally extended input-output (EEIO) tables (e.g., EXIOBASE (34) or Eora (48)), or life cycle impact inventories (e.g., ecoinvent (43)).

## Task 8: Quantify the environmental pressures of your activities

Companies must assess all pressure categories that were defined as material (in Step 1a) for each direct operations and upstream value chain activity and within the current scope of SBTN target-setting methods.

This assessment focuses on current pressures and state of nature. Future projections of pressures and states of nature (incorporating climate and socio-economic scenarios) could be helpful for companies to consider and may be included in subsequent versions of SBTN methods.

### Direct operations

In the direct operations segment, for every given location (i.e., the location of a site or off-site activity), companies must assess the pressure indicators corresponding to the material pressure categories (as defined at the end of Step 1a) for all the standardized (group-level ISIC4) economic activities that occur at the location.

In this assessment, companies must include the pressures associated with utilities (energy, water, waste management, wastewater management) consumed in their operations. For example, companies assessing their water use must account for their water use coming both from their direct withdrawals (e.g., from their own wells) as well as water supplied by a municipal grid; and companies assessing their water or soil pollution would account for nutrients they release directly to the environment (e.g., from their water pipes or nutrient application) as well as those found in waste treated by municipal facilities.

Companies are required to assess the pressure indicators shown in Table 6 for 100% of their direct operations locations (i.e., locations of sites and off-site activities) material for that pressure category.

### Upstream

For all production inputs in their upstream value chain segment, companies must assess each of their material pressure categories (as defined at the end of Step 1a) for:

- the location of the most impactful value chain stage (e.g., production, processing, extraction) of high-impact commodity volumes, or
- the location of any production or transformation value chain stage of all other components' volumes (e.g., the most recent value chain stage or the most impactful value chain stage).

In every case, companies must estimate the equivalent volume of the commodity at the value chain stage they are assessing, indicate which is this value stage, and the form or state of the commodity at that stage. For example, companies need to indicate that they have estimated the raw volume at the primary production stage equivalent to the processed or transformed volume of the commodity they acquire. Companies are recommended to use statistical data and economic allocation approaches to estimate the proportion of the equivalent volume attributable to the goods in their procurement as opposed to other products or byproducts coming from the primary commodity.




Companies are required to assess the pressure indicators shown in Table 6 for at least 67% of the total (i.e., combined) volume of their production inputs (including any volumes from HIC and EUDR commodities) and at least 90% of the total (i.e., combined) high-impact commodity volumes (including 100% of volumes of EUDR commodities), material for that pressure category. These percentages must be calculated based on the production inputs volumes that the company is sourcing. In other words, the 67% and 90% are assessed based on the volume (tonnage) at the company gate, as opposed to the equivalent volumes at primary production or other stages which are relevant to quantify the associated pressures.






Companies should treat these 67% and 90% thresholds as an initial objective to achieve in their first round of target-setting and aim to expand out to at least 95% over the five-year target assessment period. SBTN has provided a supplemental list of other commodities that companies could prioritize if they wish to go beyond those listed in the HICL.

Companies should rank their procurement by first including the total volumes of each HIC included in EUDR, followed by the total volume of each HIC, and then the total volume of each other (component) in their production inputs in decreasing order. Companies should start the assessment with the EUDR and largest volumes of high-impact commodities, so that those are prioritized in accounting for the 67% and 90% minimum thresholds.

Table 6: Environmental pressure indicators for the value chain assessment.

Pressure category material	Pressure indicator(s) required in Step 1b in Step 1a
<b>Land use &amp; land use change</b> 	<p><b>Land use:</b> Area (km<sup>2</sup> or ha) of land use, including known land management practices (e.g., crop rotation, tillage practices, or fire regimes).</p> <p>Companies are recommended to include a description or quantification of additional intensity of use indicators such as pollution, resource exploitation, and invasive species.</p> <p><b>and also:</b></p> <p><b>Land use change:</b> Area (km<sup>2</sup> or ha) converted since 2020 (or earlier cutoff dates),* by pre- and post-conversion ecosystem type and category of land use.</p> <p>The seven land use categories recognized by SBTN are: plantation, forest land, cropland, grassland, wetlands, settlements, and other land (including infrastructure and human settlements). Companies must refer to AFI (2020) for additional guidance on the definition of plantation and to IPCC (2003) for the remaining six categories.</p> <p>* See Step 3: Land for details on the appropriate cutoff date to use, depending on the area associated with sourcing or direct operations, and for guidance on statistical land use change (sLUC) in cases where companies lack production unit level data</p> <p>Companies must use both indicators (land use and land use change) for every location with activities material in this category.</p>
<b>Water use</b> 	<p><b>Water withdrawals:</b> Monthly or annual volume (m<sup>3</sup>/month or km<sup>3</sup>/year), per source (surface water, groundwater, municipal grid, etc.).</p> <p>The use of monthly values is recommended whenever possible, especially for direct operations, as it allows more flexibility and precision in Step 3. The use of annual data is allowed in all cases although companies may be required to re-assess these values in Step 3 in some cases.</p> <p><b>or, alternatively:</b></p> <p><b>Water consumption:</b> Monthly or annual volume (m<sup>3</sup>/month or km<sup>3</sup>/year), per source (surface water, groundwater, municipal grid, etc.). Water consumption must be calculated as withdrawals minus returns but returns are only allowed in cases where the water returns occur in the same location, in the same time period (month or year), and with the same quality (e.g., temperature, oxygen concentration, nutrient and pollutant concentration) as the water that was withdrawn.</p> <p>Companies may use a combination of water withdrawals and water consumption values for their locations with activities material for this category, depending on data availability and only where water returns match the quality of water withdrawals, noting for each location which of the two indicators was used.</p> <p>Note that monthly estimates should be used where possible for freshwater science-based targets, but companies may use an annual sum or a maximum monthly value when prioritizing for target setting in Steps 1 and 2.</p>
<b>Soil pollution</b> 	<p><b>Nutrient application to soils:</b> Nutrient (nitrogen and phosphorus) volume applied to soil per area (kg N/ha, kg P/ha, or kg NPK/ha).</p> <p><b>Companies are required to assess this indicator</b> for all locations with activities material for soil pollution. In some cases, however, it is expected that there may be no instance of nutrient loading to soil, or that the values are insignificant. Companies are still required to indicate the assessed values, noting and explaining the cases where these values are zero or near zero.</p>

