# Assessing biodiversity footprint, the occasion to accelerate corporate biodiversity strategy

Schneider Electric performs the first ever end-to-end biodiversity footprint assessment with the Global Biodiversity Score (GBS), a tool developed by CDC Biodiversité

September 2020

## Index


1. Joining hands to raise the biodiversity game 3

2. Time for Nature 5

3. Global Biodiversity Score and MSA.km², the potential to set the standard 7

4. Assessing Schneider Electric's biodiversity footprint 8

5. Schneider Electric's way forward 16

6. Paving the way to sustainability 20

7. Appendix 21

# 1. Joining hands to raise the biodiversity game

## Capitals Coalition

Out of all the different resources that make up the natural capital we all depend on, biodiversity is probably the least well integrated or understood. There are many reasons for this, including complexity and a lack of understanding of the benefits delivered by the diversity of life. There are more people recognizing the challenge and attempting to develop clear ways of identifying, measuring and valuing the benefits that biodiversity provides.

**Mark Gough**
*CEO*
*Capitals Coalition*

Schneider Electric's work in this area is a good example of how to apply a capital approach and integrate it into business strategy. Building on the internationally accepted framework, the Natural Capital Protocol, and using new tools, such as the Global Biodiversity Score, Schneider Electric has demonstrated the feasibility and value of quantifying an end-to-end Biodiversity Footprint Assessment.

With a global goal for nature now recognizing that we must be nature positive by 2030, we need more companies to follow Schneider Electric's efforts and we need to start harmonizing the many different attempts into a standardized approach. Schneider Electric has proven that they are willing to step forward. Will you?

## CDC Biodiversité

2021 should be a pivotal year for biodiversity with the hosting of the IUCN Congress in Marseille and the COP 15 of the Convention on Biological Diversity in China with the aim of drawing lessons from the global implementation of the 2020 objectives, and to define new ambitions. Now is the right time for businesses to start measuring their impacts on biodiversity and to assess how they can align with the post-2020 global biodiversity framework and ensure their activity stays within the planetary boundaries.

**Marc Abadie**
*Chairman*
*CDC Biodiversité*

Companies need targets, scenarios and tools. They also need credible partners to develop and implement their biodiversity strategy over time. CDC Biodiversité aspires to be one of them by contributing to the development of tools necessary for measuring biodiversity footprints and highlighting actions that can effectively reduce pressures on biodiversity. In May 2020, we launched the Global Biodiversity Score 1.0 (GBS 1.0) on which the CDC Biodiversité team has been working for almost 5 years. Built and tested with the support of more than thirty companies and financial institutions gathered within the Business for Positive Biodiversity Club (B4B+ Club) and thanks to collaborations with academics, NGOs and other initiatives measuring corporate biodiversity footprint, **the GBS now makes it possible to assess the impacts of economic activities on biodiversity along their value chain, in a robust and aggregate way**.

We are very enthusiastic about the work conducted with Schneider Electric, a company committed to transforming its business to operate within the planetary boundaries, and to build momentum for transformative change among other businesses. We are also excited to have cooperated with PRé Consulting, a Dutch leader in sustainability consulting, to conduct the assessment, and see this collaboration as an example of how consultancies and academics will be able to use the GBS in the future.

Embedding the assessment into existing frameworks such as the Natural Capital Protocol is key to our vision: corporate biodiversity footprint assessments should be comprehensive, relevant, replicable and verifiable. Applying the Natural Capital Checker is a logical next step to strengthen the assessment conducted with Schneider Electric.

We are looking forward to 2021 and are already working with more companies to assess their biodiversity footprint.

## Schneider Electric

Sustainability is at the heart of everything we do, empowering all to do more with less, ensuring Life is On™, everywhere, for everyone, at every moment.

**Xavier Houot**
*Senior Vice President, Chief Environmental Officer*
*Schneider Electric*

Sustainability requires holistic thinking because all environmental issues are intertwined together: biodiversity and nature-based solutions are needed to limit global warming; at the same time climate change is one of the main drivers of biodiversity loss.

Schneider Electric's biodiversity footprint shows that most of discrete industries' impacts on biodiversity are indirectly caused by their carbon emissions, meaning their first lever of action to protect biodiversity is climate action. Mitigating climate change is at the core of Schneider Electric's mission; our carbon pledge is among the most ambitious validated by the Science Based Target, aligned with a 1.5°C trajectory and with the target of reducing by 100% the emissions from our operations (Scope 1 and 2) by 2030.

Yet, biodiversity protection cannot be reduced to climate action and requires specific action. The end-to-end biodiversity footprint assessment enables us to quantify biodiversity hotspots and opportunities all along our value chain, with a global and scientific approach. The Global Biodiversity Score (GBS) methodology developed by CDC Biodiversité is a game changer to step up corporate biodiversity strategies.

This is the beginning of a long and partly unmapped journey. Together, we can shape a path towards no net loss of biodiversity. At Schneider Electric, we take pride in being pioneers of sustainability, and we hope that by sharing our experience with others, we will accelerate their transformation.

Without a healthy planet, societies cannot prosper and nor can businesses. As the IPBES stated, the current biodiversity loss is a major concern for the world and needs to be halted, and Schneider Electric is ready to play its role.

# 2. Time for Nature

The IPBES global assessment report (Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services - November 2019) makes it very clear that the global biodiversity loss is unsustainable and calls for a transformative change of the economic and social model:

- Nature and its vital contributions to people, which together embody biodiversity and ecosystem functions and services, are deteriorating worldwide.
- Direct and indirect drivers of change have accelerated over the last 50 years.
- Goals for conserving and sustainably using nature and achieving sustainability cannot be met by current trajectories, and goals for 2030 and beyond may only be achieved through transformative changes across economic, social, political and technological factors.
- Nature can be conserved, restored and used sustainably while other global societal goals are simultaneously met through urgent and concerted efforts fostering transformative change.

As Dr Cristiana Palmer, Executive Secretary at the Convention on Biological Diversity, said, "healthy biodiversity is the essential infrastructure that supports all forms of life on earth, including human life. It also provides nature-based solutions on many of the most critical environmental, economic, and social challenges that human society faces, including climate change, sustainable development, health, and water[1] and food security". In short, human well-being fundamentally depends on nature and natural capital. Beyond the services they provide to human societies, we value the existence of species for their own sake: we believe biodiversity has an intrinsic value, even when it has no use for humanity.

The IPBES report has been a starting point of what is set to be a decisive couple of years for biodiversity with two major events in 2021: the IUCN (International Union for the Conservation of Nature) World Congress, and most importantly the Convention on Biological Diversity (CBD)'s, also known as the COP15. During the latter, governments are expected to reinforce the international biodiversity framework finding an international agreement, which would set the global targets and ambitions for the coming decades.

## 2.1. The current biodiversity loss

Science says clearly that human activity takes an unsustainable toll on nature. In 2018, the world average terrestrial Mean Species Abundance (MSA) is only at 66%, meaning that a significant part of the species abundance of ecosystem integrity has already been lost. Under a business-as-usual scenario, this number would fall below 60% MSA by 2050[2], which is much beyond the safe operating zone that respects the planetary boundary, which is estimated at 72% MSA[3]. Such a high biodiversity loss undermines nature's ability to provide its contribution to people, which is vital for human existence and a good quality of life.

