# FACTSHEET READING GUIDE



## AIM OF THE READING GUIDE

The reader will find in this document:

- A short description and explanation of the content of each section of the factsheets;
- Elements required to understand the factsheets for readers with limited knowledge about the Global Biodiversity Score;
- Definitions.

The reader should consult the general appendix for more technical and methodological details.

## KEY MESSAGES

➤ List key messages learnt from the benchmark, *e.g.* the pressures considered as material for the industry, and which should thus have to be included in any Biodiversity Footprint Assessment related to this industry

## WHAT DOES THE SECTOR INCLUDE?

| EXIOBASE INDUSTRY | NACE rev2 CODE |
|---|---|
| **Names of the EXIOBASE industries included in the sector** | **List of the corresponding divisions from NACE rev2 classification** NACE rev 2 is the classification currently used by the European Union. See general appendix for the link between rev1 and rev2. (Eurostat European Commission 2018) |

## KEY FIGURES - DEFINITIONS

**Dynamic impacts:** periodic gains or losses *i.e.* variation of stocks of biodiversity (new impacts) occurring within the period assessed. They describe changes, degradations or restorations of ecosystems during the period assessed.

**Static impacts:** stocks of past accumulated negative impacts up to a given moment

**Vertically integrated (VI):** value chain boundaries if the company had integrated all its supply chain (instead of relying on external suppliers): sum of the Scope 1, Scope 2 and Upstream Scope 3 impacts;

**MSA.m²/kEUR:** an intensity in MSA.m²/kEUR represents an impact by thousands of euros of turnover. For instance, a loss of 7 MSA.m²/kEUR can be interpreted as 7 m² of an undisturbed ecosystem being converted into a completely artificialised one for each 1000 euros of turnover. For each factsheet, the results are generally presented in MSA.m²/kEUR of the turnover of the whole benchmark sector. In case of a group of sub-industries, if results are detailed per sub-industry, they are in MSA.m²/kEUR of the sub-industry.

**MSAppb/bEUR:** a similar intensity but in MSAppb (impacts on terrestrial and aquatic ecosystems are expressed as a fraction of their respective global area) per billion euros of turnover (CDC Biodiversité 2023). Impacts on terrestrial and aquatic biodiversity are summed in this section.

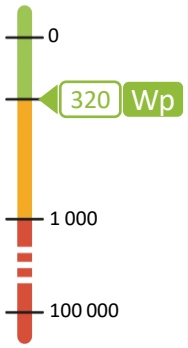
**MSAppb*/bEUR:** a similar intensity but expressing an aggregated score (MSAppb*) per billion euros of turnover. The static and dynamic biodiversity impacts are summed in this section.

**Dependency score (100%):** rates the dependency of the sector on ecosystem services, based on the 2018-2023 version of the ENCORE knowledge base. Materialities were converted into percentage. The percentages given are an average of all ecosystem services, for Scope 1 and Upstream dependencies. See general appendix for the methodology.

| Very low | Low | Medium | High | Very high |
|---|---|---|---|---|
| [0 - 20%] | ]20 - 40%] | ]40 - 60%] | ]60 - 80%] | ]80 - 100%] |

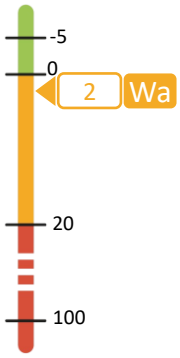
### TERRESTRIAL STATIC PERFORMANCE OF THE SECTOR

Intensity (MSA.m²/kEUR)




### TERRESTRIAL DYNAMIC PERFORMANCE OF THE SECTOR

Intensity (MSA.m²/kEUR)




### HOW TO READ THE TRAFFIC LIGHT GRAPHS

- Relatively low impact intensity (compared to all other economic activities) for static impacts and gains of biodiversity for dynamic impacts
- Intermediate impact intensity (compared to all other economic activities)
- Impact intensity among the most impactful of all industries (empirical)