Pressure category material	Pressure indicator(s) required in Step 1b in Step 1a
<b>Soil pollution (continued)</b> 	<p>Companies should note that this indicator and the <i>nutrient loading to freshwater via soil</i> indicator for water pollution are closely related and can be calculated using the same data.</p> <p><b>and, optionally:</b></p> <p><b>Nutrient loading to soil via solid waste:</b> Estimated nutrient volume (kg N or kg P) in solid waste generated by the company, including its disposal mechanism and treatment (if known).</p> <p><b>Nutrient loading to soil via solid waste</b> is not required, but <b>recommended</b> for companies generating significant amounts of organic solid waste discharged directly to the environment. Companies whose waste is treated through a waste treatment facility should not assess this indicator.</p> <p><b>and, optionally:</b></p> <p><b>Other pollution loading to soil:</b> Estimated ecotoxic potential volume discharged to soil or total acidification potential volume discharged to soil, or other metrics of soil pollution.</p> <p><b>Other pollution loading to soil</b> is not required, but <b>recommended</b> for companies in sectors where nutrients are not significant pollutants. Companies whose waste is treated through a waste treatment facility should not assess this indicator.</p>
<b>Water pollution</b> 	<p><b>Nutrient loading to freshwater via soil:</b> Rate of nutrient (nitrogen or phosphorus) application in soil (kg N, kg P, or kg NPK per month or year) or, where possible, nutrient discharge to freshwater systems.</p> <p>Companies are strongly recommended to estimate nitrogen and phosphorus loads separately for each location with material activities for freshwater pollution, as this will allow a better implementation of the Step 3 methods. A combined metric estimating total fertilizer application (e.g., NPK) or other similar metrics are also allowed but may require re-assessing the two nutrients separately to proceed with target-setting in Step 3. The use of monthly data is recommended whenever possible, as it will allow more precise target-setting and actions in Steps 3 and 4, but annual data is allowed in all cases.</p> <p><b>Companies are required to assess this indicator</b> for all locations with activities material for freshwater pollution. In some cases, however, it is expected that there may be no instance of nutrient loading to soil, or that the values are insignificant. Companies are still required to indicate the assessed values, noting and explaining the cases where these values are zero or near zero.</p> <p><b>and also:</b></p> <p><b>Nutrient loading to freshwater via wastewater:</b> Rate of nutrient (nitrogen and phosphorus) loading in wastewater streams (kg N/month and kg P/month, or kg N/year and kg P/year), indicating discharge directly to the environment.</p> <p>Companies may estimate this indicator by measuring or estimating the nutrient concentration (kg N/lt or kg P/lt) in their wastewater streams and multiplying it by their discharge water volumes (m<sup>3</sup>/month or km<sup>3</sup>/year).</p> <p>Companies are strongly recommended to assess nitrogen and phosphorus loads separately for each location with material activities for freshwater pollution. A combined metric (total nutrient load or NPK load) is allowed but companies are recommended to use statistical data or available conversion factors for their specific practices to estimate the specific proportions of N and P in each location. This will allow a better implementation of the Step 3 freshwater methods which are specific to nitrogen and phosphorus levels in each basin. The use of monthly data is recommended whenever possible, as it will allow more precise target-setting and actions in Steps 3 and 4, but annual data is allowed in all cases.</p> <p><b>Companies are required to assess this indicator</b> for all locations with material activities for freshwater pollution. In some cases, however, it is expected that there may be no instance of nutrient loading in wastewater, or that the values are insignificant. Companies are still required to indicate the assessed values, noting and explaining the cases where these values are zero or near zero.</p> <p>Note that monthly estimates should be used where possible for freshwater science-based targets, but companies may use an annual aggregation or a maximum monthly value when prioritizing for target setting in Steps 1 and 2.</p>
<b>GHG emissions</b> 	<p><b>GHG emissions:</b> Companies are required to complete (or have completed) an assessment of their GHG emissions in line with SBTi guidance.</p>



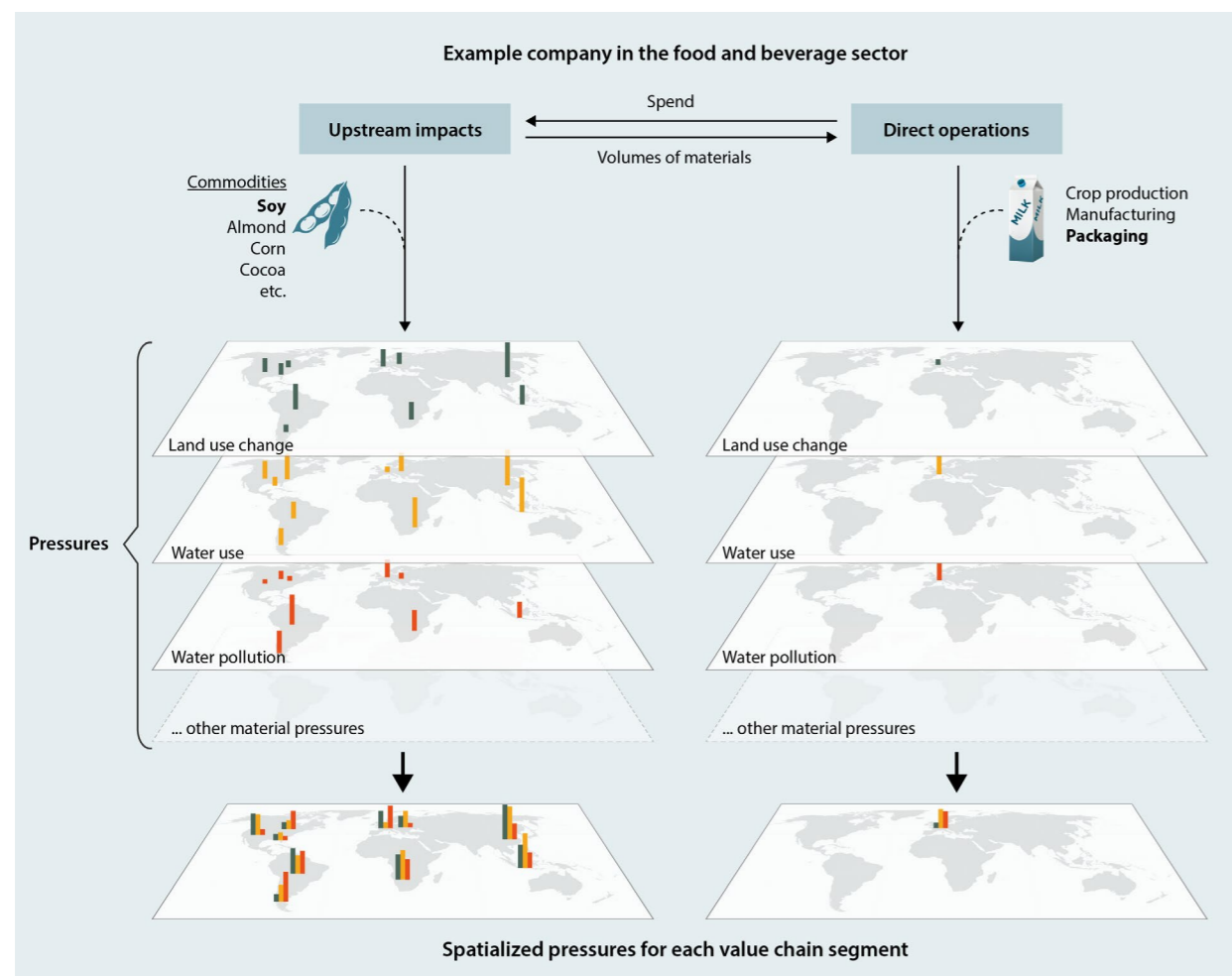
## Pressure indicators for the value chain assessment

Companies may assess their contributions to additional pressure categories screened as material in Step 1a, such as freshwater ecosystem use and change or other resource use. Companies are recommended to set targets and take actions to address these impacts with the help of other corporate sustainability initiatives beyond SBTN. The assessment, and eventual target-setting and actions implemented to address these impacts, remains out of scope of the v1.1 of the SBTN methods and will not be considered in the validation process.

## Approaches to quantify pressures

There are two main approaches to quantify the pressures generated by a company's value chain activities, both applicable to direct operations and upstream: measurements and estimations. Companies will likely combine these two approaches as necessary. In all cases, companies must record which approach was taken to produce each pressure quantification (i.e., for each location) and, if relevant, the data sources or models used.

The information compiled during this exercise may be utilized by companies throughout the target-setting process, enabling more rapid calculation of their target baseline in Step 3, and appropriate resourcing and prioritization for target-setting.



**Figure 7:** Combining pressure data to complete the value chain assessment. This figure illustrates the process of pressure data collection for the different parts of a company's value chain. Each pressure is estimated separately for each location and economic activity included in the company's assessment scope.

## MEASUREMENTS

Measurements are generated by the company themselves or, where appropriate, retrieved from publicly available data sources. For example, companies can get readings from stream gauges or sensors, or estimate a land holding's surface area from maps or satellite data.

This approach requires knowledge of more precise location data. In the case of upstream activities, this may only be available to companies with strong supplier relationships and may need additional verification by the company before submission for validation.

This approach will yield the best data to prioritize locations (in Step 2) and set targets (in Step 3) as the values will be specific to the company's activities. Once companies start implementing actions to meet their targets (Step 4), this will allow the most flexibility in terms of actions available and the most precision in monitoring progress (in Step 5). For these reasons, companies must use measurements whenever they have the data available.

### Box 4: Leveraging existing sustainability data to complete the value chain assessment.

Companies may be able to leverage recent assessments and data collection efforts for the process of setting science-based targets. Past efforts likely to be helpful to companies in completing the value chain assessment include:

- certifications or other investments in supply chain traceability,
- product or enterprise-level impact assessments following standardized life cycle impact assessment methods (e.g., those from the International Standard Organization, ISO),
- GHG accounting and data used for setting science-based targets for climate,
- water impact accounting and data used for setting enterprise-level water targets or context-based water targets,
- applications of the Natural Capital Protocol,
- information collected for reporting to CDP on water, forests, or climate,
- information collected for disclosing in line with the Global Reporting Initiative (GRI), particularly the standards on material issues, water, and biodiversity,
- information collected for the Taskforce on Nature-related Financial Disclosures (TNFD) disclosure requirements, and
- supply chain due diligence and other initiatives to ensure avoidance and management of potential labor and human rights issues (e.g., in line with guidance from the OECD or UN).