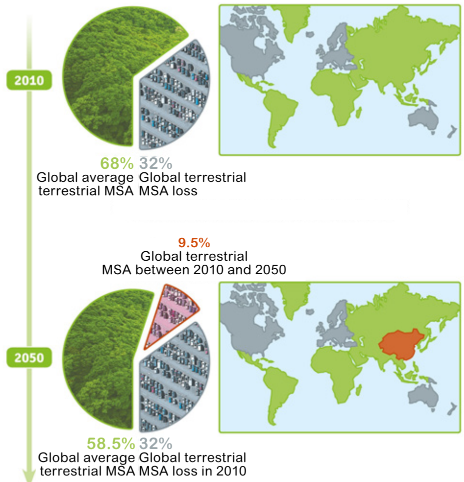


**Figure 1**

Global MSA loss between 2010 and 2050 (CDC Biodiversité, 2019)†

1 IPBES Global Assessment Report, summary for policymakers, 2019.

2 Kok, Marcel T.J., Rob Alkemade, Michel Bakkenes, Martha van Eerdt, Jan Janse, Maryia Mandryk, Tom Kram, et al. 2018. 'Pathways for Agriculture and Forestry to Contribute to Terrestrial Biodiversity Conservation: A Global Scenario-Study'. Biological Conservation 221 (May): 137–50. https://doi.org/10.1016/j.biocon.2018.03.003

3 Lucas, Paul, and Harry Wilting. 2018. 'Using Planetary Boundaries to Support National Implementation of Environment-Related Sustainable Development Goals'. 2748. The Hague: PBL Netherlands Environmental Assessment Agency. https://www.pbl.nl/sites/default/files/downloads/Using_planetary_boundaries_to_support_national_implementation_of_environment-related_Sustainable_Development_Goals_-_2748.pdf

† CDC Biodiversité. 2019. 'Global Biodiversity Score: A Tool to Establish and Measure Corporate and Financial Commitments for Biodiversity'. 14. Biodiv'2050 Outlook. CDC Biodiversité. http://www.mission-economie-biodiversite.com/wp-content/uploads/2019/05/N14-TRAVAUX-DU-CLUB-B4B-GBS-UK-WEB.pdf

## What is the Mean Species Abundance (MSA)?

FOCUS BOX 1

The Mean Species Abundance of original species relative to undisturbed situations (MSA) is a metric that measures the level of “integrity” or “naturalness” of ecosystems.

The relative abundance of a species is the percentage of individuals left in a given ecosystem compared to a past undisturbed situation. The MSA is the mean of the relative abundance of all species present. The MSA can thus range from 100% (for an undisturbed ecosystem) to 0% (for a lifeless ecosystem).

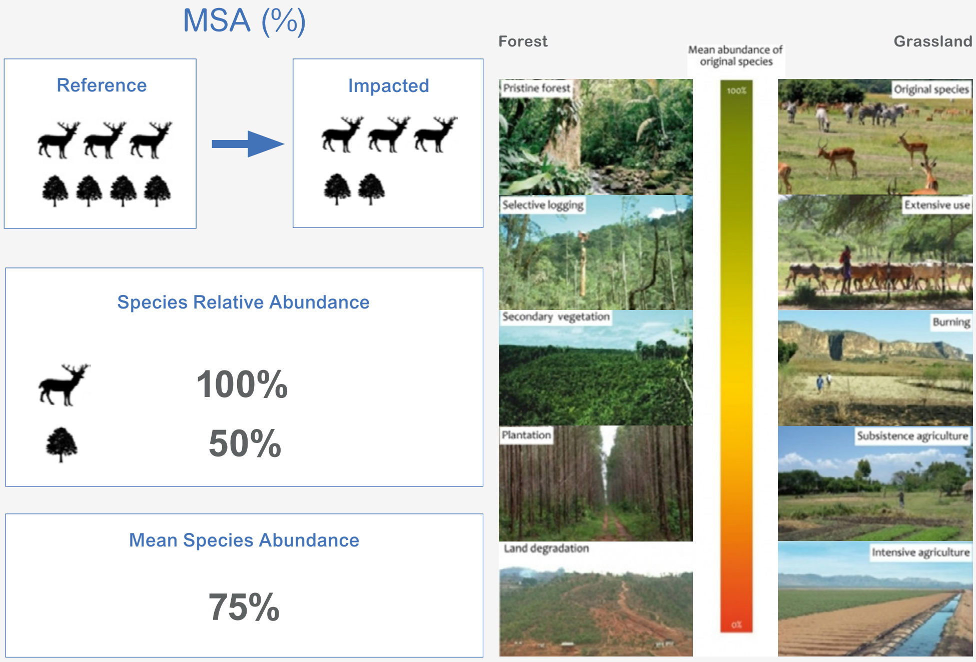


**Figure 2**
MSA metric calculation

## 2.2. Schneider Electric is ready to raise its game

For far too long, the impacts of human activities on nature have been underestimated and neglected, but we are now witnessing a fast raising of awareness, and new generations are not only more digital and connected: they are also more purpose and planet oriented then their parents. The momentum is building to move towards bending the curve of biodiversity loss.

The private sector has a major role to play in reversing the trend of biodiversity loss and Schneider Electric has the ambition to play a role in this transition, leading the way for other companies who wish to become compatible with the planetary boundaries.

# 3. Global Biodiversity Score and MSA.km², the potential to set the standard

## 3.1. The business world needs metrics like $CO_2$-eq

The $CO_2$ ton-equivalent metric played a key role in mainstreaming climate issues and driving actions to mitigate climate change. The industry needs comparable metrics for natural capital, and in particular for biodiversity, to properly address biodiversity loss meaning quantitative metrics depicting the state of biodiversity, broadly used and accessible to all, scientifically consensual and that can be aggregated or dis-aggregated at multiple levels.

Such quantitative biodiversity metrics, coupled with qualitative interpretation, are necessary steps to estimate, monitor and pilot the impacts of biodiversity or demonstrate gains.

To capture the complexity of biodiversity (notably ecosystem, species and genetics), three types of complementary indicators and their associated metrics should be used: the conservation status (Red List Index), population trends (Living Planet Index), and ecosystem integrity or biodiversity intactness (Mean Species Abundance, MSA). However, methodologies to assess a company's impact across its value chain are fairly at the beginning of their development.

To date, the Global Biodiversity Score, is the most advanced and innovative methodology for companies that wish to assess their biodiversity impact and biodiversity intactness. Notably, the MSA.km² metric has all the ingredients it needs to become a part of the "$CO_2$-eq of biodiversity": synthetic, easy to understand, and widely applicable.

The importance of scientific and measurable assessments is also underlined by the Natural Capital Protocol[4], in which assessing the biodiversity footprint of companies belongs to Step 5 – Measure impact drivers and/or dependencies, and Step 6 – Measure changes in the state of natural capital. Indeed, assessments rely on data on drivers of biodiversity loss (such as land use change) and translate them into changes in the state of biodiversity (i.e. impacts). The use of aggregated metrics such as the MSA also overlaps partly with Step 7 – Value impacts and/or dependencies.

### Focus on what is MSA.km²

FOCUS BOX 2

Once the MSA is calculated on a given area (Figure 1), it can be multiplied by the surface of that area. This allows to add different impacts into one single figure: a change in MSA from 100% to 75% over a surface area of 1 km² corresponds to a loss of (100%-75%)*1 km² = 0.25 MSA.km². Equivalently, MSA remaining at 100% across 75% of the surface area (0.75 km²) and dropping to 0% in the remaining 25% (0.25 km²) also generates a loss of 0.25 km² MSA

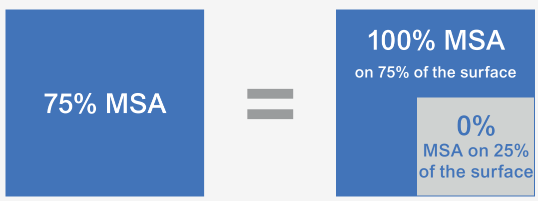


**Figure 3**

Illustration of MSA.km² equivalency

4 Natural Capital Coalition. 2016. 'Natural Capital Protocol'.

## 3.2. Need for international alignment on ambition

History has shown the amount of efforts it takes to switch the environmental conversation from noble to strategic, and climate change is an unfortunate example of a very well known issue that has been neglected despite the alerts from the scientific community. Today, we are living in an age of incredible fast-paced changes, where environmental concern is gaining a significant role in society. We are facing a unique occasion to support, design and fuel change, in the positive direction.

