

Aim of the factsheet

The benchmark factsheet is designed for companies or investors to assess a sector's impact on biodiversity. Companies can use the factsheet to compare their impacts (e.g. assessed with the Global Biodiversity Score tool) to the sector average or to estimate their impact and main pressures on biodiversity. Also, investors can use it to screen their biodiversity impact, or rate specific companies' performance against sectoral benchmarks. Finally, factsheets will help nourish the work of the EU Green Taxonomy by identifying low impact companies. It is supported by an explanatory appendix.

Sector's stakes

Ecosystem services dependencies of the construction sector

The direct dependencies of the sector are calculated by model ENCORE, a tool developed to provide knowledge about how a sector is dependent of various ecosystem services (see the technical appendix for the methodology). The highest dependence of the sector¹ concerns the ecosystem service "flood and storm protection" (dependency score of 53 %) which provide sheltering, buffering and attenuating effects of natural and planted vegetation. The service "climate regulation" (dependency score of 47 %) is provided by nature through the long-term storage of carbon dioxide in soil, vegetable biomass and ocean. Finally "mass stabilisation and erosion control" (dependency score of 40 %) is delivered through vegetation cover protected and stabilizing terrestrial, coastal and marine ecosystems, coastal wetlands and dunes. However, for all other ecosystem services, the dependency of the sector does not exceed 40 %. The figures displayed in the box "Key figures" are an aggregated scores over all ecosystem services.

How does the sector contribute to changes in the state of natural capital ?

The sector affects natural capital through land use change due to infrastructure building by converting about 1 000 km² of forest and land per year in Europe and half of this surface is made impermeable by using concrete and other construction materials (Pelletier et al. 2015). This leads to the loss of the soil's capacity to perform its basic functions (recycling of organic matter, water treatment, carbon storage, etc...) and water drainage which prevents from flood. Locally, during the construction period, direct encroachment (noise) or pollution (spills of paints, solvents, and toxic chemicals) cause additional local impacts on biodiversity. Other spatial pressures are generated by the sector such as fragmentation, especially through linear infrastructure projects,

What does the sector include?

The Construction sector refers to the section F of NACE rev 2, including the general construction and specialised construction activities for buildings and civil engineering works. It includes new work, repair, additions and alterations, the erection of prefabricated buildings or structures on the site and also construction of a temporary nature. This factsheet does not include real estate activities corresponding to the EXIOBASE industry "Real estate (70)".

EXIOBASE industry	Code NACE rev 2
Construction (45)	F.41 Construction of buildings F.42 Civil engineering F.43 Specialised construction activities

resulting in significant biodiversity loss and potentially to a lasting degradation of ecosystems (CBD 2018).

The materials purchased by the sector and used for construction also impact natural capital. Their production requires raw material extraction which use land and large amount of water as well as a land use change due to career exploitation and deforestation by using wood.

Moreover, the use of buildings and construction sector accounted for 36% of the global final energy use and 39 % of energy and process-related carbon dioxide emissions in 2018, 11 % of which resulted from manufacturing building materials and products such as steel, cement and glass (UNEP & IEA 2018).

Finally, dismantling buildings and infrastructures generates significant waste (e.g. 220 million tonnes in France according to ADEME) which may be hard to treat, occupy land and lead to diffuse pollution.

Opportunities

Despite the high impact of the sector on biodiversity and the global trends towards urban sprawl, the growing awareness of the sector's impact on natural capital is leading various stakeholders to take greater account of biodiversity in construction.

Adopting an eco-conception approach at the design stage would ensure that the materials chosen can be dismantled, reused or recycled (Pays and Jourda 2012). Integrating eco-conception in the planning and design of buildings would for instance encourage to build on brownfield sites hosting less biodiversity, instead of converting natural habitats.

Finally, the European Union Directive 2010/31 on the energy performance of buildings promotes policies that will boost energy performance of buildings. The new proposal aims to contribute to reaching the target of at least -60% emission reductions by 2030 in the building sector in comparison to 2015 and achieve climate neutrality by 2050 (European Commission 2021).

