Integrating biodiversity into private equity

FEEDBACK & CASE STUDIES – FEBRUARY 2024

FRANCE INVEST

Contents

Introduction

The integration of biodiversity issues by private equity players is a challenge, in response to new regulations and the urgency of the current ecological crisis.

From this perspective, private equity players have an important role to play, whether by financing companies that make a positive contribution to the issue of biodiversity loss, or by defining action plans within the companies.

In 2022, France Invest with the Sustainability Commission's Biodiversity Working Group, published the first guide dedicated to this topic, with the aim of presenting the different approaches to integrating biodiversity into private equity at each stage of the investment cycle, while offering essential keys to understanding biodiversity-related concepts (ecosystem services, biodiversity risks, impacts and dependencies), regulations and the main available tools for measuring biodiversity footprints.

This publication is a continuation of that guide. It represents a concrete transition from theory to practice, focusing specifically on a crucial stage that is both necessary and a prerequisite for the development of a biodiversity strategy by asset management companies: the qualitative and quantitative analysis of the impacts (and dependencies) on biodiversity, both at the level of the portfolios and the companies invested in.

These analyses provide a clear picture of exposure to risks in terms of impacts on biodiversity and possible dependencies, making it possible to identify material companies at portfolio level and specific issues to be prioritized at company level.

After this identification, the biodiversity footprint can be used to quantify the impact generated and thereby establishing an initial inventory, facilitating the initiation of a biodiversity strategy and the definition of the first actions at the level of the invested company. All these steps are part of the support provided to these companies by the management companies during the holding phase.

In 2023, some members of the Biodiversity Working Group of the France Invest Sustainability Commission therefore continued the process of integrating biodiversity into private equity with the launch of a pilot study aimed at putting these specific steps into practice. Four management companies volunteered to test the ENCORE and GBS tools on their portfolios.

The purpose of this publication is threefold :

1. Test the tools that can be used to assess biodiversity issues, whether at the level of the portfolios of private equity management companies or at the level of their portfolio companies

2. Support the development of a biodiversity footprint methodology adapted to private equity, considering the associated constraints

3. Disseminate the lessons learned from this work, to enable the entire profession to take up this major issue.

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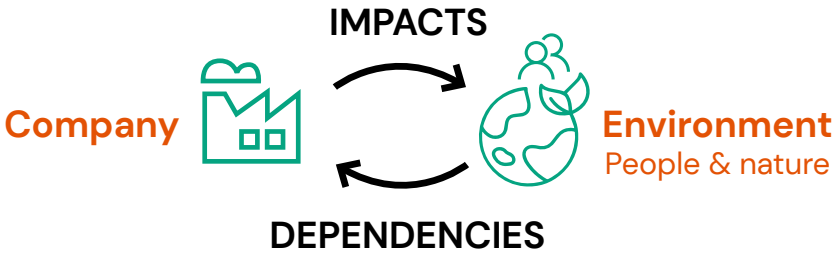
Part 1 |
Qualitative assessment of impacts and dependencies at portfolio level

Depending on the sector, production process, business model, geographical location, size and other specific features, companies may have varying levels of dependency on biodiversity and may also participate in the degradation of ecosystems.

The **dependencies** represent the risks for invested companies in a context of biodiversity collapse that could compromise their viability.

The **impacts** represent the damage generated by the activities of invested companies on natural ecosystems.

Because these impacts and dependencies give rise to nature-related risks and opportunities, evaluating them is a fundamental step to integrate nature in decision making and risk management practices.



In the European Union (EU), the materiality assessment of ESG issues must now consider two perspectives (double materiality):

1. A "financial" or "outside-in" perspective capturing the company's dependencies on nature, i.e., the risks or opportunities that environmental and social issues represent for the company's activity and value

2. An "impact" or "inside-out" perspective, capturing the negative or positive impacts of the company and its activity on the environment, people and society

Nature-related impacts and dependencies assessment – or double materiality assessment – is thus a key requirement of the Corporate Sustainability Reporting Directive (CSRD) and a fundamental component of the leading frameworks on Nature, namely the Locate, Evaluate, Assess, Prepare (LEAP) approach of the Taskforce on Nature-related Financial Disclosures (TNFD) and the first step of the Science Based Targets for Nature (SBTN) approach.

The qualitative evaluation of portfolios' nature-related dependencies and impacts relies on two leverages:

1. Knowledge of the main activities and industries in which the invested companies operate

2. Scientific expertise on the main nature-related impacts and dependencies of these industries.

The qualitative evaluation is thus based on sector-level information, allowing to identify the portfolios' potential material impacts and dependencies on nature in a short time frame and with no requirement of information from the portfolio companies.

DEFINITIONS OF DEPENDENCIES ON ECOSYSTEM SERVICES AND POTENTIAL IMPACTS ON BIODIVERSITY LOSS

The concept of **ecosystem services** refers to the notion of the "economic value of nature", corresponding to the goods and services provided free of charge to humanity by nature, and which contribute to its well-being and development. Our societies and economies cannot exist without balanced and sustainable ecosystems.