Note that while companies' engagement in the initiatives mentioned above can lead to more and better data being available for use in the target-setting process, evaluation of existing sustainable practices will primarily be incorporated during the baselining assessment in Step 3, not in Steps 1 and 2. These practices are only considered once companies have determined the specific locations and activities that they will manage with targets. This will allow for the evaluation of efforts within a specific context, using appropriate indicators.



### (MODEL-BASED) ESTIMATIONS

Estimates rely on the use of pre-existing quantitative models and will generally take specific company data as an input in order to produce a pressure estimate. For example, companies can estimate the associated pressures from a certain volume (measured in tonnage or an economic value measure, such as procurement spend) of commodities sourced or produced in a location. Companies should use sectoral- or regionally-relevant models whenever possible (as opposed to models that only use and provide global, average data). To build on this, companies are also encouraged to use models with outputs at a resolution closest to the Step 3 target-setting methods. Modeling approaches are particularly relevant for pressure estimation when companies lack fine scale data.

Companies should use measurements whenever this is feasible, although not at the expense of moving forward to Step 2. For example, in cases where precise location data is unknown or there is a very large number of locations to assess, using measurements will not be feasible and estimations are acceptable.

Having completed the Step 2 prioritization process (using estimations), companies may opt to recalculate the pressures using measurements as part of the Step 3 baselining process. Otherwise, targets may be set using estimated pressures, but this may limit companies' flexibility in terms of what actions can be counted as progress toward targets (Steps 4 and 5).

The pressure assessment required in the SBTN methods should be specific to a particular value chain stage and location, e.g., the pressures at the primary production stage in a particular farming location. However, when companies are not able to assess location-specific pressures, companies may use tools that provide aggregated estimations at the value chain level. Approaches like LCA may provide estimates for cradle-to-gate (i.e., the total pressures from primary production to the moment the product arrives at the company) or cradle-to-grave (i.e., from primary production to end of life). When taking this approach, companies must assume that the total pressure estimated by the tool is attributable to the specific value chain stage they are assessing (rather than trying to account for a proportion of it). Companies should use the tools and scope that provide the most accurate estimate possible, and note their rationale to SBTN.

### Box 5: Tools and resources to quantify value chain pressures.

Companies that source agricultural crop commodities and only know their sourcing locations at the national-scale (i.e., they don't know subnational or regional sourcing locations), should use secondary sources (e.g., SPAM or Aqueduct Food) to estimate how their total sourced volume (and the associated pressures) can be disaggregated from national scale to specific basins, ecosystems, or subnational locations. For all other materials, this disaggregation step is encouraged where secondary sources are available to support it.

This spatial disaggregation will facilitate the implementation of the Step 2 prioritization process. Using known locations and/or having subnational estimates of locations will enable companies to more easily set science-based targets in Step 3 and increase the coverage of their validation claims.

Other relevant resources for companies include environmentally extended input-output (EEIO) models and databases (e.g., EXIOBASE or Eora), life cycle impact assessment methods (e.g., IMPACT World+) and life cycle inventory databases (e.g., Ecoinvent, the Federal LCA Commons (US), or those produced for the EU (43) (44) (45)). While these are commonly used approaches for modeling pressures, there is no single solution and companies should combine these with other approaches such as spatial modeling and remote sensing to address their needs. See additional tools available to support the Step 1b pressure assessment in the SBTN Step 1 Toolbox (31).

Because of these differences in pressure data, companies may either compute their upstream pressure estimates per activity or compute the aggregate pressure estimates by commodity. Regardless, the pressure data should be aggregated per location and harmonized with the associated SoNP per location.

Pressure estimation using life cycle assessment methodology will reflect the different levels of analysis used to understand the system and yield results aggregated at different levels (e.g., at unit process or system level) and different levels of detail or precision.



## REQUIREMENTS AND RECOMMENDATIONS PRESSURE ASSESSMENT

- ◆ **Requirement 14. Assessment of material pressures.**
  - Companies must assess their direct operations and upstream activities against the pressure categories of land use and land use change, water use, water pollution, and soil pollution if they were flagged as material in Step 1a. Application of SBTi methods can be used for GHG emission assessment instead of new analysis using SBTN methods.
- ◆ **Requirement 15. Direct operations assessment scope.**
  - Companies must assess 100% of direct operations locations (i.e., locations of sites and off-site activities) for each of their material pressures.
- ◆ **Requirement 16. Upstream assessment scope.**
  - Companies must demonstrate that they have estimated the pressures associated with at least 67% of all production volumes (incl. the high-impact commodities) and at least 90% of the sourced high-impact commodity volumes for each pressure category, including 100% of volumes associated with EUDR commodities.
- ◆ **Requirement 17. Priority use of measurements.**
  - SBTN requires that companies use measurement data, where available. This requirement holds for both the direct operations and upstream value chain assessment (where those data would be coming from a supplier or other relevant source in-situ).
  - When the use of measurements is not available or feasible, companies may estimate the pressures using quantitative models.
- ◆ **Requirement 18. Use of required indicators.**
  - Pressure quantifications (whether measurements or estimates) must be provided with the indicators shown in Table 2. Activities material for land use and land use change must be assessed using both indicators shown in the table.
- ◆ **Requirement 19. Upstream representativeness.**
  - Pressures must be estimated based on the activities and commodities/goods that companies source from upstream suppliers.

## REQUIREMENTS AND RECOMMENDATIONS PRESSURE ASSESSMENT (CONTINUED)

- ◆ **Requirement 20. Activities to consider when estimating upstream pressures.**
    - When estimating upstream pressures, companies must focus on the activities that are expected or known to be the greatest contributors to a given pressure category. Note that this may mean that multiple unit processes and locations need to be included for a given commodity if they are the most important for different pressures.
- 
- ◇ **Recommendation 8. Alignment with climate assessment scope.**
    - Companies with full GHG inventories prepared for climate science-based targets should assess impacts associated with at least 95% of their upstream activities.
  - ◇ **Recommendation 9. Spatial resolution and scale of assessment.**
    - The spatial resolution of pressure data should match the finest spatial resolution available for the activity's location data (as defined in Task 7). When using measurements, they should be collected at the site scale, allowing for aggregation to appropriate scales for further analyses, see guidance on tool and data criteria (32). Companies should assume that pressures occur in the same locations as their activities; where they know or suspect this is not the case, they should adjust the pressure location data to match the expected location. For example, this may be the case where a company's water withdrawals come from a different basin than where their facility is located.
    - For both direct operations and upstream impacts, in cases where companies have collected primary data for some of these pressure indicators (e.g., GHG emissions for operational sites), they must opt for utilizing these pressure quantifications rather than using modeled estimates. See how a company can format results for their direct operation pressure assessment in the worked examples available through SBTN's Resource Library.



## Task 9: Assess the state of nature in each geographical location

Information about impact location is necessary to understand the relative significance of a given pressure. Pressures of the same magnitude occurring in different geographic locations will have different significance, depending on factors such as the sensitivity of the local ecosystem to additional changes, presence of threatened species, or reliance of local communities on an impacted resource. Therefore, to understand the contextual significance of a company's pressure footprint, spatial state of nature (SoN) indicators are required.

Two types of spatial indicators for SoN must be used in the value chain assessment:

- Pressure-sensitive SoN indicators [SoNP]: indicators appropriate to summarize the features of SoN most directly connected to the pressure being assessed.
- Biodiversity SoN indicators [SoNB]: indicators appropriate to estimate SoN in terms of biodiversity, along three key dimensions: the ecosystem, species, and genetic level.

Incorporating both types of indicators allows companies to target those locations where they are having the greatest impact and have the highest potential for change (through SoNP), as well as those locations that have the greatest intrinsic value for biodiversity and where the resulting contributions to people are most critical (through SoNB).