Biodiversity footprint²

Key figures

Scope 1 static terrestrial intensity:

0.14 MSA.m²/kEUR ~ 1.0 MSAppb/bEUR

(Scope 1 dynamic terrestrial intensity: 0.39 MSA.m²/kEUR ~ 2.9 MSAppb/bEUR)

Vertically integrated static terrestrial intensity :

260 MSA.m²/kEUR ~ 1800 MSAppb/bEUR

(Vertically integrated dynamic terrestrial intensity: 4.5 MSA.m²/kEUR ~ 34 MSAppb/bEUR)

Aggregated score (MSAppb*/bEUR):

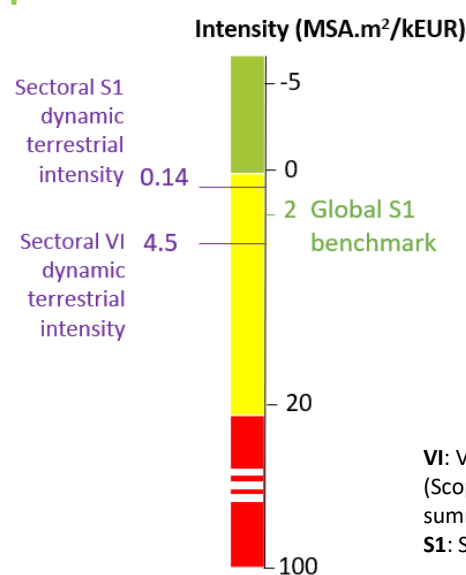
1.3 for Scope 1; **120** for Vertically integrated (VI)

Ecosystem services dependency score:

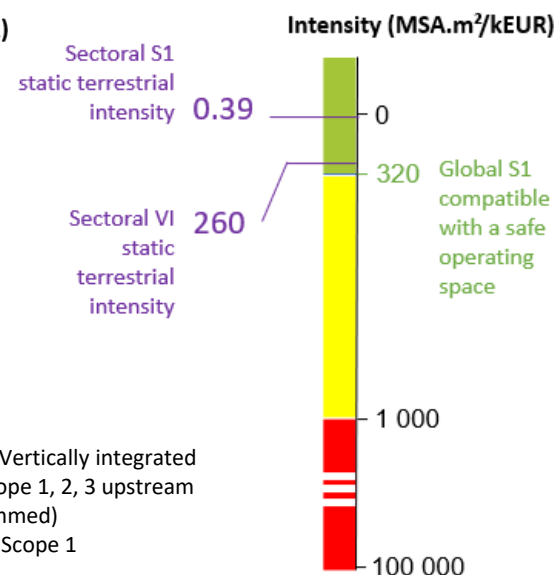
Scope 1 **17 %**

Upstream Scope 3 **14 %**

Dynamic terrestrial performance of the sector



Static terrestrial performance of the sector



- "Construction" and "Infrastructure maintenance contracts" are the ENCORE processes included in the "Construction & Engineering" and "Homebuilding" sub-industries.
- The figures and charts presented do not include most of the Land use impact drivers unless otherwise stated. An estimation is available on the technical appendix in the section "The sector's impact on land use". Unless otherwise stated, the figures are worldwide averages.

Biodiversity footprint (continued)

Realm	Accounting category	Impact intensity - MSA.m ² /kEUR	
		Scope 1	Vertically integrated
Terrestrial	Dynamic	0.14 – 1.4	4.5 – 5.9
	Static	0.39	390 - 590
Aquatic	Static	0.015	19

The intervals of intensities presented in this table include a more precise estimation of the impacts caused by the land use related to the Construction sector, the methodology is detailed in the technical annex in "Sector's impact on land use". The other figures and charts presented on the factsheet do not include this estimation.

Scope and industry breakdown

Scope 3 dynamic terrestrial impacts are the most important, especially the Rest of upstream Scope 3. This is due to the sector's reliance on other sectors for primary raw materials, for which extraction processes are more impactful.