**Wp** World terrestrial static intensity compatible with planetary boundaries

$$= \frac{terrestrial\ static\ impact\ compatible\ with\ planetary\ boundary}{global\ turnover}$$

$$= \frac{28\%MSA\ * total\ emerged\ land\ surface}{global\ turnover}$$

**Wa** Corporate world average terrestrial dynamic intensity

## BIODIVERSITY FOOTPRINT

| Realm | Accounting category | Impact intensity - MSA.m²/kEUR | | Impact intensity - MSAppb/bEUR | | Impact intensity - MSAppb*/bEUR | |
|---|---|---|---|---|---|---|---|
| | | Scope 1 | Vertically integrated | Scope 1 | Vertically integrated | Scope 1 | Vertically integrated |
| Terrestrial | Dynamic | All the main figures that could serve as references in this sector | | | | | |
| | Static | | | | | | |
| Aquatic | Static | | | | | | |

# KEY ISSUES OF THE SECTOR - DEFINITIONS

Includes context information about the link between biodiversity and the sector, divided in three topics :

## ECOSYSTEM SERVICES DEPENDENCIES OF THE SECTOR

Definitions of the ecosystem services considered, extracted from https://encore.naturalcapital.finance/en/data-and-methodology/services (2018-2023 version of the ENCORE knowledge base)

**Animal-based energy:** Physical labour is provided by domesticated or commercial species, including oxen, horses, donkeys, goats and elephants. These can be grouped as draught animals, pack animals and mounts.

**Bio-remediation:** Bio-remediation is a natural process whereby living organisms such as micro-organisms, plants, algae, and some animals degrade, reduce, and/or detoxify contaminants.

**Buffering and attenuation of mass flows:** Buffering and attenuation of mass flows allows the transport and storage of sediment by rivers, lakes and seas.

**Climate regulation:** Global climate regulation is provided by nature through the long-term storage of carbon dioxide in soils, vegetable biomass, and the oceans. At a regional level, the climate is regulated by ocean currents and winds while, at local and micro-levels, vegetation can modify temperatures, humidity, and wind speeds.

**Dilution by atmosphere and ecosystems:** Water, both fresh and saline, and the atmosphere can dilute the gases, fluids and solid waste produced by human activity.

**Disease control:** Ecosystems play important roles in regulation of diseases for human populations as well as for wild and domesticated flora and fauna.

**Fibres and other materials:** Fibres and other materials from plants, algae and animals are directly used or processed for a variety of purposes. This includes wood, timber, and fibres which are not further processed, as well as material for production, such as cellulose, cotton, and dyes, and plant, animal and algal material for fodder and fertiliser use.

**Filtration:** Filtering, sequestering, storing, and accumulating pollutants is carried out by a range of organisms including, algae, animals, microorganisms and vascular and non-vascular plants.

**Flood and storm protection:** Flood and storm protection is provided by the sheltering, buffering and attenuating effects of natural and planted vegetation.

**Genetic materials:** Genetic material is understood to be deoxyribonucleic acid (DNA) and all biota including plants, animals and algae.

**Ground water:** Groundwater is water stored underground in aquifers made of permeable rocks, soil and sand. The water that contributes to groundwater sources originates from rainfall, snow melts and water flow from natural freshwater resources.

**Maintain nursery habitats:** Nurseries are habitats that make a significantly high contribution to the reproduction of individuals from a particular species, where juveniles occur at higher densities, avoid predation more successfully, or grow faster than in other habitats.

**Mass stabilization and erosion control:** Mass stabilisation and erosion control is delivered through vegetation cover protected and stabilising terrestrial, coastal and marine ecosystems, coastal wetlands and dunes. Vegetation on slopes also prevents avalanches and landslides, and mangroves, sea grass and macroalgae provide erosion protection of coasts and sediments.

**Mediation of sensory impacts:** Vegetation is the main (natural) barrier used to reduce noise and light pollution, limiting the impact it can have on human health and the environment.