### Pressure-sensitive SoN indicators

SBTN requires companies to assess the SoN in their material value chain locations using pressure-sensitive SoN indicators (SoNP) to capture the more direct impacts that a given pressure can have on nature. Currently, the elements captured by SoNP indicators include water availability, water pollution, and natural ecosystem extent, structure, composition, and function (captured through an index of terrestrial ecosystem intactness).






Companies must assess the SoNP indicators associated with the pressure categories material at a given location, as shown in Table 7. For example, if a value chain activity was determined to be material for water use (in Step 1a), the company will be required to assess the SoNP indicator of surface water flows and/or groundwater levels (depending on the source of their withdrawals, as indicated in Task 8) for the location where that activity takes place.

### Box 6: Relationships between pressure and SoN variables and rationale for the approach.

The effects of pressures can lead to changes in the state of nature over time (i.e., the general conditions of nature in physical, chemical, or biological terms), but the causal relationships between these variables is not always clear. For this reason, SBTN includes the assessment of pressures and states of nature separately within the company's initial screening of its contributions toward negative impacts on nature. This acts as a safeguard to ensure that all aspects of a company's activities that may contribute to negative impacts on nature are captured in the assessment. The approach provides companies with information on the magnitude of each pressure generated by the company, and the health of nature, expressed in terms of SoN (pressure-specific and general), in each location.

The combination of data points collected during the value chain assessment allow companies to choose which locations and business activities to prioritize based on the magnitude of pressure and health of nature and the values of these indicators relative to one another (in Step 2). This analysis allows companies to consider the potential connection between each pressure (e.g., water withdrawals) and a specific SoN variable (e.g., water availability), and the potential connection between that pressure and biodiversity (e.g., species extinction risk, linked to water availability). The use of these different variables is intended to ensure that companies are focusing on the right pressures in the right places.

Table 7: Pressure-sensitive SoN indicators and their associated pressure categories. For data interpretation guidance please refer to documentation provided by dataset developers.

Pressure category material in Step 1a	Pressure indicator(s) required in Step 1b
 <p><b>Land use &amp; land use change</b></p>	<p><b>Ecosystem extent:</b> Area (km<sup>2</sup> or ha) of extent of natural ecosystems, ideally separated by ecosystem type.</p> <p>Companies with production unit data for pressures should calculate SoNP values with a buffer around production units indicating the surrounding state of nature (but state data should still be associated with the relevant production unit used for calculating pressures). Companies with sourcing area and coarser subnational data (those who may be reliant on statistical land use change calculations) should provide contextual state data at the ecoregional level.</p> <hr/> <p><b>Ecosystem intactness/integrity (ecosystem structure, function, and composition):</b> This complements the ecosystem extent indicator above by including measures of an ecosystem's overall condition. This can be assessed directly using datasets describing ecological integrity or using datasets describing the degradation of ecosystems through human activities. Companies should calculate these measures using guidelines for spatial resolution as above.</p>
 <p><b>Water use</b></p>	<p><b>Surface water flows:</b> Surface water flows in the basin (km<sup>3</sup>/month or km<sup>3</sup>/year) for all locations where water withdrawals come from surface water sources and/or water utility providers.</p> <p>Companies must use the model developed by Hogeboom (2020) and available in <a href="#">SBTN's online tool</a> to assess this indicator if they know the location at spatial data level 1 (i.e., Pfafstetter basin level 5 for water use).</p> <p>Companies may otherwise use the <a href="#">SBTN Unified Water Availability Dataset (53)</a> to assess this indicator when they know the location at spatial data levels 2 or 3. Further <a href="#">information on the database</a> is available online.</p> <p><b>And, optionally:</b></p> <p><b>Groundwater levels:</b> The use of this indicator is not required and only recommended in cases where groundwater withdrawals are more significant than surface water withdrawals. Additional guidance on the adequate spatial scale and available datasets is forthcoming.</p> <p>Groundwater levels in the aquifer for all locations where water withdrawals or consumption come from groundwater sources, whether those are direct withdrawals by the company or water supplied by a provider (which in turn is known to obtain it from an aquifer).</p>
 <p><b>Soil pollution</b></p>	<p><b>Nutrient pollution levels in soil:</b> Soil nitrogen (N) and phosphorus (P) concentrations or, if nutrient pollution is not relevant, other physical or chemical properties associated with soil pollution may be used instead.</p> <p>Useful resources to support the assessment of soil pollution include FAO's <a href="#">GLOSIS</a> and the <a href="#">soilgrids'</a> soil pH level and nitrogen concentration layers. Note that you may need to complement these models with other data to discern the contribution of nutrients in generating these SoNP (versus that of other substances) and to estimate soil nutrient concentrations.</p>
 <p><b>Water pollution</b></p>	<p><b>Nutrient pollution levels in freshwater:</b> Instream N or P concentrations in the basin for locations where the pressure indicators of nutrient loading to freshwater via soil or via wastewater for N or P (respectively) have been quantified to be more than zero (i.e., not zero or near-zero values).</p> <p>Companies must use the model developed by McDowell (2020) <a href="#">available online</a> to assess this SoN indicator if they know the location at spatial data level 1 (i.e., Pfafstetter basin level 4 for water pollution).</p> <p>Companies may otherwise use the <a href="#">SBTN Unified Water Pollution Dataset (53)</a> to assess this SoN indicator when they know the location at spatial data levels 2 or 3. Further <a href="#">information on the database</a> is available online.</p>
 <p><b>GHG emissions</b></p>	<p>Companies may wish to assess state indicators associated with climate change to gain additional insight on the state of nature in their value chain locations. For additional guidance please reference SBTi methods. This assessment is not required by SBTN and will not be reviewed as part of the target validation process.</p>



## Biodiversity SoN indicators

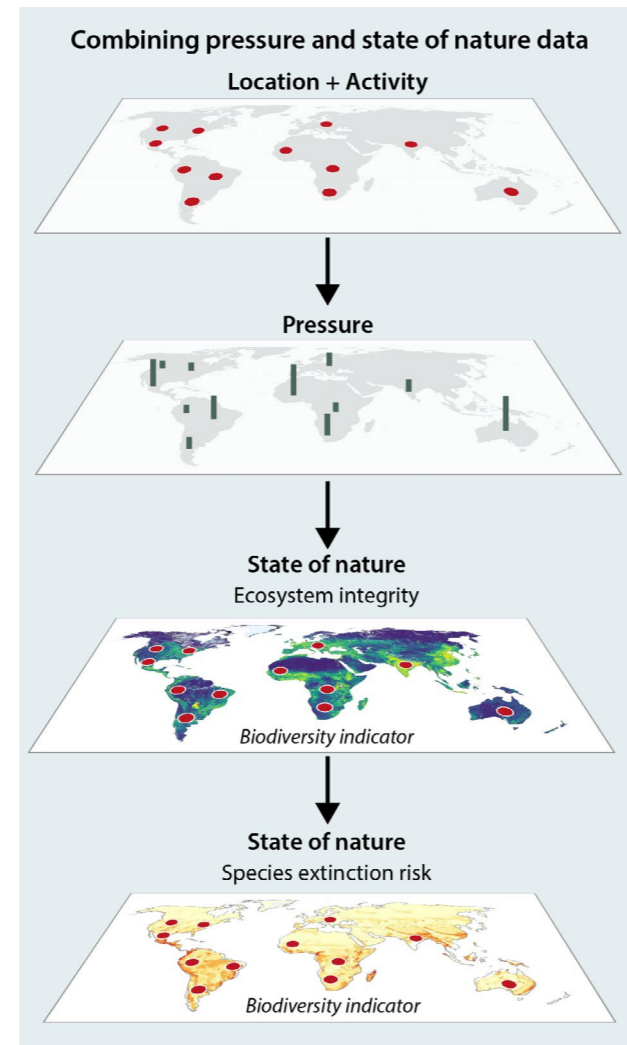
Companies must complement the pressure-sensitive SoN indicators with biodiversity SoN indicators. Biodiversity is defined as the variability in living organisms at the ecosystem, species, and genetic dimension (50). Companies are required to use two SoNB indicators for each activity: a species-level indicator and an ecosystem-level indicator. Due to lack of data around the genetic dimension of biodiversity, no genetic-level indicators are required. Companies must select indicators that are relevant for the given pressures and realms associated with their value chain activities. Examples of recommended metrics and datasets to evaluate each of these indicators for associated pressures and realms can be found in the table of Appendix 1 and in the Step 1 toolbox.