For the static terrestrial pressures, the rest of upstream Scope 3 is also the most important.

The sector's upstream footprint is largely due to the following commodities, such as wood logs, crops, grass and oil and gas commodities, sand and gravel were also assessed in GBS 1.4.0.

More detailed results and a focus on the construction materials such as concrete are available in the "Additional results" section of the technical appendix.

The sector contributes to changing the state of the natural capital through different impact drivers. Land use change is one of the main impact driver for the sector, even though linear infrastructures' impacts are underestimated in GBS 1.4.0.

The following paragraph presents the proportions of each pressure in a given realm and accounting category in terms of their impact. These figures do not include supplementary results on land use.

Terrestrial dynamic impacts are due to:

- Climate change: 70 %
- Land Use: 29 %

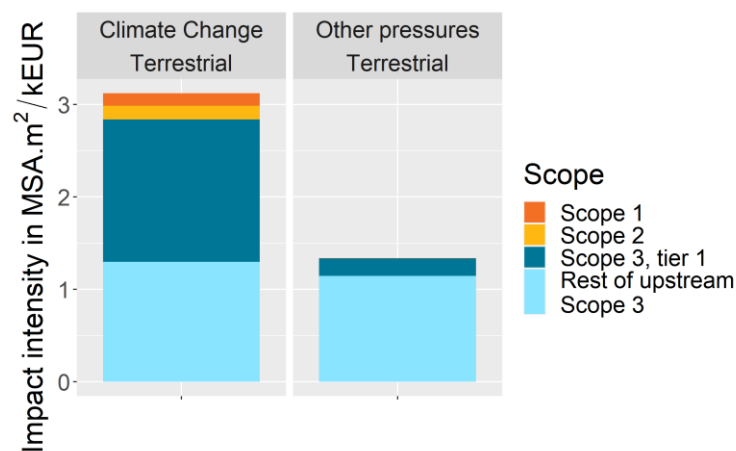
Terrestrial static impacts are due to:

- Land use: 82 %
- Encroachment: 16 %

Aquatic static impacts are due to:

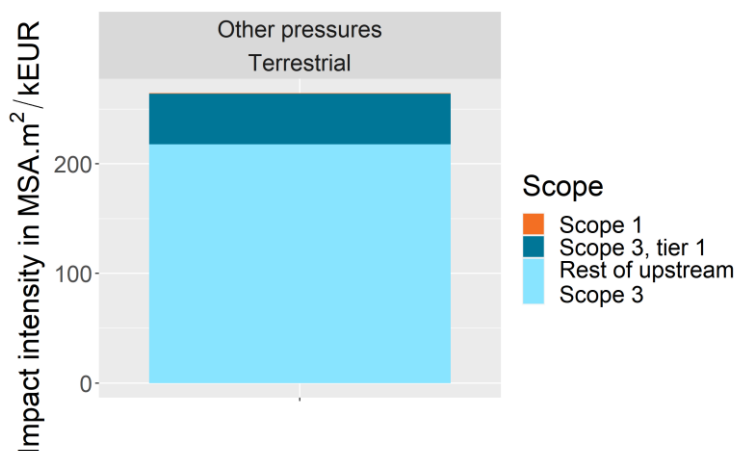
- Land use in catchment: 59 %
- Wetland conversion: 23 %
- Hydrological disturbance due to direct water use: 13 %

Dynamic Terrestrial impact intensity



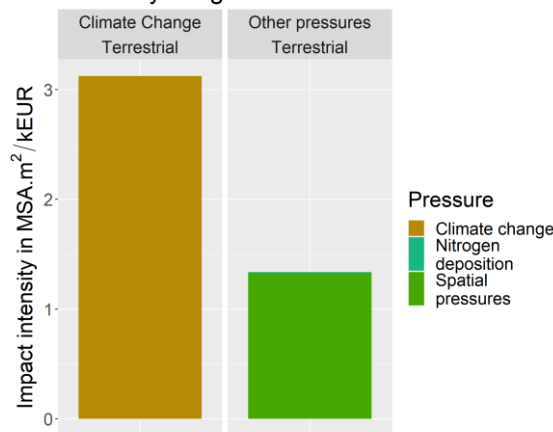
Source: GBS 1.4.0 computation, Mar 2022, Camille Breton