It's in the years 2000 that the study of ecosystem services gained traction, especially thanks to the work of the Millennium Ecosystem Assessment (MEA). Initiated by the United Nations and gathering over 1300 experts worldwide, the MEA assessed the consequences of ecosystem change for human well-being. It provided a state-of-the-art scientific appraisal of the condition and trends in the world's ecosystems and the services they provide, as well as the scientific basis for action to preserve them and use them sustainably.

By analyzing the portfolio's dependencies, it is possible to identify companies whose business is closely linked to the provision of a service provided by nature, allowing to estimate their exposure in the event of disruption or rarefaction of this service.

Biodiversity **impact factors** reflect the contribution of human activities to the erosion of biodiversity, in terms of quality or quantity (deteriorating its capacity to provide ecosystem services).

Five categories of impact factors have been identified by the Intergovernmental science-policy Platform on Biodiversity and Ecosystem Services (IPBES):

By analyzing the impact that businesses can have on biodiversity, it is possible to identify the players exerting the greatest pressure on nature and to work towards finding solutions to mitigate their impacts.

Various publicly available databases and tools gathering experts' assessments of sector's contributions to biodiversity loss and sectors' dependencies on ecosystem services exist, allowing asset managers to conduct a first screening of their portfolios' material impacts and dependencies. The remaining of this section illustrates the use of the ENCORE tool.

ASSESSMENT OF THE PORTFOLIO'S MAIN IMPACTS AND DEPENDENCIES USING THE ENCORE TOOL

1. Reminder of the methodology described in the previous guide

Assessing the qualitative biodiversity footprint of an investment portfolio
Example of an approach to qualitatively estimate the biodiversity footprint of a portfolio

Step 1 : Identify high material dependencies and impacts at the level of each investment sector,

with regard to dependencies on ecosystem services	**with regard to impacts** on the loss of biodiversity

Using the ENCORE tool, **determine the number and materiality level of the** sectors' **dependencies and impacts** :
NB : the tool data can be downloaded in Excel format from the methodology page, after completing the free registration procedure (see more details on the use of this tool in the dedicated Focus)

Assess the materiality of sectoral dependencies based on the :
- number of ecosystem services identified
- level of materiality reported by the tool :
  - Very High materiality (VH)
  - High materiality (H)
  - Medium materiality (M)
  - Low materiality (L)
  - Very Low materiality (VL)
  - Not applicable (NA)

Assess the materiality of sectoral impacts based on the :
- number of impacts identified
- level of materiality reported by the tool :
  - Very High materiality (VH)
  - High materiality (H)
  - Medium materiality (M)
  - Low materiality (L)
  - Very Low materiality (VL)
  - Not applicable (NA)

Step 2 : Consolidate qualitative analyses at portfolio level

For an overall analysis of portfolio exposure to biodiversity impacts and dependencies

- **Consolidate these sectoral analyses at portfolio level, based on :**
  - the number of dependencies and impacts identified for each sector
  - the materiality level of the dependencies and impacts identified for each sector
  - weighted by the share of investment in each sector

- **The (qualitative) biodiversity footprint** can then be approximated by the **share of the portfolio that negatively impacts biodiversity** (e.g. X% of the portfolio has a very strong or strong negative impact on biodiversity)

- Furthermore, it is possible to estimate the **share of the investment portfolio that is significantly dependent on biodiversity** (e.g. X% of the portfolio is very strongly or strongly dependent on ecosystem services)

For a pressure / dependency analysis of portfolio exposure to biodiversity impacts and dependencies

The ENCORE tool allows the approach described above to be applied to each pressure and/or dependency identified at the sectoral level. This level of detail can thus be used to identify the **share of an investment portfolio that impacts one or other of the five drivers of biodiversity loss** defined by IPBES. This refined approach can thus make it possible to **respond more precisely to the requirements of Article 29** (e.g. X% of the portfolio has a very high or high impact on the generation of pollution).

Limitations of this qualitative approach

Several points need to be noted in relation to this first approach :
- The qualitative approach does not allow the biodiversity footprint to be «measured» as such, but only enables a qualitative estimation of this footprint.
- The sectoral analysis alone does not take into account the characteristics of each holding.
- It is not possible to detail the scope of the operations and value chains considered.

2. What is the ENCORE tool ?

ENCORE (Exploring Natural Capital Opportunities, Risks and Exposure) is a qualitative assessment tool developed by the Natural Capital Finance Alliance in partnership with UNEP-WCMC (UN Environment Programme World Conservation Monitoring Centre) and Global Canopy. It is publicly available as an online platform that helps financial institutions understand, assess, and integrate natural capital risks into their financing activities.

By focusing on the goods and services provided by nature and from which economic activities benefit, ENCORE helps users understand how businesses in all sectors impact and depend on nature, and how these impacts and dependencies can pose a risk to the viability of invested companies in the event of environmental degradation.