To engage companies in a transformative change, clear and measurable international targets must be set, counterparts to both the 1.5-2°C climate limit and its associated carbon budget. We welcome the CBD “zero draft” for COP15 which sets targets for species, ecosystems and genes and for each driver of biodiversity loss. We also encourage the various parties of the CBD to maintain the zero draft framework and establish realistic and ambitious goals and targets.

In the development of international targets, we believe that Science Based Targets will be necessary to transform the internationally agreed objectives into operational targets for companies. Without any doubt, among the most intricate issues to address lies the allocation rule defining the efforts needed across different economic sectors.

# 4. Assessing Schneider Electric's biodiversity footprint

## 4.1. Methodology

### 4.1.1. Perimeter of works

In 2020, CDC Biodiversité, with the support of PRé Consultants, assessed Schneider Electric's 2019 biodiversity footprint, using the GBS.

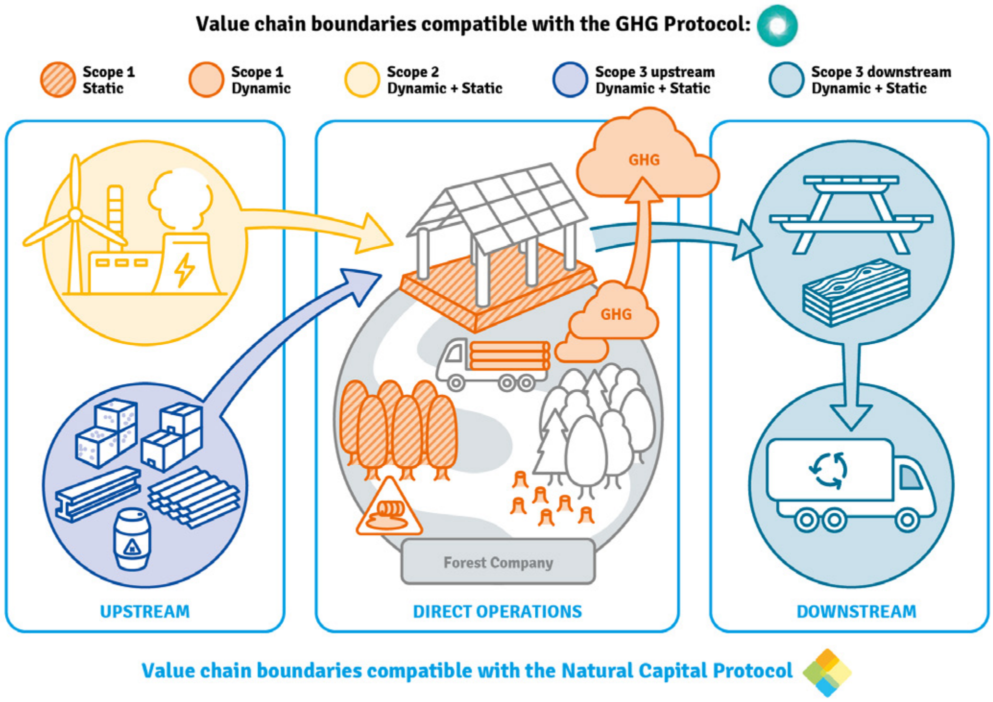


**Figure 4**

The different Scopes in the assessments (CDC Biodiversité, 2020)†

The perimeter of the assessment is the whole value chain (from cradle to grave). However, downstream impacts are limited to those caused by climate change, due to data and methodological limitations.

To account for impacts lasting beyond the period assessed, impacts are further split into **dynamic** – periodic gains/losses occurring within the period assessed – and **static** – persistent impacts or stock of accumulated losses[5]. Dynamic and static impacts should be accounted for separately: while dynamic impacts can be summed up from one period to the next (e.g. the dynamic impacts over the 2017-2019 period are equal to the sum of the dynamic impacts of 2017, 2018 and 2019), static impacts are a stock of impacts and should not be added up.

Results are further split along **Scopes**, as in carbon accounting: impacts of direct operations are included in Scope 1. Impacts of energy purchases are included in Scope 2. Impacts of other purchases are included in Scope 3 upstream, while impacts of product life and end of life are included in Scope 3 downstream.

Three overarching types of biodiversity are usually distinguished: terrestrial, aquatic (lakes, rivers, wetlands) and marine (oceans and seas). Marine biodiversity is not covered by the GBS (due to lack of scientific data). In line with recommendations of the Biological Diversity Protocol[6] and to consider the different natures of spatial integrations of impacts (aquatic ecosystems have depth whereas terrestrial ecosystems are considered in two dimensions), results are reported separately for **terrestrial** and **aquatic** biodiversity.

5 Due to technical and accounting challenges, climate change static impacts are currently not accounted for in the GBS

† CDC Biodiversité. 2020. 'Measuring the Contributions of Business and Finance towards the Post-2020 Global Biodiversity Framework - 2019 Technical Update'. 15. Les Cahiers de BIODIV'2050. Paris. http://www.mission-economie-biodiversite.com/downloads/cahier-de-biodiv2050-n15-measuring-the-contributions-of-business-and-finance-towards-the-post-2020-global-biodiversity-framework/.

6 EWT - NBBN. 2019. 'The Biological Diversity Protocol (2019). Draft 1.1 for Consultation.' Draft 1.1-For consultation only. Endangered Wildlife Trust (EWT) – National Biodiversity and business Network (NBBN).

### 4.1.2. GBS methodology

As illustrated by Figure 4, the approach of the GBS is to link input data to biodiversity impacts. In most cases, the input is corporate data on **economic activity** that is turned into **pressures on biodiversity**, itself translated into **biodiversity impacts**. At each step, the GBS is able to use the best available data, be it financial information, volumes of raw materials or even pressures, in what is called a hybrid approach. Biodiversity Footprint Assessments (BFAs) use company specific data on purchases or related to pressures or inventories (such as land use changes, greenhouse gas emissions or water consumption). In the absence of precise data, the GBS can run a default assessment based on financial turnover data, usually available in companies' annual reports.

The underlying assumptions of the GBS are transparent. In the long run, its aim is to cover all biodiversity impacts across the value chain (including both upstream and downstream impacts). It currently covers direct operations and upstream impacts (cradle to gate) on terrestrial and aquatic (freshwater) biodiversity.
The pressures covered are:

- Land use
- Fragmentation of natural ecosystems
- Human encroachment
- Atmospheric nitrogen deposition
- Climate change
- Hydrological disturbance
- Wetland conversion
- Freshwater eutrophication
- Land use in catchment
- Ecotoxicity (experimental)

Figure 4 further describes the links between each possible data entry point. EXIOBASE's input-output modelling allows to estimate purchases based on turnover, while its environmental extensions make it possible to estimate inventories, i.e. raw material consumption and production as well as greenhouse gas – GHG – emissions, based on monetary flows. Inventory data can be fed into in-house tools developed by

CDC Biodiversité, notably commodity tools which translate tonnages of commodities into pressures (and impacts) on biodiversity. Pressure data is translated into impacts on biodiversity using GLOBIO cause-effect relationships.