**Pest control:** Pest control and invasive alien species management is provided through direct introduction and maintenance of populations of the predators of the pest or the invasive species, landscaping areas to encourage habitats for pest reduction, and the manufacture of a family of natural biocides based on natural toxins to pests.

**Pollination:** Pollination services are provided by three main mechanisms: animals, water and wind. The majority of plants depend to some extent on animals that act as vectors, or pollinators, to perform the transfer of pollen.

**Soil quality:** Soil quality is provided through weathering processes, which maintain bio-geochemical conditions of soils including fertility and soil structure, and decomposition and fixing processes, which enables nitrogen fixing, nitrification and mineralisation of dead organic material.

Surface water: Surface water is provided through freshwater resources from collected precipitation and water flow from natural sources.

**Ventilation:** Ventilation provided by natural or planted vegetation is vital for good indoor air quality and without it there are long term health implications for building occupants due to the build-up of volatile organic compounds (VOCs), airborne bacteria and moulds.

**Water flow maintenance:** The hydrological cycle, also called water cycle or hydrologic cycle, is the system that enables circulation of water through the Earth's atmosphere, land, and oceans. The hydrological cycle is responsible for recharge of groundwater sources (*i.e.* aquifers) and maintenance of surface water flows.

**Water quality:** Water quality is provided by maintaining the chemical condition of freshwaters, including rivers, streams, lakes, and ground water sources, and salt waters to ensure favourable living conditions for biota.

The methodologies to calculate the **average and critical dependencies** are detailed in the general appendix as well as in CDC Biodiversité publications (CDC Biodiversité, 2021 and CDC Biodiversité, 2023)

## HOW DOES THE SECTOR CONTRIBUTE TO CHANGES IN THE STATE OF NATURAL CAPITAL ?

## OPPORTUNITIES

# SCOPE AND INDUSTRY BREAKDOWN - DEFINITIONS

Analysis of the impacts by Scope. Climate change impacts on biodiversity are reported separately as this allows to distinguish between climate impacts already tackled through the assessed entity's climate policy and all the other impacts it needs to tackle through additional actions.

Note that only a few charts are selected and displayed on the factsheet, the others (for each realm, accounting category and Scope) are displayed in the sectoral appendix.

- **Scope 1:** impacts generated on the area controlled by the entity and other impacts directly caused by the entity during the period assessed;
- **Scope 2**: impacts resulting from non-fuel energy (electricity, steam, heat and cold) generation, including impacts resulting from land use changes, fragmentation, *etc.*
- **Tier 1 of Upstream Scope 3 :** impacts caused by the first tier of suppliers of the company, *i.e.* its direct suppliers.
- **Rest of Upstream Scope 3:** impacts caused by the suppliers of the direct suppliers, *i.e.* in tier 2 and beyond.
- **Downstream Scope 3:** impacts caused downstream of the company's activities, *i.e.* during the use or end of life of its products and services. The GBS does not yet account for downstream impacts but aims to include them in the future.

Sometimes the economic sector under consideration can be heterogeneous and impacts are then displayed by EXIOBASE industries or industry groups included in the sector under consideration (listed in the first section).

The EXIOBASE industries are ranked in ascending order by footprint inside an industry group (as defined in the EXIOBASE nomenclature).

## IMPACT DRIVERS BREAKDOWN - DEFINITIONS

This part aims at bringing to light which pressures are mainly responsible for the impacts in the sector. The climate change pressure is reported separately from other pressures. The pressures "Terrestrial ecotoxicity" and "Freshwater ecotoxicity" are included in the analysis but are not included in the graphs and figures because of the large uncertainties associated to them.

**Definitions of the pressures**

Terrestrial ecosystems

**Climate change:** excess of emitted greenhouse gas leads to disturbance of the global climate. The global mean temperature increase (GMTI) and the induced climate change modify the repartition areas of different biomes, which threatens the survival of numerous species who cannot adapt fast enough to this phenomenon.