The use of ENCORE is a first step in enabling financial institutions to explore natural capital risks in the context of their activities and to integrate them into risk management processes. The tool makes it possible to analyze the impacts generated by invested companies regarding **11 impact factors**, and their "dependency on **21 ecosystem services.**

IMPACT FACTORS	ECOSYSTEM SERVICES
Disturbances	Animal-based energy
Freshwater ecosystem use	Bioremediation
GHG emissions	Buffering and attenuation of mass flows
Marine ecosystem use	Climate regulation
Non-GHG air pollutants	Dilution by atmosphere and ecosystems
Other resource use	Disease control
Soil pollutants	Fibres and other materials
Solid waste	Filtration
Terrestrial ecosystem use	Flood and storm protection
Water pollutants	Genetic materials
Water use	Ground water
	Maintain nursery habitats
	Mass stabilisation and erosion control
	Mediation of sensory impacts
	Pest control
	Pollination
	Soil quality
	Surface water
	Ventilation
	Water flow maintenance
	Water quality

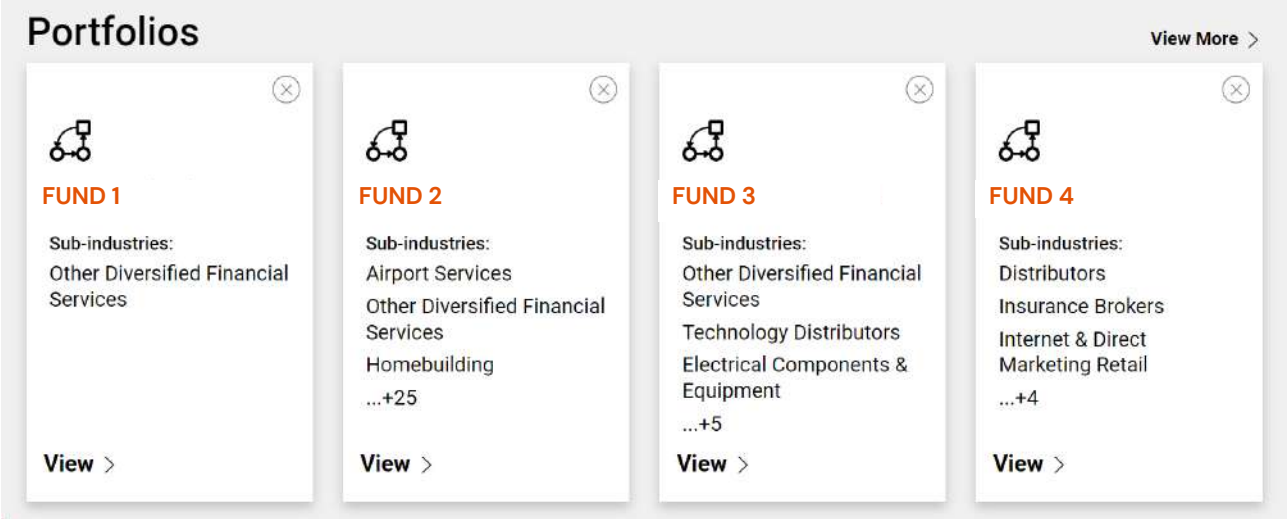
Source : https://www.encorenature.org/

3. How to use the ENCORE tool ?

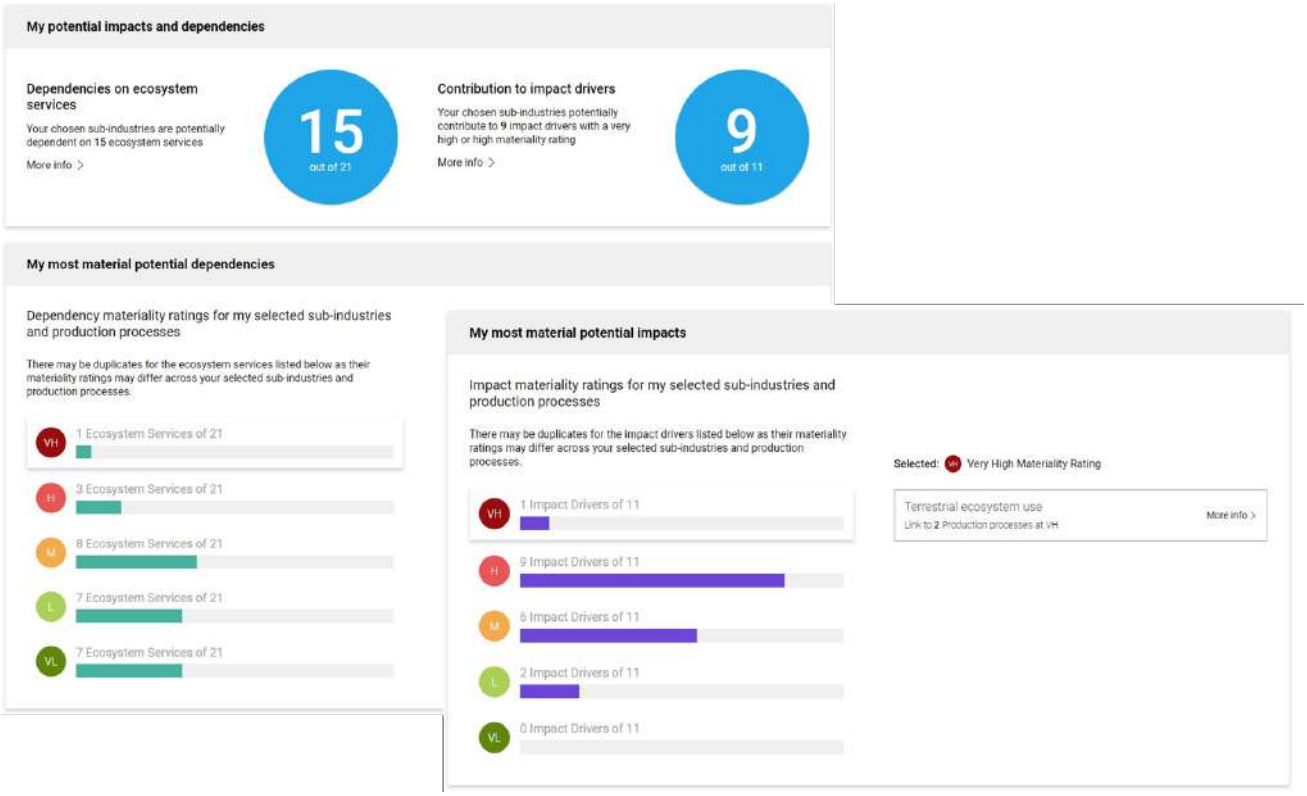
PERFORM THE ANALYSIS ON THE ENCORE ONLINE PLATFORM (FREE OF CHARGE)