Static Terrestrial impact intensity



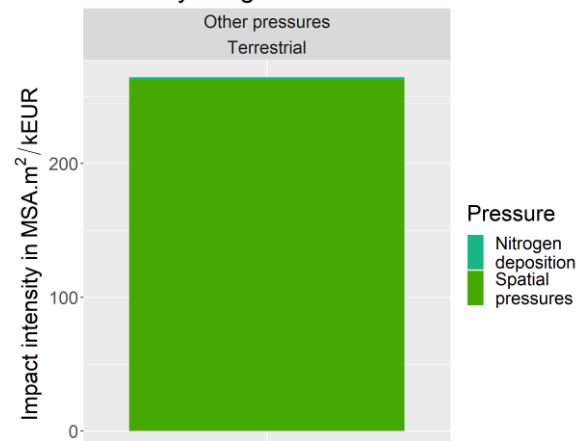
Source: GBS 1.4.0 computation, Mar 2022, Camille Breton

Dynamic Terrestrial impact intensity Vertically integrated



Source: GBS 1.4.0 computation, Mar 2022, Camille Breton

Static Terrestrial impact intensity Vertically integrated

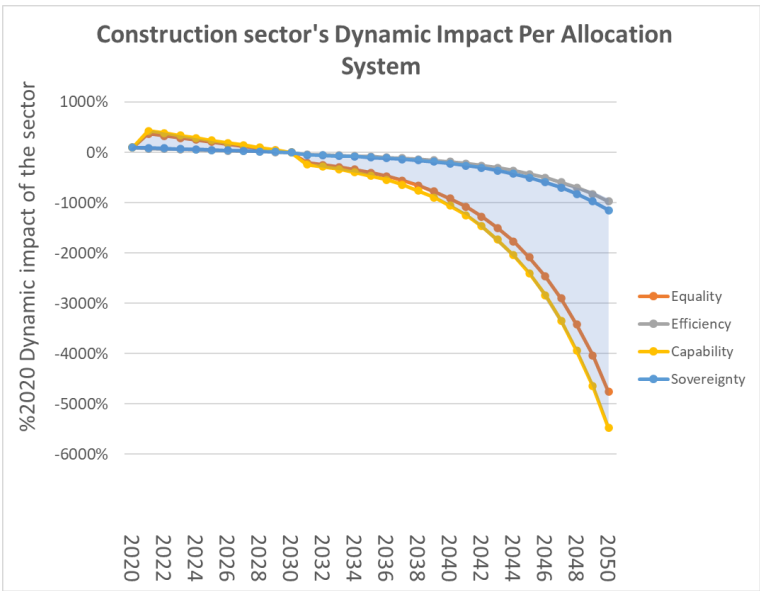


Source: GBS 1.4.0 computation, Mar 2022, Camille Breton

Science-Based Target for Biodiversity (SBT)

The global post-2020 biodiversity framework 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)¹. This global budget needs 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.

Allocation	Approach	Data used
Equality	Everyone has the same right	Number of employees in the sectors (2010)
Efficiency	Cost-effectiveness	Cost of restoration (EUR/[MSA.m²])
Capability	Industries’ ability to pay	Turnover (MEUR) (2011)
Sovereignty	Grandfathering	2020 dynamic impact (MSA.km²/year)



Possible actions to reduce the impact on biodiversity²

The following recommendations apply to the construction sector but also to the whole value chain (reminder: real estate activities belong to the downstream of the construction sector and are thus not displayed in the factsheet). Some of them can therefore be relevant and be implemented by other sectors.