**Atmospheric nitrogen deposition:** agricultural and industrial activities cause nitrogen emissions into the atmosphere. Transported by the wind or water (acid rains), the nitrogen deposits on terrestrial ecosystems. When the critical load of the ecosystem is exceeded, the imbalance caused by additional nitrogen deposition harms ecological integrity via, for instance, eutrophication and shifts in plant competition.

**Terrestrial ecotoxicity:** the pressure caused by chemical substances on terrestrial ecosystems;

**Spatial pressures:**

- **Land use:** land uses in which natural areas are converted can have significant impacts on natural habitats by reducing or destroying viable space for original species;
- **Fragmentation of natural habitats:** the pressure caused by the reduction and subdivision of natural habitats and the disappearance of ecological corridors preventing species movement and limiting their living spaces;
- **Human encroachment:** direct (noise, pollutions, etc.) and indirect impacts (right of way for hunting, tourism, etc.) from anthropogenic activities in otherwise natural areas.

Aquatic ecosystems

**Wetland conversion:** the conversion and draining of wetlands for human purposes lead to the loss of aquatic ecosystems;

**Land use in catchment:** upstream land use changes, and in particular the intensification of a watershed's upstream land uses through urbanisation or agricultural intensification, has an indirect negative impact on downstream water bodies.

**Hydrological disturbance due to direct water use/ due to climate change:** deviation of the current flow from the natural one. Causes of deviation include climate change (changes in rainfall or evaporation), anthropic water abstraction and river dams used for hydropower, water storage and/or other purposes;

**Freshwater eutrophication:** human activities can lead to excess of nutrients leaching into water bodies. The imbalances overstimulate algal and aquatic plant growth, which may result in oxygen depletion, harming other organisms;

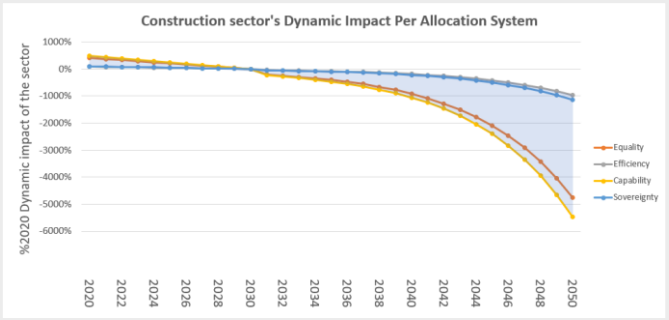
**Freshwater ecotoxicity:** the pressure caused by chemical substances on aquatic ecosystems

## TRAJECTORIES TO ACHIEVE THE UPCOMING INTERNATIONAL TARGETS

The Post-2020 Global Biodiversity Framework (GBF) aims to reach at least a global no net loss of biodiversity in 2030 (interpreted as a global dynamic impact of 0 in 2030) and restore biodiversity between 2030 and 2050 (interpreted here as return to the "zone of functional integrity of the Earth system" by 2050). The efforts to achieve these restoration goals need to be allocated to economic sectors and companies. Different allocation approaches (listed below) can be used to allocate efforts: these methods lead to different sectoral trajectories. This methodology focuses on the Scope 1 of each sector.

| ALLOCATION | APPROACH | DATA USED | SECTOR'S FIGURES |
|---|---|---|---|
| Equality | Everyone has the same right | Number of employees in the sectors (2010) | |
| Efficiency | Cost-effectiveness | Restoration cost (EUR/[MSA.m²]) | |
| Capability | Industries' ability to pay | Turnover (MEUR) (EXIOBASE 3.4 2011) | |
| Sovereignty | Grandfathering[1] | 2020 dynamic impact (MSA.km²/year) | |

1. The grandfathering approach means that the obligations of industries (or companies) are based on their historic impacts, here their 2020 biodiversity dynamic impact.