Suitable for small/medium-sized management companies with a limited number of funds and companies

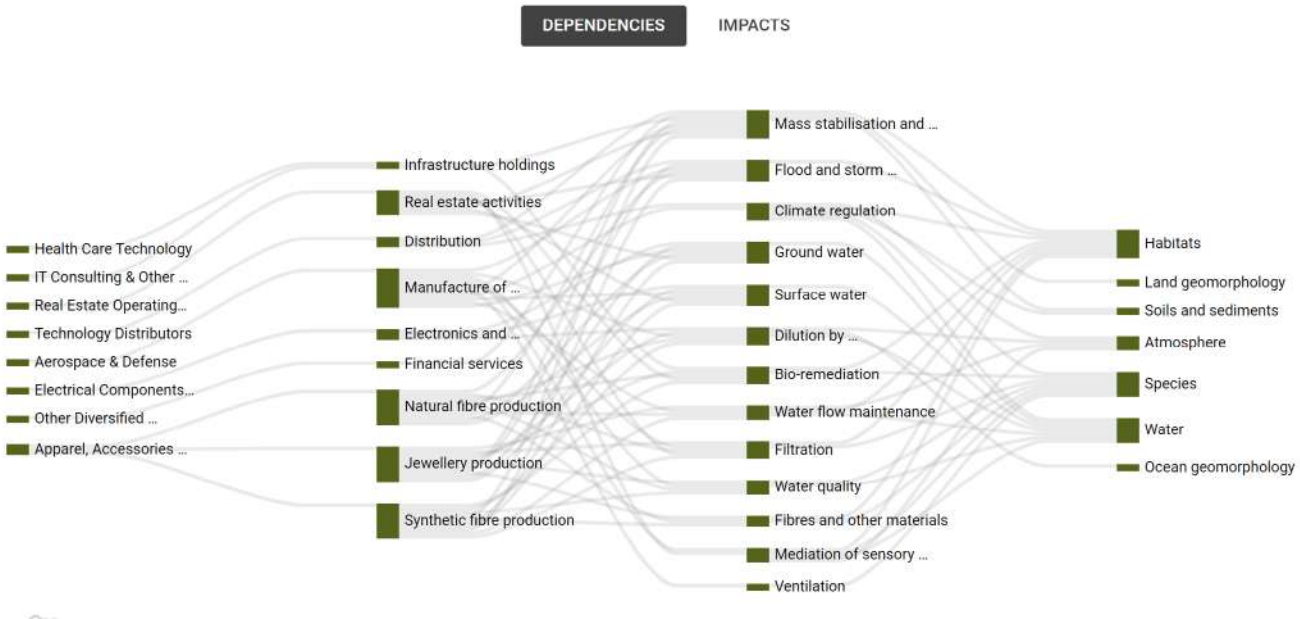
SETTING AND CUSTOMIZATION BY FUND



ANALYSIS OF THE RESULTS – MOST MATERIAL DEPENDENCIES AND IMPACTS



ANALYSIS OF THE RESULTS – SANKEY DIAGRAM



EXTRACT THE DATABASE FROM THE ENCORE TOOL AND CARRY OUT SCORING (FREE OF CHARGE)

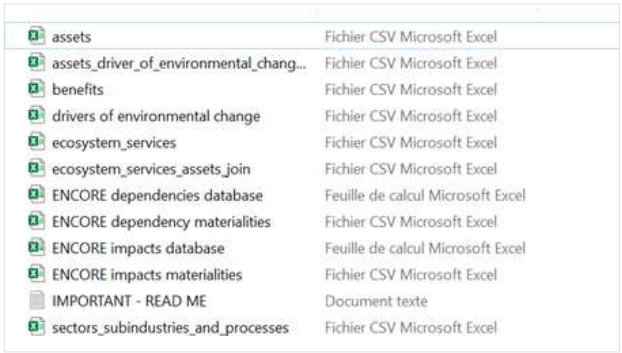
Suitable for medium/large management companies with many funds and companies

ACCESS TO ENCORE DATA FILES VIA THE ONLINE PLATFORM

Download the data that underpins ENCORE

The files in the download include the data ENCORE's Explore tool and Natural Capital Dashboard. Please cite the source as indicated within the 'Read Me' when using the ENCORE data files in your work.