Companies may use additional SoN indicators to account for the impacts and dependencies of companies on ecosystem services or nature's contributions to people (NCPs). This approach emphasizes the importance of ecosystem services critical for business operations (e.g., regulating services such as pollination or direct inputs of biological material for cosmetics and pharmaceuticals) through the protection and enhancement of economically relevant aspects of biodiversity, often referred to as "natural capital" (13) (14) (49).

In some cases, the recommended SoNP indicators may already incorporate measures of biodiversity at the ecosystem scale, e.g., Ecosystem Integrity Index (EII) (51). To complement these and summarize biodiversity at a more granular scale, companies should use a species risk and extinction indicator, such as the global Species Threat Abatement and Restoration (STAR) metric (52), in line with best practices for impact screening from the Align project (42). The STAR metric is appropriate to the pressure and threat framing that SBTN utilizes to address nature impacts. The STAR freshwater biodiversity layer is still being developed at the time of release of v1.1 of the methods. For the current scope of SBTN methods, STAR can only be used as a species-level SoNB indicator where the company's

pressures are directly affecting terrestrial biodiversity. For cases where the company's pressures affect freshwater species, companies are recommended to use different metrics such as freshwater fish rarity-weighted richness.

Companies are encouraged to consider the full set of biodiversity metrics noted in Table 8 but may need to apply a simpler and more prescriptive approach to meeting minimum requirements for SoNB metrics in Steps 1 and 2. For more guidance on this minimum approach for species and ecosystem level metrics please reference Appendix 1.



**Figure 8:** Combining pressure and SoN data. This figure illustrates the process of combining data on a pressure with the relevant SoNP pressure-sensitive indicator (SoNP) and the biodiversity SoN indicator (SoNB). This process should be repeated for each pressure using a different SoNP.

**Table 8:** This table shows the full set of SoNB indicators and metrics that companies should consider assessing. The indicators are mapped against the criteria for ecologically-sensitive locations used for location prioritization by TNFD and the GRI Biodiversity Standard. Companies may use this mapping to better leverage their analyses across different corporate sustainability frameworks. Examples of datasets representing recommended SoNB metrics and indicators can be found in the Step 1 Toolbox.

Biodiversity dimensions and NCPs	Recommended Biodiversity state of nature (SoNB) indicators for Step 1b	Alignment with TNFD and GRI criteria for ecologically sensitive locations
<b>Species</b>	Richness of threatened species	Biodiversity importance: Areas important for species (included threatened, congregatory, migratory, range-restricted or endemic species)
	Rarity-weighted richness	
<b>Ecosystems</b>	Protected areas including other effective area-based conservation measures' (OECMs)	Biodiversity importance: Areas protected through legal or other effective means
	Areas scientifically recognized for importance for biodiversity	Biodiversity importance: Areas scientifically recognized for importance for biodiversity
	Critically Endangered or Endangered ecosystems on land	Biodiversity importance: Areas containing ecosystems that are rare, very localized or highly threatened
	Species-rich marine or coastal habitats	
	Ecological corridors Migratory corridors	Biodiversity importance: Areas important for ecological connectivity
<b>NCPs</b>	Ecosystem integrity	Ecosystem integrity: High integrity locations and areas of rapid decline in ecosystem integrity
	Areas critical to NCPs	Areas important for the delivery of ecosystem service benefits, including to Indigenous Peoples and local communities
	Areas critical for NCPs to Indigenous Peoples and Local Communities	Areas that have been traditionally owned, occupied or otherwise used by Indigenous Peoples and local communities

### Box 7: Tools and resources to quantify the state of nature.

There are many existing tools and data layers that can be used to derive information on SoN indicators for the value chain assessment. For some variables, SBTN provides explicit requirements about which tools to use for the value chain assessment (see Requirements). For other SoN variables, SBTN provides guidance on suggested units, tools, and data sources and will check for appropriate application of the tool and data criteria when companies have submitted their data following completion of Steps 1 and 2. To complete this assessment, companies may reference datasets and tools in the SBTN Step 1 Toolbox (31) or use another dataset that meets the SBTN criteria (32).





## REQUIREMENTS AND RECOMMENDATIONS STATE OF NATURE ASSESSMENT

- ◆ **Requirement 21. Use of the most recent SoN data.**
  - Companies must use the most recent versions of SoN datasets to represent current environmental conditions. Validators may ask for revision or additional justification if more recent versions of datasets are known to be available for the locations being evaluated.
- ◆ **Requirement 22. Selection of pressure-sensitive SoN indicators.**
  - Companies must assess the SoNP in their value chain locations for water use and water pollution using the indicators (and, where relevant, the models) described in Table 7, depending on the pressure indicators assessed at the location and the spatial resolution known for the location.
  - Companies must assess the SoNP in their value chain locations for land use and land use change and soil pollution, following the guidance in Table 7 and using any relevant database available in the Step 1 toolbox.
- ◆ **Requirement 23. Biodiversity indicators (SoNB) requirement.**
  - Companies must use at least two biodiversity SoN indicators (a species and an ecosystem indicator) in this analysis to accompany pressure and pressure-sensitive SoN data (except in cases where the SoNP indicator already incorporates an ecosystem level indicator of biodiversity).



## REQUIREMENTS AND RECOMMENDATIONS LINKING PRESSURE AND SON DATA

- ◆ **Requirement 24. State and pressure data needed for each activity-location pair.**
    - To complete Step 1, companies must record this SoN information alongside their pressure data for each activity-location pair in their direct operation dataset and for each commodity-location or activity-location pair in their upstream dataset. The key here is that each location is recorded with its associated SoN and pressure data. This information will then be analyzed in Step 2 to determine which locations are highest priority for target-setting.
  - ◆ **Requirement 25. Precision of pressure data considered before SoN data collection.**
    - Before beginning the SoN assessment, companies must consider the level of precision in their activity location and pressure data to determine the locations to use for the SoN assessment (e.g., the country or set of countries estimated as probable sourcing locations).
  - ◆ **Requirement 26. Check appropriateness of SoN data.**
    - For the upstream analysis, SoN estimates must be associated with companies' procurement or upstream activity data and be consistent with guidance on spatial resolution of pressure data (Table 4).
- 
- ◇ **Recommendation 10. Ensure compatible spatial and temporal resolution.**
    - When completing the value chain assessment, companies are strongly recommended to use SoN data that are compatible with the spatial and temporal scale of the pressure data they have collected (i.e., data which are delineated along similar political and natural boundaries, and cover a similar period of time). When the spatial resolution of pressure and recommended SoN data for a specific location are not equal, the finer-scale data should be aggregated to the coarser of the two scales.
    - Because of the potential inconsistency of spatial scales between these data sources, SBTN recommends that companies use datasets and resources for the SoN assessment that have a broader spatial extent (this refers to coverage across company sites, not to be confused with spatial scale). This may help companies avoid having to harmonize datasets before proceeding with the analysis.
  - ◇ **Recommendation 11. Data structure for upstream value chain assessment.**
    - For ease of analysis in Step 2, it is recommended that companies sort their data by commodity or activity category, though other options are possible.



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After completing Step 1, companies are ready to progress onto the selection of locations where they can begin setting targets for nature.