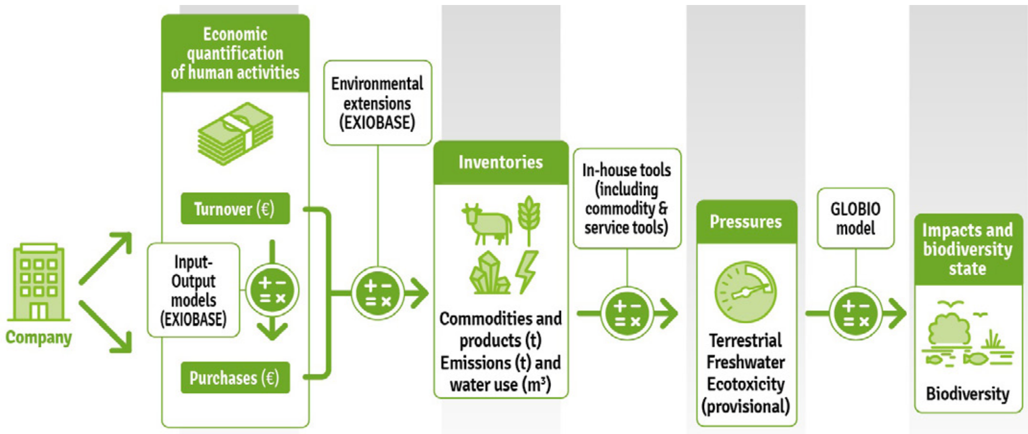


**Figure 5**
GBS methodology (CDC Biodiversité, 2020)

## More information on the GBS can be found in CDC Biodiversité’s reports:

*Measuring the Contributions of Business and Finance towards the Post-2020 Global Biodiversity Framework – 2019* Technical Update (2020).

[Download](Download).

*Global Biodiversity Score: a tool to establish and measure corporate and financial commitments for biodiversity – (2019)*. 2018 technical update.

Download.

*Global Biodiversity Score: measuring a company’s biodiversity footprint (2017)*: Report describing the MSA choice and the crops

Download.

### 4.1.3. Data collection

From a corporate standpoint, the data required is mostly already available in existing reporting and environmental declarations. In fact, a large share of the data required is the same as what's used to calculate carbon footprint, therefore available in most annual reports and procurement databases. Nevertheless, sometime a specific effort is required to extract information, for instance on tonnage of raw material (from purchase data) or ground surface occupation. In the table below are detailed the main requirements to the GBS and how Schneider Electric provided the data.

| Item | Details | Used in carbon accounting | Work performed by Schneider Electric |
|---|---|---|---|
| (1) Scope 1 land occupation (m2) | Surface of the land occupied by manufacturing facilities, distribution centers (logistics), and offices | | The internal reporting included only usable area which had to be converted into ground surface by estimating the average floor area ratio. |
| (2) Scope 1 water consumption and withdrawal (m3) | Volumes of water consumed or withdrawn by site or by country | | Already available - extra financial reporting |
| (3) GHG emissions (kg CO2-eq) | GHG emissions for Scope 1, 2 and 3 (upstream and downstream) | x | Already available - extra financial reporting |
| (4) Raw material purchase (t) | Tonnages of metal ores, crude oil and wood logs covering all purchases except indirect procurement and solution procurement | x | Raw material purchase was partly available thanks to internal reporting and carbon footprint calculations. Additional work was performed to transform inventories of products (e.g. tons of metal alloys, number of electronic boards) to raw material (e.g. pure metals). |
| (5) Purchases (EUR) | Breakdown of direct purchases by procurement category | x | Mapping of Schneider's procurement categories to EXIOBASE categories, with CDC Biodiversité's help. |
| (6) Turnover (EUR) | Total turnover and break down by industry and country | | Already available – financial reporting & internal reporting |
| (7) Energy | Electricity bought by country and technology. Fossil fuels bought for heating. | x | Already available - extra financial reporting |

1. (1) and (2) were used to assess the Scope 1 impacts of **land use** & **land use in catchment** and the part of **hydrological disturbance** due to water use respectively. The impacts of **climate change** and **hydrological disturbance due to climate change** were assessed with (3). The evaluation was conducted through the GBS's pressure-impact relationships.
2. (4) were input into the GBS's CommoTools (tools developed by CDC Biodiversité to evaluate the impacts of commodity production) to assess all the (non-climate) upstream impacts related to wood logging, mining and oil extraction.
3. Financial data, (5) and (6), was used to plug gaps in the coverage of the impacts assessed with more detailed data. Indirect purchases (suppliers of direct suppliers, up to raw material extraction) were assessed using EXIOBASE's (an environmentally extended multi-regional input output model) input output tables. Then, the raw material use and emissions of nitrogen, phosphorous and ecotoxic substances associated to both turnover and (direct and indirect) purchases were estimated based on EXIOBASE's environmental extensions, to complement (1), (2), (3) and (4). The raw material use was fed into the GBS's CommoTools and emissions into its pressure-impact relationships.

7 In the GBS 1.0, aquatic dynamic impacts are less robust than aquatic static impacts, but both reflect the same trends: the use of aquatic static impact figures should thus be preferred.

## 4.2. Results

Table 1 **shows the results of the assessment**. More detailed results are available in the appendix.

| | | Direct operations (Scope 1, MSA.km²) | Placeholder header | Upstream (Scope 3, MSA.km²) | Downstream (Scope 3, MSA.km²) |
|---|---|---|---|---|---|
| Terrestrial | Dynamic | 0.79 | 1.1 | 46 | 290 |
| | Static | 9.6 | 1.4 | 3 600 | Not assessed |
| Aquatic | Dynamic[7] | 0.0095 | 0.011 | 0.91 | 2.9 |
| | Static | 1.2 | 0.063 | 140 | Not assessed |

**Table 1**

Summarized results of end to end footprint assessment (excluding savings delivered in use phase)
Source: GBS 1.0.0 calculations, August 2020, Sibylle Rouet-Pollakis

| | | Direct operations (Scope 1, MSA.km²) | Placeholder header | Upstream (Scope 3, MSA.km²) | Downstream (Scope 3, MSA.km²) |
|---|---|---|---|---|---|
| Terrestrial | Dynamic | NA | NA | NA | -200 |

**Table 2**

Summarized results of net savings delivered to customers through Schneider Electric's technology
Source: GBS 1.0.0 calculations, August 2020, Sibylle Rouet-Pollakis

Nota Bene: Static and aquatic cannot be summed together, as explained in paragraph 4.1.

Schneider Electric has developed a methodology (refer to Focus Box 3 "How Schneider Electric's offers help customers to move towards a low carbon economy") to quantify $CO_2e$ emissions savings delivered by its offers during their use phase. The versatility of the Global Biodiversity Score allows to calculate the impacts of pressure's reduction on biodiversity, which enabled us to complete this case study with the most holistic view of climate impact on biodiversity in downstream scope 3 terrestrial dynamic impacts. Schneider Electric's net $CO_2$ savings contribute relieving the pressure on climate change, therefore resulting in avoided impacts on biodiversity.

As expected, the order of magnitude of impacts on scope 1 are fairly negligible with respect to the end to end footprint. The results show that the most significant part of impacts occurs in the scope 3 downstream, which, for Schneider Electric, is due to the $CO_2$ emissions during the use phase of its products. Looking at the cradle to gate footprint, 98% of impacts are caused by the supply chain which is consistent with the industrial role of a manufacturer such as Schneider Electric, ultimately reliant on the extraction of raw materials.

To better illustrate the meaning of the upstream Scope 3 dynamic impact of 46 MSA.km², one can think about it as the equivalent of transforming an area about half the size of Paris (inner city) from pristine ecosystems to a lifeless parking lot.

### 4.2.1. Schneider Electric's performance against the sectoral benchmark

For **Scope 1**, Schneider Electric's impact intensity per unit of turnover is 0.03 MSA.m²/kEUR, against a 2011 global sectoral benchmark of 0.06 MSA.m²/kEUR. This sectoral (Manufacturing of electrical machinery and apparatus) benchmark is itself very low compared to the global benchmark of 2 MSA.m²/kEUR (Figure 3), which is driven mainly by raw material extraction and production industries, such as agriculture, logging or extractive industries.

However, the upstream impacts are more significant and amount to **0.04 MSA.m²/kEUR for Scope 2**, and **1.7 MSA.m²/kEUR for upstream Scope 3**.

8 CDC Biodiversité. 2020. 'Measuring the Contributions of Business and Finance towards the Post-2020 Global Biodiversity Framework - 2019 Technical Update'. 15. Les Cahiers de BIODIV'2050. Paris. http://www.mission-economie-biodiversite.com/publication/gbs-update-2019.