DOWNLOAD



RELY ON AN EXTERNAL SERVICE PROVIDER TO CARRY OUT AN IMPACT AND DEPENDENCY ANALYSIS

Suitable for management companies wishing to outsource measurement.

4. Case study : analysis at portfolio level

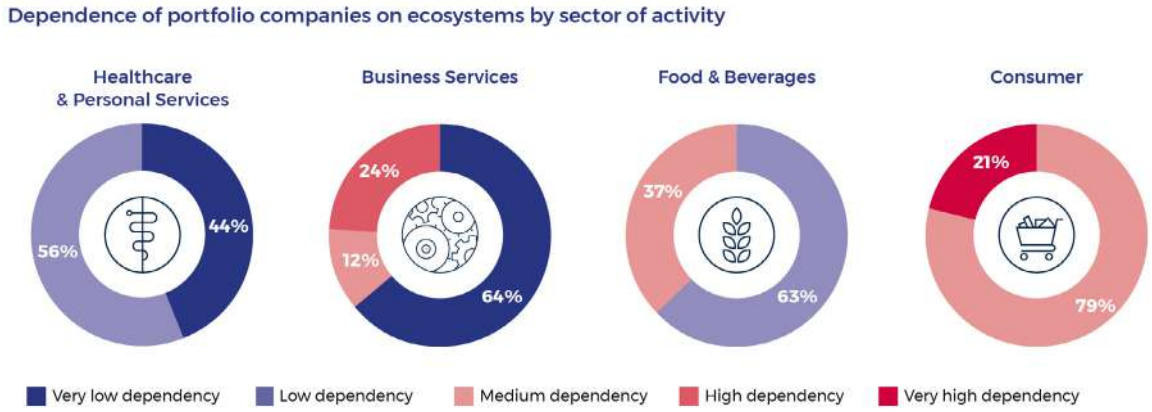
ANALYSIS AT COMPANIES' LEVEL

Source: Eurazeo

The ENCORE tool enables a comparison of the pressures and dependencies on biodiversity of the companies in the portfolio based on their sector of activity. After identifying the sector of activity of each company in the portfolio and using the ENCORE tool, the results obtained can be presented as shown above. As Company 1 and Company 4 operate in the same sector of activity, they have the same pressure scores.

ANALYSIS OF THE SECTORS AT PORTFOLIO LEVEL

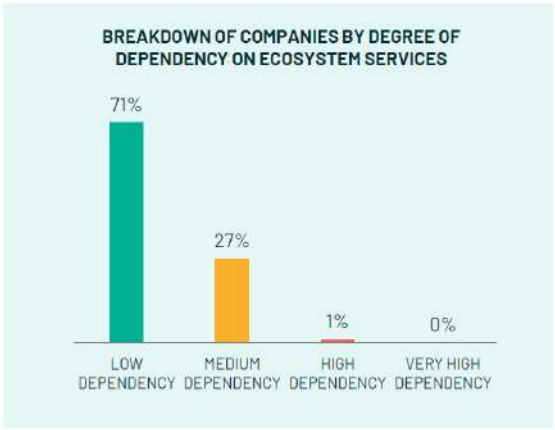
After matching the companies in the portfolio with their corresponding ENCORE sector of activity, an analysis of the impacts and dependencies of the portfolio can be carried out.