The graph above is an example obtained for one sector (Construction here), showing the target trajectories for the dynamic impacts of the sector from 2020 to 2050 according to the different allocation systems. The vertical axis corresponds to the percentage of the dynamic impact of the sector in 2020, it starts at 100% in 2020. For instance, with the capability allocation system, the Construction sector needs to achieve an impact of –1000 % in 2040 (relative to 2020), corresponding to a positive impact on biodiversity (meaning for example ecological restorations), *i.e.* it should restore biodiversity at a rate ten times its negative 2020 dynamic impact.

## POSSIBLE ACTIONS TO REDUCE THE IMPACT ON BIODIVERSITY

| | |
|---|---|
| SCOPE 1 | List of sector-specific actions that could potentially reduce impacts on biodiversity in MSA.km², broken down by Scope or by stages in the value chain.<br>This list can provide guidance to companies in defining their action plan following their Biodiversity Footprint Assessment. |
| SCOPE 2 | |
| UPSTREAM SCOPE 3 | |
| DOWNSTREAM SCOPE 3 | |

# FACTSHEET READING GUIDE



## ENVIRONMENTAL SAFEGUARDS

Some impacts and pressures are not covered by the figures displayed in this benchmark factsheet (partly due to limitations in the Global Biodiversity Score tool used to obtain them). The general appendix provides a more detailed description of the uncertainties and limitations of the results. They should not be ignored when defining the biodiversity action plan.

- **Avoid locating activities on or near sites of high environmental value** or establish a specific management plan, especially for the upstream agricultural or extractive activities.
- Make sure that suppliers do not have harmful practices such as **deforestation,** as recommended by the EU Deforestation regulation(2).
- **Restore habitats** during operations and/or after operations (IFC 2012 (3)).
- Conduct a **systematic review** to identify priority ecosystem services, meaning those on which project operations are most likely to have an impact and those on which the project is directly dependent (*e.g.*, water) (IFC 2012).

Moreover, of the three components of biodiversity, the GBS only focuses on the ecosystem diversity, and does not cover species or genetic diversity. See the GBS review report "Quality assurance" for the full list of environmental safeguards to implement (CDC Biodiversité 2020 (4); IFC 2012).

Additional "environmental safeguards" are mostly extracted from the **EU Taxonomy Climate and Environmental Delegated Acts**, which describe conditions for economic activities to make a **substantial contribution to environmental objectives**. These objectives include climate change mitigation, climate change adaptation, transition to a circular economy, sustainable use and protection of water, pollution prevention and control and protection and restauration of biodiversity and ecosystems.

The EU Taxonomy also sets **Do no significant harm (DNSH) criteria for the protection and restoration of biodiversity and ecosystems**.

## BIODIVERSITY FOOTPRINT ASSESSMENT

### GENERAL OBJECTIVES OF A GBS-BASED ASSESSMENT

The factsheet helps companies of each sector to understand their most material impacts and dependencies. However, a Biodiversity Footprint Assessment is more company-specific and allows to calculate the companies' impacts and dependencies on biodiversity. Indeed, a GBS-based assessment uses companies' data (emissions, land occupation or other pressures, raw materials and products purchased and produced by the companies) to calculate biodiversity impacts.

Thus, a GBS-based Biodiversity Footprint Assessment allows to:

- **Quantitatively assess the biodiversity footprint** generated by the activity of the company or by its investment portfolio and to **assess the contribution of the company to global biodiversity erosion**;
- Understand which impact drivers on biodiversity the company contributes to and which ecosystem services it is dependent on;
- Provide elements for a **short-term** and a **mid-term action plan to reduce the footprint** on biodiversity and alleviate the contribution of the company to biodiversity erosion;
- **Comply with mandatory biodiversity footprint disclosure** in France, in the European Union (action 31 of the French National Biodiversity Plan, CSDR), and in the world (Global Biodiversity Framework), as well as voluntary reporting frameworks such as the one set by the Taskforce on Nature-related Financial Disclosure (TNFD).