The impact intensity of a hypothetical "vertically integrated" Schneider Electric (summing across Scopes 1, 2 and 3 upstream) amounts to 1.7 MSA.m²/kEUR. This compares to a benchmark for a vertically integrated manufacturer of electrical equipment of 4.9 MSA.m²/kEUR.

Figure 5 and Figure 6 provide orders of magnitude of the impact intensities through a "green light" system. They display the impact intensities of an "average company" globally *(Global average)* and of the Manufacture of electrical machinery and apparatus n.e.c. (not elsewhere classified) industry *(Industry average)*, to which Schneider Electric belongs. The Figures aim to give some context to understand the performance of the industry and of Schneider Electric, and to provide some background figures on what can be considered high, or low impact intensities. The green area on the Figures is the one towards which the company should tend. The amber area represents an average performance (which is not satisfactory and still causes biodiversity loss). The red area is associated with high impact intensities, which correspond to companies causing significant harm to ecosystem integrity. Figures are preliminary and more research is ongoing to assess the average impact intensities of a range of industries, and to refine the criteria to judge the impact intensities of businesses.

For terrestrial dynamic impacts (Figure 5), the green area is defined by the need to reverse biodiversity loss and move back towards the biodiversity safe operating space (further described in Figure 8) and to meet the CBD COP15 goals: The green area includes all the impact intensities below 0 MSA.m2/k€, i.e. gains of biodiversity. Those gains are likely to be achieved through ecological restoration. The threshold of the red area is set at 20 MSA.m2/k€ based on a preliminary analysis by CDC Biodiversité, which highlighted this figure as a frontier between most industries and a number of industries (located in some regions) causing significant impacts on ecosystem integrity. Using a climate change analogy, corporates located in the red area can roughly be considered as belonging to the "fossil fuel industry" of biodiversity. The area in between is the amber area, with the symbolic threshold of roughly 2 MSA.m2/k€ (CDC Biodiversité 2020[8]) representing the global average corporate impact intensity (total terrestrial dynamic impacts divided by the total global turnover), i.e. companies or industries with an impact intensity below 2 MSA.m2/k€ have a lower than average intensity but must still reduce it.

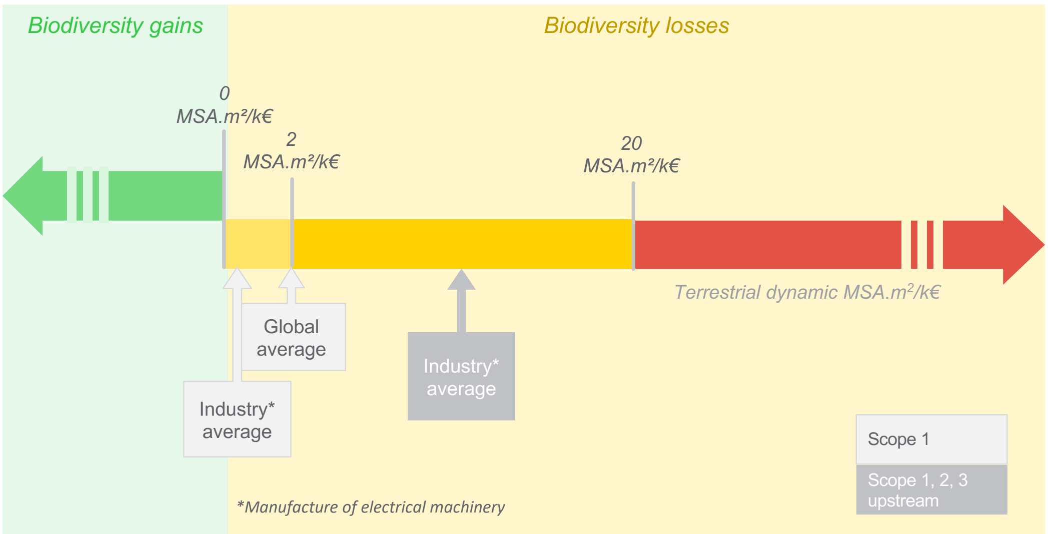


**Figure 6**

2019 terrestrial dynamic performance of Schneider Electric against benchmarks

The current knowledge on aquatic static impacts (Figure 6) is more limited, and figures are more uncertain. Static impacts represent a stock of impacts and cannot be negative: Indeed, the green area thus ranges from 0 MSA.m2/k€ to a value which is currently unknown as the threshold for the safe operating space for aquatic biodiversity has not yet been quantified. What is known is that this threshold has already been exceeded and it thus stands below 30 MSA.m2/k€, which is the global average. As represented on Figure 6, the amber area starts above this threshold. The upper threshold of the amber area (and thus the lower limit of the red area) is also less well known than terrestrial dynamic biodiversity: as a first estimation, it has been assessed at 300 MSA.m2/k€.

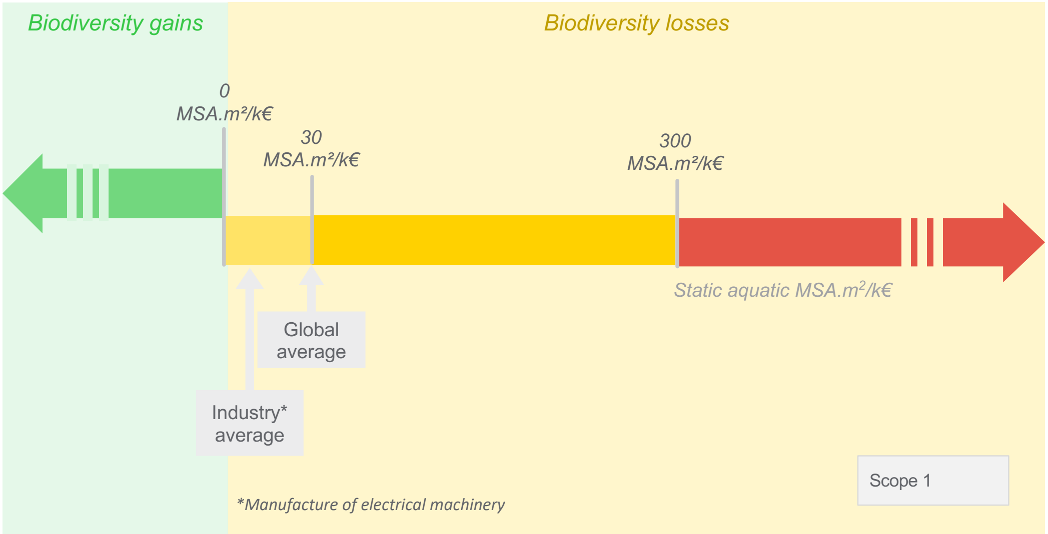


**Figure 7**
2019 aquatic static performance of Schneider Electric against benchmarks

## 4.2.2. Hotspots identification

Despite the diversity of indicators (static and dynamic, aquatic or terrestrial), the key messages from all results are pointing in the same directions. Which is why in this section, hotspots will be identified mainly based on dynamic terrestrial impacts, which are also the most steerable for Schneider Electric. Nonetheless, static and aquatic will be used to complete the picture.

At this point in time, considering the level of maturity of both Schneider Electric and the GBS tool, rather than concentrate on absolute impacts or industry and global benchmark, it is important to take a closer look at the hotspots in order to define a strategy and an action plan. Both terrestrial and aquatic results indicate similar sources for their respective impacts.

The GBS gives detailed and modular results. Indeed, the results can be split by input line (for example, each metal product is a different line, so the specific impact of each metal is known). A further split is available by pressures on biodiversity, that is the mechanism through which biodiversity is impacted: for terrestrial biodiversity, these pressures are climate change, land-use change, encroachment, fragmentation and atmospheric nitrogen deposition (see Figure 7). Because climate change plays such a predominant and specific role (being the only pressure that acts on a global scale), results are often divided into two categories: climate change related and non-climate impacts.