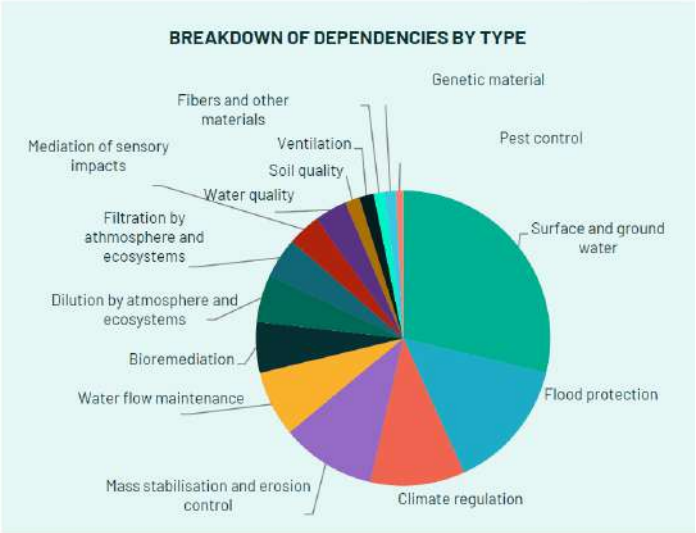


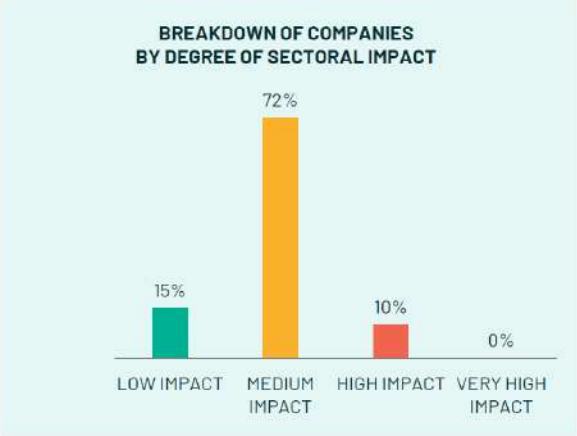
Source: Azulis

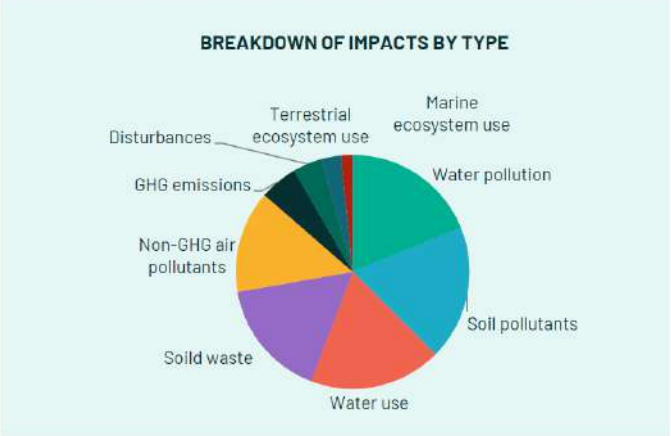
GLOBAL ANALYSIS OF AN EXISTING PORTFOLIO TO IDENTIFY THE MAIN IMPACTS AND DEPENDENCIES

ANALYSIS BY LEVEL AND TYPE OF DEPENDENCY





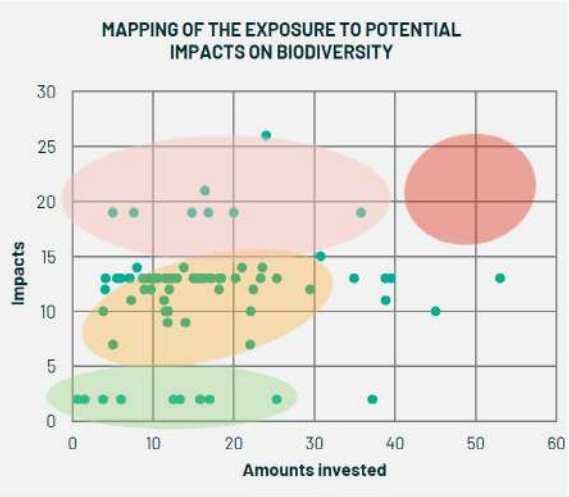




Source: Andera Partners

As shown by the graphs above, this portfolio has a majority of companies having a low level of dependency to biodiversity (71%), nearly all the rest of the portfolio companies having a medium level of dependency (27%). Existing dependencies lie mainly in the necessary use of water by certain portfolio companies during their activities, as well as in their vulnerability to floods, storms, climate change and soil erosion, which could have a strong impact on the future resilience of the concerned companies.

COMPARING THE AMOUNTS INVESTED TO DEFINE A BIODIVERSITY STRATEGY AT FUND LEVEL



Source: Andera Partners

Analysis of this portfolio shows that it is only marginally invested in companies with a high impact on biodiversity: the vertical axis represents the intensity of the sectoral impacts of the companies in the portfolio, while the horizontal axis represents the amounts invested by the financial product for each company. A financial product that has invested heavily in companies whose activities belong to sectors with high biodiversity impacts could be described as highly exposed to biodiversity risks. The same applies to the notion of dependencies. To pursue the objective of economic growth, it is tempting to invest in assets that are profitable in the short term. However, the resilience of the portfolio probably lies in a balance between amounts invested and moderate negative impacts, which comes down to considering the green and yellow shapes in the figure above.

On the other hand, it is possible to invest heavily in assets with significant positive impacts, to help restore or protect the environment. This could be seen here as the final stage in an «avoid, reduce, compensate» approach that is often advocated in environmental initiatives.

This first section highlighted the value of qualitative approaches to assessing biodiversity impacts and dependencies as a first step in integrating these issues into asset portfolio management.

THE ENCORE TOOL PRESENTED IS:

- Freely available,
- User-friendly and requiring limited data,
- And allows rapid identification of the portfolio companies most exposed to biodiversity issues (which will require further work).

To go further in integrating these issues, particularly for portfolio companies identified as highly exposed to biodiversity issues, more advanced and specific quantitative valuation methodologies are needed. This is the subject of the second section of this report.