***Limitations***: The assessment does not consider some pollution impact drivers nor the existence and impacts of invasive species, the impacts on genetic and marine biodiversity.

### HOW TO LEAD A BIODIVERSITY FOOTPRINT ASSESSMENT BASED ON THE GLOBAL BIODIVERSITY SCORE?

A GBS-based assessment can be led by **various organisms**:

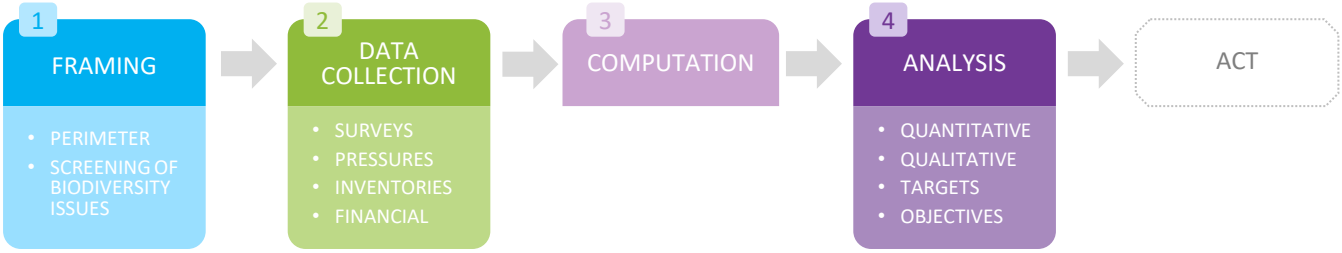
- The company itself, after being trained to use the GBS;
- CDC Biodiversité or external GBS-trained assessors (list available here), instructed by the company;
- A GBS-trained non-financial rating agency.

A biodiversity footprint assessment follows **4 main steps**, as shown below:

- The **framing** step validates the Scope of the assessment, particularly in terms of **Scopes and assessed pressures**.
- During the **data collection** step, the **methodological choices** are validated: assumptions applied, proxies used, possible limits identified
- The **computation** uses the refined analysis and the pressure-impact relationships of the GBS tool to compute impacts.
- The **analysis** step explains the results obtained with the GBS by **identifying major impacts** as well as the **main sources of these impacts**. It is also an opportunity to identify objectives and **impact reduction actions, aligned with international recommendations**.

The **relevance** of the assessment depends on:

- The inclusion of direct operations and value chain impacts
- The consistency and transparency of the data and methodology used
- The appropriate quality assurance and complete disclosure of the results




[Sector XX] Factsheet version [XX], [Month Year]. GBS computations: GBS [Version XX], [Month Year of the computation], [Assessor name].
**Sources are referenced in the section [Section name] of the sectoral appendix.**

**More information**
The general appendix: Sectoral Biodiversity Footprint Benchmarks
About the GBS: The Global Biodiversity Score - presentation
About the factsheets: GBS Documentation (bottom of the page) and Benchmark consultation guide
Measuring the contributions of business and finance towards the post-2020 global biodiversity framework (CDC Biodiversité, 2020)
Establishing an ecosystem of stakeholders to measure the biodiversity performance of human activities (CDC Biodiversité, 2021)
Accounting for positive and negative impacts throughout the value chain (CDC Biodiversité, 2023)
Bridging finance and nature: the role of the Global Biodiversity Score (CDC Biodiversité, 2024)



(2) The European parliament adopted a text which "obliges companies to ensure products sold in the EU have not [recently] led to deforestation and forest degradation."
Source: European Parliament, POSITION OF THE EUROPEAN PARLIAMENT on Deforestation regulation, 2023.
(3) International Finance Corporation, IFC Performance Standards on Environmental and Social Sustainability, 2012
(4) CDC Biodiversité, GBS Review: Quality Assurance'. Final version, 2020

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