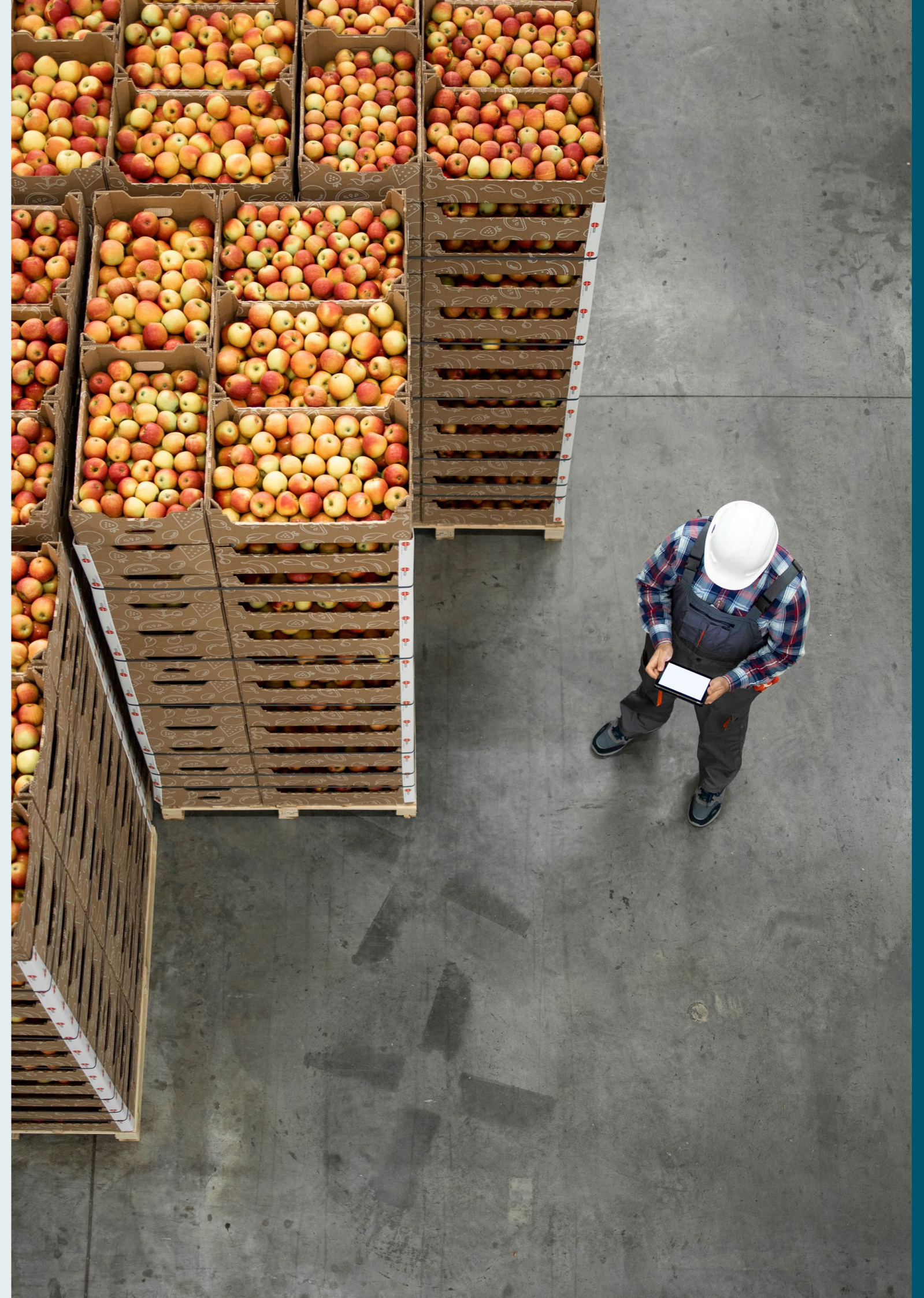


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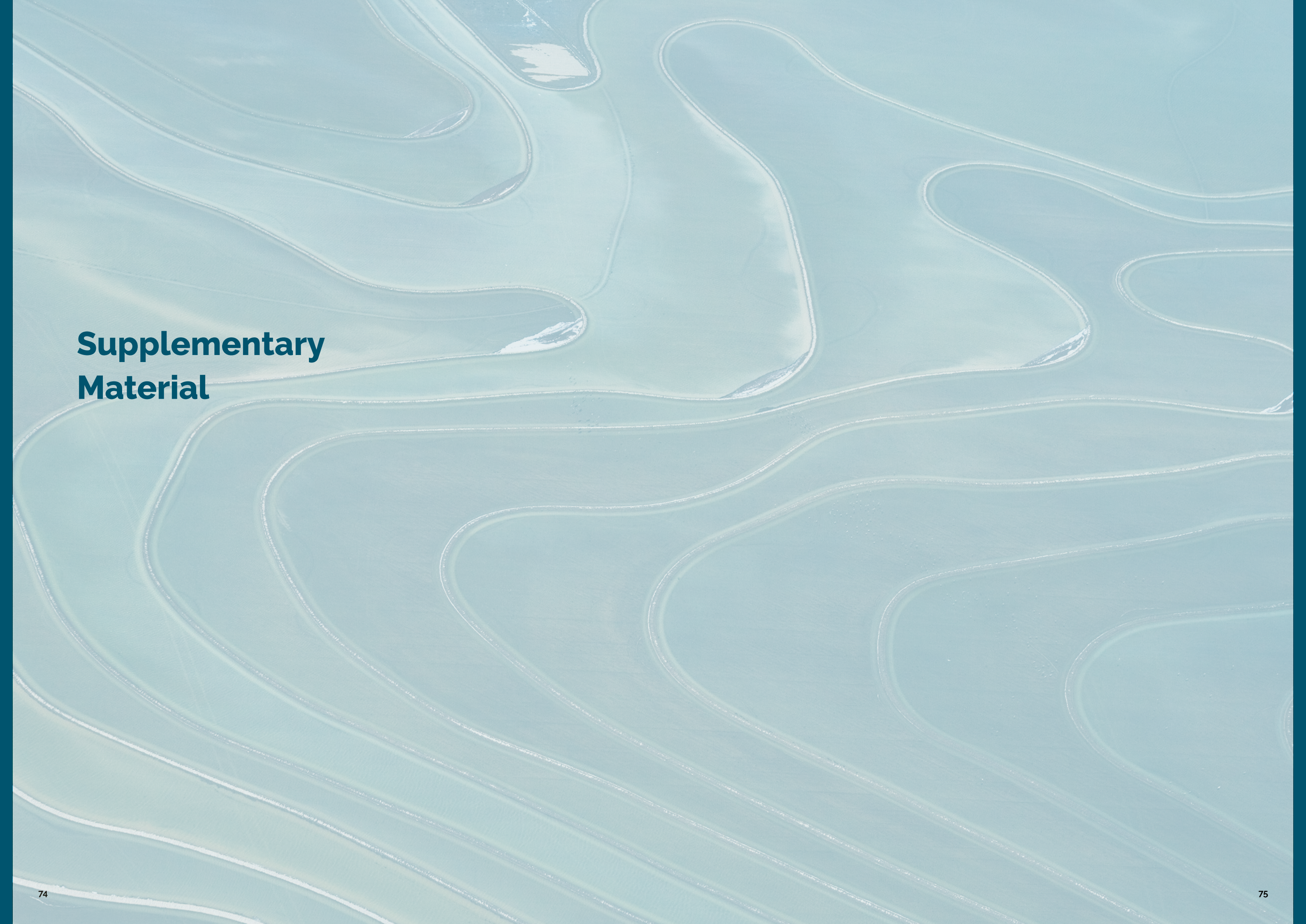
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An aerial photograph of a wetland or marsh area. The landscape is characterized by a complex network of narrow, winding water channels that meander through lush green vegetation. The channels vary in width and depth, creating a maze-like pattern. The overall color palette is dominated by various shades of green and light blue, suggesting a healthy, water-saturated environment. The lighting is even, highlighting the textures of the water and the surrounding plants.


**Supplementary  
Material**





## Appendix 1. State of Nature (SoN) Biodiversity indicators—minimum approach


Metrics relevant to pressures and realms are described here to help companies in their choice of SoNB metrics. These metrics have been selected based on their credibility and relevance, as well as practical considerations for the implementation of the methods, such their coverage of multiple pressures. This minimal approach is associating a metric for biodiversity dimension of species and ecosystem as well as NCPs for each type of pressure.