Part 2 |
Biodiversity footprint at portfolio company level

There are now several tools available for quantifying the impact on biodiversity, or the biodiversity footprint. Based on approaches like those used for carbon footprints, they offer several advantages:

- the assessment of a company-specific biodiversity footprint (contrary to the sectorial values provided by the qualitative approaches presented in Part 1).
- companies operating in the same sector can be compared.
- changes in the impact of companies and portfolios can potentially be monitored, reflecting changes in their practices and operations.

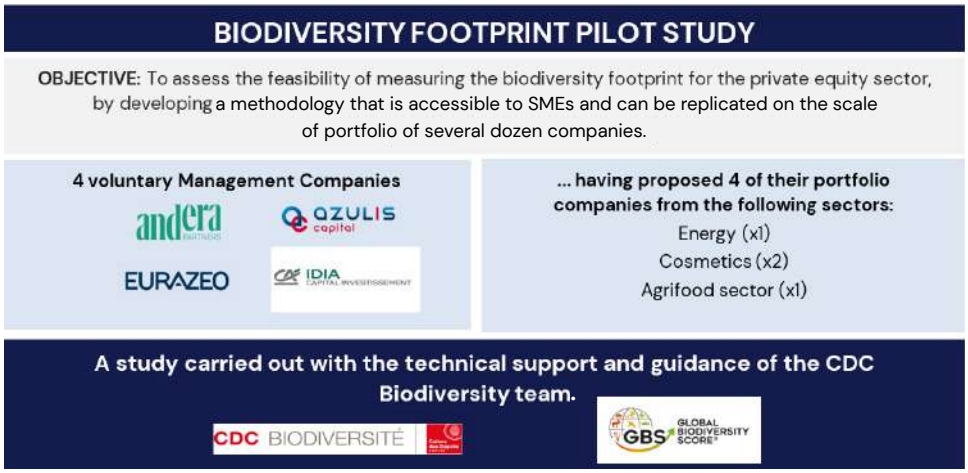
Today, three main tools are leading the market regarding the computation of biodiversity footprint at the participation level :

- Biodiversity Footprint for Financial Institutions (BFFI), developed by Pré, CREM and ASN Bank
- Corporate Biodiversity Footprint (CBF), developed by Iceberg DataLab & I Care
- Global Biodiversity Score (GBS), developed by CDC Biodiversité

More information on these three tools and use cases can be found in the reports on biodiversity assessment tools published by the EU Business & Biodiversity Platform[1] and by Finance for Biodiversity[2].

LAUNCH OF A PILOT STUDY :

In 2023, the members of the biodiversity working group of France Invest's Sustainability Commission wanted to go further in integrating biodiversity-related issues by launching a pilot study on measuring the biodiversity footprint. Four management companies volunteered to test the GBS (Global Biodiversity Score™) tool, developed by CDC Biodiversité.



1 EU Business & Biodiversity Platform
2 Finance for Biodiversity Foundation

1. Key concepts of a biodiversity footprint using the Global Biodiversity Score

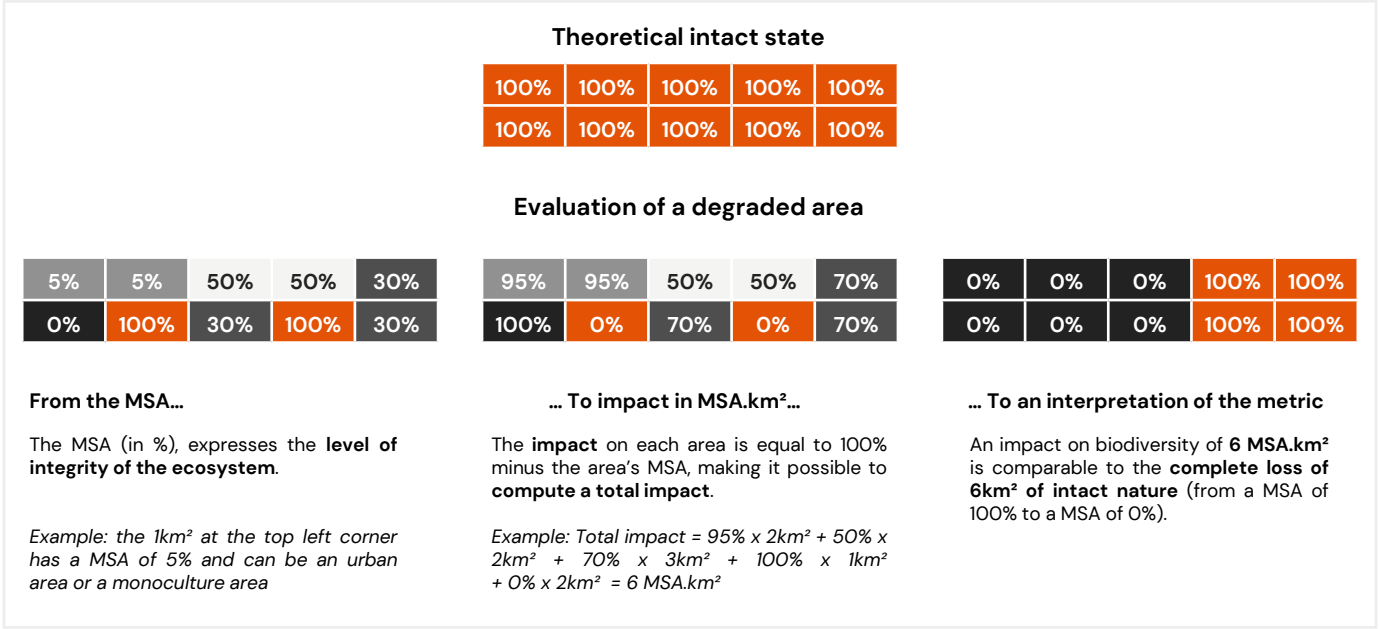
The Global Biodiversity Score (GBS) was developed to compute the impacts of economic activities on biodiversity, as well as their dependencies to nature. It can be used at all levels: processes, projects, business units, companies, portfolios, etc. It uses a pressure-impact model called GLOBIO, developed by the Netherlands Environmental Assessment Agency (PBL), to compute the impacts of the economic activities on biodiversity. The assessment of impacts using the GBS relies on five key concepts :