Looking through both prisms of input lines and pressures allow to identify the following hotspots:

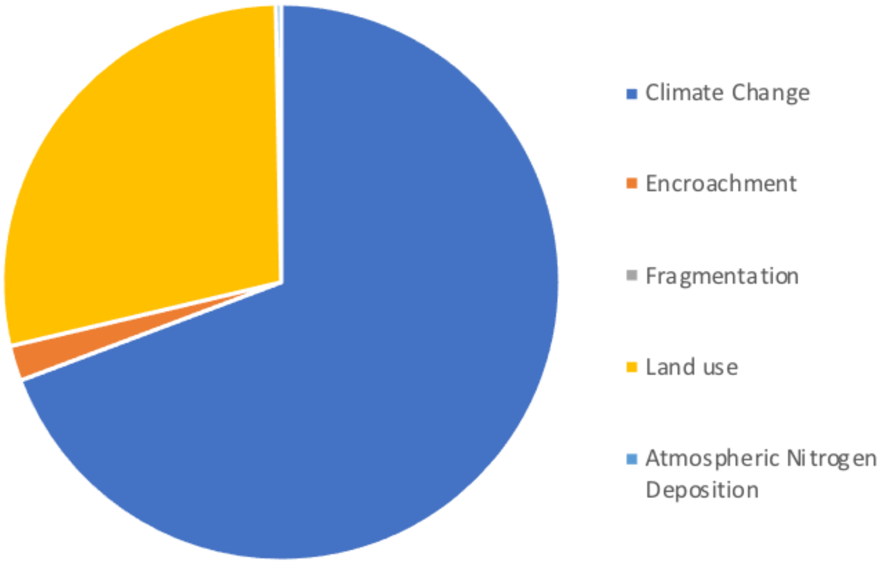


**Figure 8**

Relative importance of terrestrial pressures for Schneider cradle to gate footprint
Source: GBS 1.0.0 calculations, August 2020, Sibylle Rouet-Pollakis

### 4.2.2.1. GHG emissions

Schneider Electric's downstream impacts (290 MSA.km²), that are entirely caused by the GHG emitted to generate the electricity used and dissipated by products, dwarf Schneider Electric's direct operations and upstream impacts ("cradle to gate", 47 MSA.km²). Furthermore, within the cradle to gate impacts, 70% of terrestrial dynamic impacts originate from GHG emissions. For a manufacturing company of capital goods and consumer durables such as Schneider Electric, climate change is thus a key driver of biodiversity (dynamic) loss. Therefore, its climate change strategy takes a new relevance under the light of biodiversity.

FOCUS BOX 3

#### How Schneider Electrics' offers help customers to move towards a low carbon economy

Quantifying the $CO_2$ benefits delivered by products is part of Schneider's journey to deliver superior environmental value to customers. Schneider Electric has developed an innovative methodology to measure induced, saved and avoided $CO_2$ emissions during the use phase of capital goods and consumer durables. This methodology aims at becoming an industry standard applicable across sector. It is pragmatic, robust and flexible to enable fast adoption by the industry and has been verified by an independent organization. Please find the full white paper here.


#### What are the effects of these savings on biodiversity?

If you wish to know more about Schneider Electric's detailed carbon strategy, and notably about reaching carbon neutrality in the ecosystem by 2025, click here.

### 4.2.2.2. Wood logs

Within non-climate upstream Scope 3 impacts (14 MSA.km2), **wood logs** represent about **56% of terrestrial dynamic impacts**. For Schneider Electric, wood logs are mainly represented by cardboard and pallets. Their impacts are mainly caused by the land use changes triggered by logging, for instance, the clearing of natural or semi-natural forests and grasslands to make way for plantations. In 2019, 96% of cardboard and pallets for transport packing come from recycled or certified sources, and the target for 2020 is 100%. In the assessment, an average, non-certified, wood was considered and the impacts are likely to be over-estimated as certification can in some cases lead to lower impacts. Future BFAs will have to better consider the effects of recycled and certified wood on biodiversity. In any case, further engagement with suppliers will be necessary to obtain assurances of low impacts on biodiversity, as current certifications appear too flexible to ensure systematic reduction in biodiversity impacts.

### 4.2.2.3. Metals

Mining of metals represents **17% of non-climate terrestrial dynamic impacts** (and 43% of non-climate terrestrial static impacts).

In addition to GHG emissions and to land use changes due to mine pits and infrastructures, mining also causes significant encroachment (disturbances to nearby ecosystems such as human presence, noise, light, etc., caused by anthropic activities) and fragmentation (separation of ecosystems in smaller continuous patches, reducing the size of existing habitats).

At Schneider Electric, the metal with the highest impact on biodiversity (both in extraction and transformation phase) is copper and specific actions with suppliers all along the supply chain are needed to reduce those impacts. For instance, recycled copper impacts are approximately half those of virgin copper. The potential impacts of switching from virgin to recycled on our footprint is in the order of magnitude of 3% in terrestrial dynamic impacts and a reduction of the magnitude of 6% for static impact.

### 4.2.2.4. Land-use impact of buildings

When it comes to biodiversity, the impact due to direct land use comes straight to mind. That is why we pay particular attention to this indicator, which has implications for both terrestrial static (land occupation of buildings) and dynamic impacts (evolutions, positive or negative, of those same surfaces). Also, land use impact falls into Schneider Electric's operational control and it is therefore a potentially steerable indicator.

Most of the **Scope 1 static impact (8.7 MSA.km2)** is due to land use, imputable to Schneider Electric's facilities and their physical footprint on the ground. Despite the fact that this impact represents less than 0.5% of Schneider Electric's cradle to gate (static impact), a commitment to reduce that impact, for instance through office optimization, would be both beneficial to show a strong willingness, both internally and externally, and to involve all countries (sites, employees) around the World with a steerable and achievable indicator.

### 4.2.2.5. Water withdrawal

Water is another topic which comes to mind when dealing with nature preservation; within operational control, water indicators are directly under site management also facilitating country and site level implication.

The water withdrawals and consumption are the most important drivers of aquatic biodiversity loss, both for the supply chain (where it accounts for **14% of aquatic upstream Scope 3 static impact**) and for direct operations (where it accounts for **36% of aquatic static impact**).

Given the nature of Schneider Electric's activities, results show that the main impact relies on the upstream value chain ratio of impacts – showing that we need collaboration and traceability on value chain. Positive impact of Schneider Electric's technology serving Water & Wastewater and helping saving freshwater has not been assessed.

# 5. Schneider Electric's way forward

Schneider Electrics' environmental journey began more than 20 years ago, nevertheless, our biodiversity journey has just started. Coming from a strong climate culture, we have always believed in scientific, measurable, quantifiable footprinting.

The turnaround happened in 2019 with the release of the Global Biodiversity Score. The work realized with CDC Biodiversité in 2020, allows us to significantly elevate our game on biodiversity both in the understanding of the problem and the necessary steps that we need to make.

It is now clear that business needs to return and evolve in biodiversity's safe operating space, which means that we (businesses, private and public sectors – in a nutshell: humanity) need to operate within the limits of planetary boundaries to allow the thriving of all ecosystems (both natural and economic).

A milestone in the achievement of the above is certainly the COP 15 of the Convention on Biological Diversity which is scheduled to take place in 2021, and from which an international agreement is expected to provide guidance and targets. Based on CBD's draft overarching goals for both 2030 and 2050, the alignment with international agreements and objectives appears to be paramount to return to a safe operating space.

To achieve the above, we expect businesses such as ours to be challenged to reduce their static and dynamic footprints and eventually move from dynamic losses to dynamic gains (at which point, the dynamic gains will translate into a reduction of the static footprint).