Scope 1³	Apply the mitigation hierarchy (avoid, reduce, restore & offset) to all impacts from construction activities Implement solutions canceling soil sealing and/or enabling no net artificialisation Encourage renovation of old or unoccupied buildings Design the site to create new and maintain existing ecological corridors to preserve ecological continuity Design the site to include green spaces and infrastructures to attract biodiversity Favour architectural designs that minimise land use Limit noise and encroachment during the construction phase
Scope 2⁴	During the construction phase, use renewable energy with demonstrated low impact on biodiversity Optimise construction process to reduce energy consumption
Upstream Scope 3⁵	Use alternative materials to remove traditional concrete whenever it's possible Source materials from suppliers with environmental certifications (FSC, Rainforest Alliance etc.) when possible Use construction materials that attract species such as porous surfaces that can be a support for insects, moss, etc. Include biodiversity criteria in site selection. Favor areas with lower biodiversity, that are not home to endangered species and away from protected areas.
Downstream Scope 3⁶	Optimise buildings to facilitate dismantling and recycling Use renewable electricity with demonstrated low impact on biodiversity to power the building Continue to improve the recyclability of construction waste and improve their use Optimise the building's energy consumption (low-consumption buildings in terms of heat, electricity and steam with durable insulation, use of natural light, cleaner energy...)

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). 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. For instance, avoid deforestation and encroachment on protected areas for livestock or crop production (in Brazil, Congo, etc.);
- Invasive alien species: their introduction shall not be intentional, and all introductions should be carried out in accordance with the existing regulatory framework and a risk assessment shall be done. Take measures to limit their spread, particularly during the transport of marine species. Implement measures to detect and eradicate such invasions (points 21 to 23 in the Performance Standard 6, IFC 2012).
- Water scarcity: if some activities are in water-scarce areas, establish and implement a water management system.
- Restore habitats during operations and/or after operations (IFC 2012).

See the GBS review report “Quality assurance” for the full list of environmental safeguards to implement (CDC Biodiversité 2020) and (IFC 2012).

<p>The Platform on Sustainable Finance’s (PSF) draft technical screening criteria for the EU taxonomy describes conditions for activities within the “Construction” sector to make a significant contribution to environmental objectives, such as:</p> <ul style="list-style-type: none"> • Transition to circular economy: the activity “construction of civil engineering objects” should reach at least 90 % (by weight) of non-hazardous construction waste generated on the site prepared for re-use or recycling. • Protection and restoration of biodiversity and ecosystem: the activity “construction of new buildings and major renovations of buildings” should respect the mitigation hierarchy and keep a given share of areas dedicated to natural areas and permeable. <p>The PSF’s draft also describes in further details conditions of Do No Significant Harm (DNSH) for these objectives and the remaining significant contribution criteria. They are reported in the benchmark factsheet’s technical annex.</p>

1. See the technical annex, section “Construction of the different trajectories to achieve the upcoming international biodiversity targets”
 2. Pays & Jourda, 2012
 3. Impacts generated on the area controlled by the entity and other impacts directly caused by the entity during the period assessed.
 4. Impacts resulting from non-fuel energy (electricity, steam, heat and cold) generation, including impacts resulting from land use changes, fragmentation, etc.
 5. Impacts due to the upstream activities, such as purchases.
 6. Includes downstream transportation and distribution, processing of sold products (by downstream companies buying them), operations of assets leased to other entities, franchises and investments.

Key messages

- An impactful industry for which most impacts occur within the upstream **Scope 3**, linked to the materials purchases.
- Selecting biomaterials could help to reduce the overall impact of the construction process on biodiversity, provided that a specific analysis of these materials has been conducted with adequate and real inventory data.
- The key impact drivers to monitor and reduce are **land use and climate change** for terrestrial impacts whereas for the aquatic impacts, the key driver is linked to **water pollution**.