Minimum approach to SoNB measurement in SBTN Steps 1-2 for the given pressure and SoNP combination							
SBTN Pressure Category	SBTN SoNP Category and Metric	Biodiversity and NCPs aspects	Biodiversity and NCPs variables	Recommended metric	What the metric captures	What the metric does not capture/ limitations	
 Land use and land use change	Land use: Natural ecosystem structure, function, and composition  Land use change: Area of remaining intact ecosystem, land use by ecosystem, land use type	Species	Species endemism, richness, threat status	Species Threat Abatement and Restoration (STAR)	STAR combines information on species threat status, richness and range rarity to indicate potential for reducing extinction risk.	STAR is a proxy for extinction risk reduction potential as it is based on estimates of range size. It does not reflect all taxonomic groups as it is mainly based on vertebrates.	
		Ecosystems	Ecosystem integrity variability is captured through the SoNP metric. SoNP metric does not capture information on ecosystem rarity or threat status of the ecosystem type. But rare or threatened ecosystems are very likely to be highlighted based on SoNB species and NCPs metrics.				
		NCPs	Areas critical to NCPs supply	Critical Natural Assets	Captures areas most important for multiple NCPs in combination, and can be interpreted on a continuous scale.	Critical Natural Assets are inherently "natural" areas and do not capture ecosystem services provided by modified areas such as urban or cropland. Critical Natural Assets only reflect the provision of services and not the realization of these services and their importance to IPs and LCs. This would require local information.	
 Water use	Surface water flows and groundwater levels	Species	Species endemism, richness, threat status—reflective of freshwater realm/sensitive to water stress	On land: STAR	<i>For STAR, see above</i>	<i>For STAR, see above</i>	

Minimum approach to SoNB measurement in SBTN Steps 1-2 for the given pressure and SoNP combination						
SBTN Pressure Category	SBTN SoNP Category and Metric	Biodiversity and NCPs aspects	Biodiversity and NCPs variables	Recommended metric	What the metric captures	What the metric does not capture/ limitations
 Water use (continued)	Surface water flows and groundwater levels (continued)	Species (continued)	Species endemism, richness, threat status—reflective of freshwater realm/sensitive to water stress (continued)	Freshwater fish rarity-weighted richness (IUCN)  Amphibian rarity-weighted richness (IUCN)	Freshwater fish rarity-weighted richness is one of the best proxies for aquatic species richness and should be used when available. When these data are not available, amphibian species richness can also be used.	Freshwater fish rarity-weighted richness and amphibian rarity-weighted richness data is a proxy for aquatic species richness but does not capture all aquatic taxa.  Data on additional aquatic taxa may become available as rarity weighted richness (RWR) layers in the future. RWR does not capture information on the threat status of species. A freshwater STAR layer may also be available in the future which would capture information on threat status.
				The Biodiversity Importance indicators in the WWF Water Risk Filter: Freshwater Endemism and Freshwater Biodiversity Richness*	The WWF WRF tool contains data layers on freshwater endemism and biodiversity richness. They indicate whether a basin hosts a diverse and healthy ecosystem. In the tool, the indicators are interpreted as company reputation risk scores. The higher the risk, the higher the endemism and biodiversity richness are.	These indicators do not capture all aquatic taxa. Data on additional aquatic taxa may become available in the future.
		Ecosystems	Freshwater ecosystems of conservation importance  (Note: Ecosystem integrity variable partially captured through SoNP metric.)	The Ecosystem Services Status indicators in the WWF Water Risk Filter: Fragmentation Status of Rivers	Fragmentation status can inform the integrity of freshwater ecosystems and its links (e.g., natural flow).  The WWF WRF tool contains a data layer on river basin fragmentation. In the tool, the indicator is interpreted as a company reputation risk score. The higher the risk score is, the higher an ecosystem is fragmented.	Fragmentation status and catchment ecosystem services degradation can indicate the state of an ecosystem through some key points, however they do not cover all key ecosystem indicators. The metric does not necessarily capture the conservation importance of sites.  Datasets such as wetland degradation, invasive species or river extent change will be added to cover more aspects of freshwater ecosystems when they become available.



Minimum approach to SoNB measurement in SBTN Steps 1-2 for the given pressure and SoNP combination							
SBTN Pressure Category	SBTN SoNP Category and Metric	Biodiversity and NCPs aspects	Biodiversity and NCPs variables	Recommended metric	What the metric captures	What the metric does not capture/ limitations	
Water use (continued) 	Surface water flows and groundwater levels (continued)	Ecosystems (continued)	Freshwater ecosystems of conservation importance (continued)  (Note: Ecosystem integrity variable partially captured through SoNP metric.)	The Ecosystem Services Status indicators in the WWF Water Risk Filter: Catchment Ecosystem Services Degradation Level	Ecosystem services degradation can be a good proxy for assessing the state of a freshwater ecosystem as the more it is degraded, the less intact the ecosystem services linked to its function.  The WWF WRF tool contains a data layer on tree cover as a proxy for Catchment Ecosystem Services Degradation. Forests play an essential role in terms of freshwater regulation and supply. In the tool, the indicator is interpreted as a company reputation risk score. The higher the risk score is, the higher the ecosystem services are degraded.	Catchment ecosystem services degradation can indicate the state of an ecosystem through some key points, however they do not cover all key ecosystem indicators.  Datasets such as wetland degradation, invasive species or river extent change will be added to cover more aspects of freshwater ecosystems when they become available.	
		NCPs	Areas critical to NCPs supply	<i>For Critical natural assets, see above</i>	<i>For Critical natural assets, see above</i>	<i>For Critical natural assets, see above</i>	
Soil pollution 	Soil nitrogen (N) and phosphorus (P) concentrations	Species	Soil biodiversity	Global hotspots for soil nature conservation.  * Please check that the database includes data your locations before using.	Captures areas that are hotspots for multiple soil taxa and can be interpreted on a continuous scale.	Focuses on soil-specific biota, and so groups most directly impacted by soil pollution, rather than species that may be indirectly impacted by soil pollution.	
		Ecosystems	Elements of ecosystem integrity are captured through the SoNP metric—existing levels of N and P are often used to assess the condition of the ecosystem. SoNP metric does not capture information on ecosystem rarity or threat status of the ecosystem type. But rare or threatened ecosystems are very likely to be highlighted based on SoNB species and NCPs metrics.				
		NCPs	Areas critical to NCPs supply (NCPs specifically provided by soil also captured through the Global hotspots for soil nature conservation layer recommended for the species aspect.)	<i>For Critical natural assets, see above</i>	<i>For Critical natural assets, see above</i>	<i>For Critical natural assets, see above</i>	

Minimum approach to SoNB measurement in SBTN Steps 1-2 for the given pressure and SoNP combination							
SBTN Pressure Category	SBTN SoNP Category and Metric	Biodiversity and NCPs aspects	Biodiversity and NCPs variables	Recommended metric	What the metric captures	What the metric does not capture/ limitations	
Water pollution 	Instream N and P concentrations	Species	Species endemism and richness, rarity weighted richness are reflective of freshwater realm/ sensitive to pollution	Freshwater fish rarity-weighted richness and Amphibian rarity-weighted richness (IUCN)	<i>For freshwater fish rarity-weighted richness and Amphibian rarity-weighted richness (IUCN), see above</i>	<i>For freshwater fish rarity-weighted richness Amphibian rarity-weighted richness (IUCN), see above</i>	
		Ecosystems	Elements of ecosystem integrity are captured through the SoNP metric—existing levels of N and P are often used to assess the condition of the ecosystem. SoNP metric does not capture information on ecosystem rarity or threat status of the ecosystem type. But rare or threatened ecosystems are very likely to be highlighted based on SoNB species and NCPs metrics.				
		NCPs	Areas critical to NCPs supply	<i>For Critical natural assets, see above</i>	<i>For Critical natural assets, see above</i>	<i>For Critical natural assets, see above</i>	



## Appendix 2. Connections between SBTN and other sustainability frameworks and initiatives

The SBTN methods have been developed in collaboration with other organizations leading corporate sustainability action. The methods are aligned with existing frameworks, regulations, and standards to facilitate adoption and reduce duplicative effort for companies following these initiatives. These links between the SBTN methods and core principles and guidance of other established sustainability initiatives are detailed in this crosswalk. This table is not intended to be comprehensive, but rather to represent the range of initiatives and frameworks that SBTN methods align with and draw on. For additional information on SBTN's alignment with global frameworks and initiatives like the Kunming–Montreal Global Biodiversity Framework (KMGBF) or United Nation Sustainable Development Goals (UN SDGs) please see SBTN's blog on the topic.