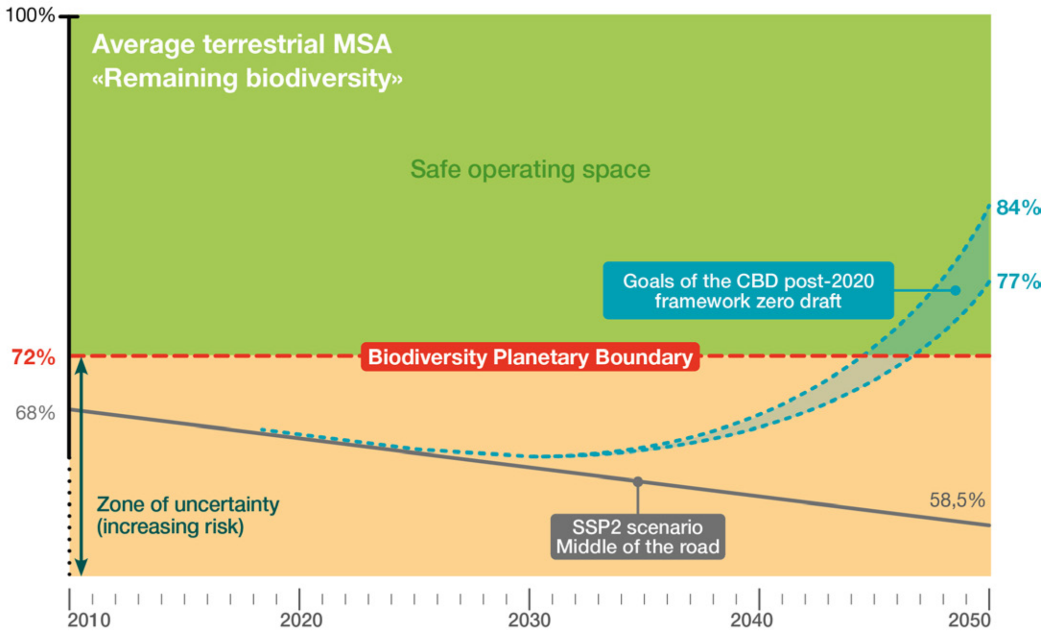


**Figure 9**

Business as usual and CBD COP15 expected trajectories for global terrestrial remaining biodiversity.
Source: CDC Biodiversité.

9 https://www.forest-trends.org/bbop/bbop-key-concepts/mitigation-hierarchy/

## 5.1. Schneider Electric's biodiversity approach

Unlike global warming, biodiversity is a very local matter: in most places of the world, biodiversity loss is visible to anyone who pays attention. Also, except for the effects of global warming on biodiversity, human activities generally impact biodiversity locally or regionally. This means that acting on local pressures can lead to visible change in the surrounding environment in little time. This is a great motivation for action, and it is the reason Schneider Electric will foster biodiversity at the local level. Adressing Scope 3 impacts is also critical to preserving biodiveristy. We will therefore leverage on our influence in our global economic ecosystem of suppliers and customers to maximise our positive impacts.

Building on the mitigation hierarchy and the Science-Based Target Network's Avoid, Reduce, Regenerate & Restore, and Transform (AR$^3$T) framework, Schneider Electric will develop its biodiversity strategy along three axes: firstly, avoiding and reducing impacts, secondly regenerating and restoring biodiversity, and finally transforming the way we do business and raising awareness.

### What is the mitigation hierarchy?

FOCUS BOX 4

The mitigation hierarchy[9] defines an order of actions to be taken to protect biodiversity. The steps involved are:

1. First, **avoid** impacts whenever possible;
2. **Minimize** unavoidable impacts;
3. **Restore** biodiversity;
4. **Offset** any remaining impacts to reach no net loss or even net gain;
5. **Compensate** when impacts cannot be offset.

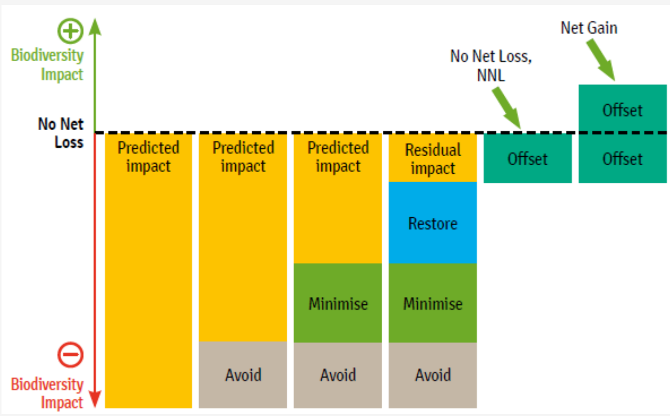


**Figure 10**

The mitigation hierarchy (adapted from CDC Biodiversité, 2020).

Aligning with international objectives requires a deep transformation, **acting on different drivers of biodiversity loss (both direct and indirect)**. Such levers of action can be found in direct operations (GHG emissions, land use occupation and water use), but also in indirect activities necessary to grant business continuity, such as procurement and more in particular choice of raw material, recycled content or lower impact suppliers.

Although this is the first biodiversity footprint, Schneider Electric's environmental strategy already delivers many transformations that enable to reduce biodiversity loss. We believe in the possibility to decouple resource usage from economic growth all along the lifecycle of our products, from cradle-to-grave.

### 5.1.1.Avoiding and reducing impacts

Avoiding (preventing impacts from happening in the first place, e.g. preventing impacts from increasing compared to a reference situation) and reducing (minimizing) impacts translate into local actions in many ways, such as: waste reduction (with already 193 sites labelled 'towards zero waste to landfill'), reducing energy consumption and water withdrawals, working with company restaurants to promote seasonal and local food as well as low-meat diets. By sharing valuable practices across sites, we invite biodiversity and nature into daily conversations and actions.

#### How Schneider Electric's environmental strategy has already benefitted biodiversity

FOCUS BOX 4

The 2018 – 2020 Schneider Sustainability Impact (SSI) is a collection of our sustainability goals, grouped under five megatrends: climate, circular economy, health & equity, ethics and development. Looking more closely at the indicators reveals the many co-benefits of this strategy, including for biodiversity: for example, thanks to our circular economy program, consumption of 120,000 metric tons of primary resources has been avoided through ECOFIT™, recycling and take-back program; meaning all the negative impacts from the mining, logging, energy-intensive processing of those 120,000 have been avoided. Learn more about many other examples, including renewable electricity purchases, waste reduction and suppliers vigilance plan here.

Locally, sites can use IBAT tool to gain knowledge on protected areas and species close by. This is a useful addition to GBS, which measures ecosystem integrity but does not cover risks associated with species extinction.

We also aim at avoiding and reducing impacts in our supply chain. Profound transformations are needed, in the way we design our products to allow for more recycled materials. The main areas of action will be carbon emissions, wood (we look forward to a certified no net loss of biodiversity label for the sector), and mining (both through increased recycling and better mining practices and certifications). Although there are many challenges ahead and high uncertainties, we wish to influence beyond our operational scope, where most of the cradle-to-gate impacts occur.

### 5.1.2. Regenerate and restoring biodiversity

Because avoiding and reducing impacts will not be enough to reach no net loss, and because considering the current state of biodiversity, avoiding future impact is not satisfactory in itself but restoration actions are also needed, the second pillar of Schneider Electric's strategy is preserving and restoring biodiversity.

The first action to implement this pillar is to build a company culture where everywhere at Schneider Electric's sites, small actions are taken to restore biodiversity, such as tree-planting or pesticide-free gardening.

To step up our preservation and restoration actions, Schneider Electric will work with partners, whether at site-level, to help develop a coherent and locally-adapted biodiversity management plan, or at global level.

Finally, since 2011 Schneider Electric has contributed towards the Livelihoods funds, which proposes innovative investment models to simultaneously address environmental degradation, climate change and rural poverty, while helping businesses become more sustainable. The effect of this recurring investment is certainly positive for biodiversity, but it has not been assessed with this exercise.