Biodiversity Footprint Assessment

General objectives of a GBS-based assessment

- To assess quantitatively the biodiversity footprint generated by the activity of the company or portfolio and to assess the contribution of the company to global biodiversity erosion;
 - To understand what are the main impact drivers on biodiversity the company is responsible for;
 - To 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
- To anticipate future mandatory biodiversity footprint disclosure in France and in the European Union (action 30 of the French National Biodiversity Plan, post-2020 Biodiversity Agenda)
- Limitations:** The assessment does not consider some pollution impact drivers nor the existence of invasive species, the impacts on genetic and marine biodiversity
- Data:** Calculation based on data from the input-output table and the environmental extensions of EXIOBASE 2011 and the impact factors developed by CDC Biodiversité

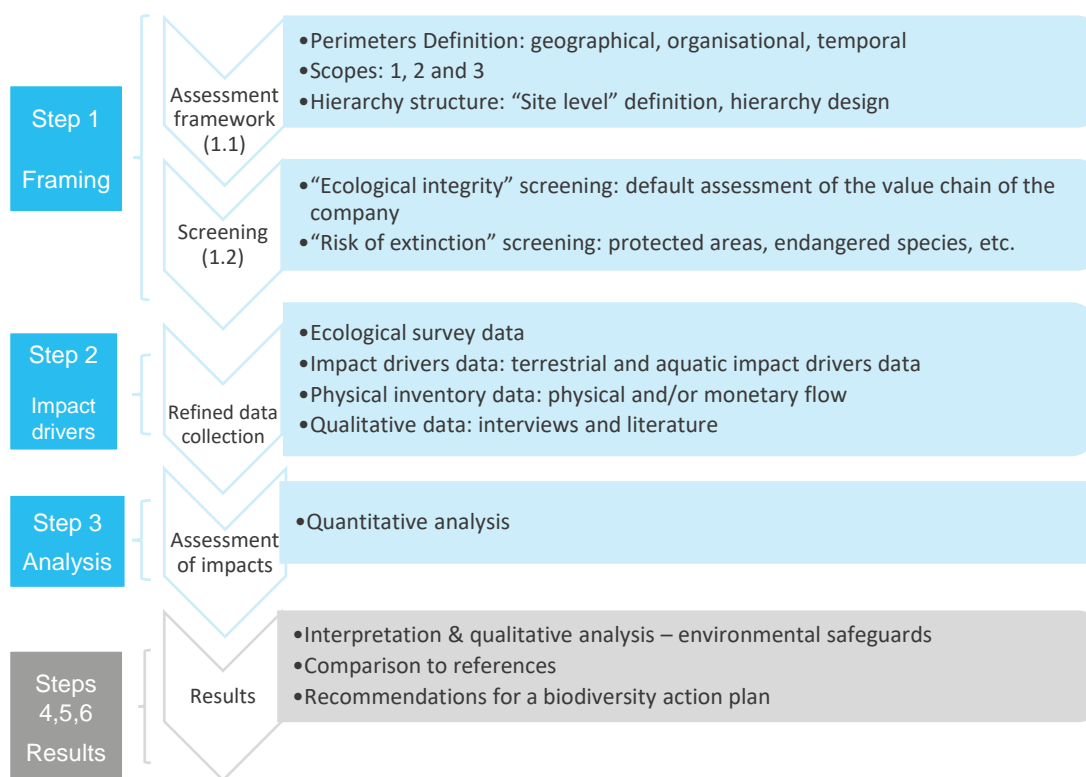
How to lead a Biodiversity Footprint Assessment based on the Global Biodiversity Score?

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

- The company itself
- A service-provider, instructed by the company
- A non-financial rating agency

The relevance of the assessment depends on:

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



Construction Factsheet version 1.0, April 2022. GBS computations: GBS 1.4.0, March 2022, Camille Breton.

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More information

About the GBS: <https://www.cdc-biodiversite.fr/le-global-biodiversity-score/>

About the factsheets: <https://www.mission-economie-biodiversite.com/actualites/fiches-benchmark-benchmark-factsheets>

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)

The sources are referenced in the section "Construction" of the [technical appendix](#).