Connections to other frameworks	Step 1a		Step 1b				Step 2c	
	Organizational boundary	Screening approaches and definitions of materiality	Activity scope for value chain assessment	Pressure scope for value chain assessment	Approaches for pressure estimation	State of nature assessment	Social and societal considerations	Financial materiality and risk
<b>Accountability Framework initiative (AFI)</b>								
Core Principles and Definitions (see specifically, "corporate group") (54)	✗							
Core principles, 3: Specification of commitments (55)			✗					
Respecting the Rights of Indigenous Peoples and Local Communities (56)							✗	
Doing Business with Respect for Human Rights (UN Global Compact, Oxfam, and Shift) (57)							✗	
<b>Align (Aligning accounting approaches for nature) Project</b>								
Recommendations for a standard on biodiversity measurement and valuation (2022), Section 4.1.2: Universal recommendations (58)				✗				
Recommendations for a standard on biodiversity measurement and valuation (2022), Section 4.2: Methodologies to measure business impacts on biodiversity (42)						✗		

Connections to other frameworks	Step 1a		Step 1b			Step 2c		
	Organizational boundary	Screening approaches and definitions of materiality	Activity scope for value chain assessment	Pressure scope for value chain assessment	Approaches for pressure estimation	State of nature assessment	Social and societal considerations	Financial materiality and risk
<b>Capitals coalition</b>								
Natural Capital Protocol (2016): Step 03: Scope the assessment (13)	✗		✗					
Natural Capital Protocol (2016): Step 04: Determine impacts and/or dependencies (13)		✗		✗				
Natural Capital Protocol (2016): Step 05: Measure impact drivers (13)					✗			
Natural Capital Protocol (2016): Step 06: Measure changes in the state of natural capital (13)						✗		
Principles of Integrated Capitals Assessments (13)								✗
<b>CDP</b>								
Climate Questionnaire (2023) (58)		✗	✗	✗				
Forests Questionnaire (2023) (59)		✗	✗	✗				
Water Security Questionnaire (2023) (60)		✗	✗	✗				
<b>European Union</b>								
Directive 2014/95/EU [on Non-Financial Risk Disclosure/NFRD] (61)		✗	✗	✗				
Regulation 2020/852 [on the establishment of a framework to facilitate sustainable investment/EU Taxonomy] (62)		✗	✗	✗				
Directive 2022/2464 [on corporate sustainability reporting/CSRD] (38)		✗	✗	✗				
<b>European Financial Reporting Advisory Group (EFRAG)</b>								
European Sustainability Reporting Standards (ESRS) E1: General requirements (30)		✗	✗	✗				✗
European Sustainability Reporting Standards (ESRS) E2: Pollution (30)		✗						
European Sustainability Reporting Standards (ESRS) E3: Water and marine resources (30)		✗						
European Sustainability Reporting Standards (ESRS) E4: Biodiversity and ecosystems (30)		✗				✗		



Connections to other frameworks	Step 1a		Step 1b			Step 2c			
	Organizational boundary	Screening approaches and definitions of materiality	Activity scope for value chain assessment	Pressure scope for value chain assessment	Approaches for pressure estimation	State of nature assessment	Social and societal considerations	Financial materiality and risk	
<b>Greenhouse Gas Protocol (GHGP)</b>									
Corporate Standard (2004), Chapter 3: Setting Organizational Boundaries (24)	x								
Corporate Standard (2004), Chapter 4: Setting Operational Boundaries (24)			x						
Scope 3 Standard (63)			x						
<b>Global Reporting Initiative (GRI)</b>									
GRI 1: Foundation 2021 (25)	x	x	x	x					
GRI 3: Material Topics 2021 (64)	x	x	x	x					x
GRI 101: Foundation (2016) (65)	x								
GRI 103: Management approach (2016)(66)	x								
GRI 303: Water and Effluents 2018 (67)			x	x	x				
GRI 304: Biodiversity (2016) (68)			x	x	x	x			
GRI 305: Emissions 2016 (69)			x	x	x				
GRI 413: Local communities (2016) (70)							x		
GRI 308: Supplier environmental impact assessment (2016) (71)			x						
<b>International Financial Corporation (IFC)</b>									
Stakeholder Engagement: A Good Practice Handbook for Companies Doing Business in Emerging Markets (2007) (72)							x		
<b>International Financial Reporting Standards (IFRS) &amp; International Sustainability Standards Board (ISSB)</b>									
Exposure Draft ED/2022/S1 General Requirements for Disclosure of Sustainability-related Financial Information (73)		x							

Connections to other frameworks	Step 1a		Step 1b			Step 2c			
	Organizational boundary	Screening approaches and definitions of materiality	Activity scope for value chain assessment	Pressure scope for value chain assessment	Approaches for pressure estimation	State of nature assessment	Social and societal considerations	Financial materiality and risk	
<b>International Organization for Standardization (ISO)</b>									
ISO 14001:2015 Environmental management systems: Requirements with guidance for use (74)		x							
ISO 14001:2015 Environmental management systems, Chapter 4.1: Understanding the organization and its context (74)									x
ISO 14001:2015 Environmental management systems, Chapter 4.3: Determining the scope of the environmental management systems (74)	x		x						
ISO 14044:2006 Environmental management: Life cycle assessment – Requirements and guidelines (77)					x				
ISO 14044:2006 Environmental management, Chapter 4.2: Goal and scope definition (77)	x								
ISO 14046-1:2018 Greenhouse gases – Part 1: Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals, Chapter 5: GHG inventory boundaries (75)	x								
ISO 14046:2014 Environmental management – Water footprint – Principles, requirements and guidelines, Annex A: Additional requirements and guidelines for organizations (76)	x								
ISO/TS 14072: Environmental management – Life cycle assessment – Requirements and guidelines for Organizational Life Cycle Assessment (78)	x								
ISO 31000, Risk management (79)									x



Connections to other frameworks	Step 1a		Step 1b			Step 2c			
	Organizational boundary	Screening approaches and definitions of materiality	Activity scope for value chain assessment	Pressure scope for value chain assessment	Approaches for pressure estimation	State of nature assessment	Social and societal considerations	Financial materiality and risk	
<b>International Union for Conservation of Nature (IUCN)</b>									
IUCN Global Standard for Nature-based Solutions (2020) (80)							✗		
<b>Life Cycle Initiative (Hosted by UNEP)</b>									
Guidance on Organizational Life Cycle Assessment (2015), Chapter 3.2 Definition of goal and scope (3)	✗				✗				
<b>ENCORE Partnership and SUSTAIN Project</b>									
ENCORE tool (33)		✗							
<b>Organisation for Economic Co-operation and Development (OECD)</b>									
Due Diligence Guidance for Responsible Business Conduct (37)		✗					✗		
<b>Taskforce on Nature-related Financial Disclosures (TNFD)</b>									
Recommendations of the Taskforce on Nature-related Financial Disclosures (TNFD) v1.0 (2023): Evaluate (E3, E4) and disclosure recommendations for Strategy A, Risk & Impact Management A, Metrics & Targets (14)				✗	✗				
Recommendations of the Taskforce on Nature-related Financial Disclosures (TNFD) v1.0 (2023): Locate (L1-L4) and Evaluate (E1-E4), and Disclosure Recommendations on Strategy, Risk & Impact Management, and Metrics & Targets (14)						✗			
Recommendations of the Taskforce on Nature-related Financial Disclosures (TNFD) v1.0 (2023): see content on Evaluate and Assess (14)								✗	

Connections to other frameworks	Step 1a		Step 1b			Step 2c			
	Organizational boundary	Screening approaches and definitions of materiality	Activity scope for value chain assessment	Pressure scope for value chain assessment	Approaches for pressure estimation	State of nature assessment	Social and societal considerations	Financial materiality and risk	
<b>Transparent Project</b>									
Standardized Natural Capital Accounting (2021), Section 1.2: Scope (81)	✗		✗	✗					
A methodology promoting standardized natural capital accounting for business (2021), Section 2: Measure and value (81)						✗			
Standardized Natural Capital Accounting (2021), Annex II (81)					✗				
<b>World Wide Fund for Nature (WWF)</b>									
Risk Filter Suite: Biodiversity Risk Filter and Water Risk Filter (82)		✗							





**SCIENCE BASED TARGETS NETWORK**  
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