### 5.1.3. Awareness-raising at every level

To support and complement the strategy to reduce impacts and to restore biodiversity, Schneider Electric will seek to contribute to an “enabling environment” favorable to biodiversity and to raise awareness about biodiversity on all levels: first internally, through trainings that are already available to all employees describing the current biodiversity loss and urging to act both on a professional and on a personal level, but also externally, through partnerships with businesses, academia and NGOs, that will help Schneider Electric to continue to learn as well as to share its current knowledge. For example, in 2020 Schneider Electric has joined its voice to Business for Nature’s[10] call to action, and has published, together with CDC Biodiversité, its own initiative to involve other companies and collectively "Raise corporate biodiversity ambition and aim at no net loss".

# 6. Paving the way to sustainability

Looking back at the work done together, CDC Biodiversité and Schneider Electric are proud of the result. The GBS has achieved what it promised to do: quantify the global and end-to-end biodiversity footprint of a large corporation.

With this publication, our wish is to demonstrate that biodiversity quantification is possible and to invite other corporations to assess their footprint. We must fast-track the adoption of reporting best practices, and transparent disclosure is also part of the journey.

By providing relevant metrics, the GBS has proven its ability to provide a guide for companies to define meaningful biodiversity strategies. Because time is precious to reverse biodiversity loss, CDC Biodiversité and Schneider Electric hope that this paper will inspire other companies to embrace ambitious biodiversity strategies.

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10 Business for Nature is a global coalition bringing together influential organizations and forward-thinking businesses, amplifying together a powerful business voice calling for governments to reverse nature loss.

# 7. Appendix

## 7.1. Table of results

Figures are rounded to two significant digits, so rounded totals may differ from the sum of rounded impacts by pressure.

Aquatic dynamic impacts are not reported here as they are less robust than aquatic static impacts, but the conclusions and trends are aligned for both.

| | Terrestrial Dynamic Footprint (MSA.km²) | | | | | | |
|---|---|---|---|---|---|---|---|
| Scopes and Pressures | Scope 1 | Scope 2 | Tier 1 of upstream Scope 3 | Rest of upstream Scope 3 | Downstream Scope 3 | Avoided & Saved | Total (excluding Avoided & Saved) |
| Climate Change | 0.79 | 1.1 | | 31 | 290 | -200 | **320** |
| Encroachment | 1.3E-03 | 4.2E-05 | 4.1E-03 | 0.97 | | | **0.97** |
| Fragmentation | 1.1E-10 | 1.1E-10 | 7.0E-09 | 1.3E-04 | | | **1.3E-04** |
| Land Use | - | 1.01 | 0.25 | 13 | | | **13** |
| Atmospheric Nitrogen Deposition | 1.4E-05 | 2.4E-07 | 2.7E-05 | 0.15 | | | **0.15** |
| **Total** | **0.79** | **1.1** | | **45** | **290** | **-200** | **340** |

Source: GBS 1.0.0 calculations, August 2020, Sibylle Rouet-Pollakis

| | Terrestrial Static Footprint (MSA.km²) | | | | |
|---|---|---|---|---|---|
| Scopes and Pressures | Scope 1 | Scope 2 | Tier 1 of upstream Scope 3 | Rest of upstream Scope 3 | Total |
| Climate Change | - | - | | - | **-** |
| Encroachment | 0.86 | 0.03 | 3.5 | 1 300 | **1 300** |
| Fragmentation | 0.05 | 0.02 | 1.4 | 47 | **49** |
| Land Use | 8.7 | 1.3 | 13 | 2 200 | **2 200** |
| Atmospheric Nitrogen Deposition | 2.8E-03 | 4.8E-05 | 0.01 | 30 | **30** |
| **Total** | **9.6** | **1.4** | **17** | **3 500** | **3 600** |

Source: GBS 1.0.0 calculations, August 2020, Sibylle Rouet-Pollakis

| | Aquatic Static Footprint (MSA.km²) | | | | |
|---|---|---|---|---|---|
| Scopes and Pressures | Scope 1 | Scope 2 | Tier 1 of upstream Scope 3 | Rest of upstream Scope 3 | Total |
| Freshwater eutrophication | 1.9E-03 | 1.1E-05 | 0.007 | 14 | **14** |
| Encroachment | 0.42 | 1.2E-04 | 0.06 | 20 | **20** |
| Fragmentation | - | - | - | - | **-** |
| Land use in catchment of: | | | | | |
| rivers | 0.01 | 1.2E-04 | 0.02 | 1.5 | **15** |
| wetlands | 0.43 | 0.06 | 0.48 | 65 | **66** |
| Wetland conversion | 0.31 | 9.1E-04 | 0.38 | 40 | **40** |
| **Total** | **1.2** | **0.06** | **0.95** | **140** | **140** |

Source: GBS 1.0.0 calculations, August 2020, Sibylle Rouet-Pollakis

## 7.2. Limitations

The underlying ambition of Schneider Electric is to have a positive impact on biodiversity itself, and not just to optimize its footprint based on the **MSA metric**. The MSA is a useful metric, which covers one of the three core aspects of biodiversity: ecosystems, and their integrity. It does not cover the risk of extinction of species, nor the degradation of the diversity of genes. As metrics and approaches to cover impacts on species extinction and genes mature, Schneider Electric will seek to integrate that data into its biodiversity strategy.

It is also important to understand that through its intrinsic characteristics, the MSA may also favour some decisions over others. For instance, as described in CDC Biodiversité's reports[11], optimizing the MSA.km2 footprint will put species-rich undisturbed tropical forests at the same level as undisturbed temperate forests or undisturbed desert, which may host fewer species: all natural, undisturbed and functional ecosystems can reach 100% MSA, independently of the maximum number of species they can carry.

The **GBS** also faces several limitations: it currently does not cover marine biodiversity, nor the impact of invasive alien species pressure on terrestrial and freshwater biodiversity. Some forms of pollutions such as plastic waste are not covered. Uncertainties in the assessment of impacts are higher for freshwater (or aquatic) biodiversity than for terrestrial biodiversity and the freshwater impact assessment should thus be considered more as a compass, pointing at the direction to follow to reduce impacts. Some impacts of some economic activities such as the land use of energy production (e.g. solar farm and coal power plant) are still being assessed and are therefore not covered by this study. A more comprehensive list of limitations is available in the GBS technical reports[12]. The accounting framework used in this BFA also does not yet account for climate change static impact (only the dynamic impacts of climate change are accounted for).

Finally, the **data collected** suffer from limitations. Despite the best efforts, it was impossible to know all quantities of raw material with complete accuracy – especially for fabricated products. It was especially difficult to estimate the recycled content of products. It was not possible to identify where raw material originated from and, as a result, global impact factors had to be used, instead of more precise country impact factors. For Scope 1 land-use impacts, the evolution of the land occupation from 2018 to 2019 was unknown, only the 2019 land occupation was known. Despite a trend of declining land occupation for Schneider Electric, a conservative assumption (over-estimating the impact) of no land use change was considered.

11 CDC Biodiversité. 2019. 'Global Biodiversity Score: A Tool to Establish and Measure Corporate and Financial Commitments for Biodiversity'. 14. Biodiv'2050 Outlook. CDC Biodiversité. http://www.mission-economie-biodiversite.com/wp-content/uploads/2019/05/N14-TRAVAUX-DU-CLUB-B4B-GBS-UK-WEB.pdf.

12 CDC Biodiversité. 2020. 'GBS Review: Quality Assurance'. Final version.

## About Schneider Electric

As a global specialist in energy management and automation in more than 100 countries, Schneider Electric offers integrated energy solutions across multiple market segments. Our integrated solutions and expertise make electrical energy realiable, efficient and green.

**www.se.com**

## About CDC Biodiversité

Our objective was to create a tool that makes it possible to act for biodiversity, by identifying and developing economic levers (regulatory, voluntary, etc.) to finance the preservation and restoration of nature. CDC Biodiversité is a wholly-owned subsidiary of Caisse des Dépôts, which has all the means enabling it to act towards this objective.

**https://www.cdc-biodiversite.fr**

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