1. The MSA.km² metric	2. Assessment by Scopes	3. Breakdown of impacts	4. Pressure indicators	5. Quantitative data

1. The MSA.km² as unique metric

The Global Biodiversity Score measures impact on biodiversity, expressed in **Mean Species Abundance integrated over a surface impacted (MSA.km²)**. The MSA metric measures the level of integrity of an ecosystem, integrated over an impacted surface. It is computed in percentages ranging from 100 % for an undisturbed ecosystem, to 0 % for an ecosystem where all biodiversity is destroyed. Integrating the impacts expressed in MSA on the surface on which they would take place allows to compare quantitatively aggregated impacts from different types, using the MSA.km² as a unique metric. **An impact of 1 MSA.km² is equivalent to the total destruction of an undisturbed ecosystem on a surface of 1 km².**

ILLUSTRATION : FROM MSA TO THE MSA.KM² METRIC, AND ITS INTERPRETATION



Source : NGFS Occasional Paper, Central banking and supervision in the biosphere : An agenda for action on biodiversity loss, financial risk and system stability (2022).

2. Assessment by Scopes (1, 2 and 3)

In a similar way to a carbon footprint, GBS uses a **Scopes** approach to assess impacts on biodiversity, differentiating between :

- Direct activities ("Scope 1"),
- Non-fuel energy generation ("Scope 2"),
- Upstream and downstream value chain of the activity ("Scope 3").

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3. Breakdown of impacts

By types of ecosystems:

Impacts are reported separately according to the ecosystems they affect. Two types of ecosystems are currently covered by the GBS: **terrestrial ecosystems and freshwater ecosystems[3].**

By types of impacts :

To accurately measure the impact reduction efforts needed, the GBS accounts separately for two types of impacts:

- **Static impacts,** which represent cumulative negative impacts over time ("stock" logic),
- **Dynamic impacts,** which represent gains or losses occurring over the period being assessed ("stock variation" logic).

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4. Pressure indicators

Unlike climate impacts, which can be measured by accounting for the greenhouse gas emissions (GHG) generated by a company or project, the impacts on ecosystems and biodiversity are multiform. The IPBES has referenced a number of pressure indicators, the vast majority of which are covered and integrated into the GBS footprint calculation, for both terrestrial and freshwater ecosystems, with the exception of "invasive alien species" and impacts on marine environments.

ILLUSTRATION : IPBES PRESSURES COVERED BY THE GBS BIODIVERSITY FOOTPRINT TOOL

IPBES PRESSURES	*GBS / GLOBIO PRESSURES* Terrestrial	Freshwater	Marine
Land/sea use change	Land use Fragmentation of natural habitats Human encroachment	Wetland conversion	Not covered
Direct exploitation	Pressures due to resources extraction (crops, mining…)	Hydrological disturbance due to direct water use Pressures due to resources extraction (crops, mining…)	
Climate change	Climate change	Hydrological disturbance due to climate change	
Pollution	Atmospheric nitrogen deposition Terrestrial ecotoxicity	Land use in catchment of rivers Land use in catchment of wetlands Freshwater eutrophication Freshwater ecotoxicity	
Invasive alien species	Not covered		

Source: CDC Biodiversité

3 Impacts on marine environments are not currently covered by the GBS, due to a lack of information and data on the pressures exerted by human activities on these environments.

5. Quantitative data

The biodiversity footprint is a quantitative measure, which is specific to each organisation and based on activity data provided by the organisation. Similarly to a carbon footprint, the quality of the measurement depends on the quality and granularity of the input data, which can be (from the most robust to the most approximate):

- **Pressure data (e.g. ecotoxicity or Land use),**
- **Inventory data (e.g. tonnes of raw materials/ processed products),**
- **Monetary data (e.g. kEUR spent by type of expenditure)**

All this data will be combined by the GBS, prioritizing the most granular data available. Impact factors are then used to translate the input data into impacts on biodiversity, expressed in MSA.km².

2. Implementation of a biodiversity footprint for Private Equity portfolio companies

Although the main stages of a biodiversity footprint are **very similar to those of a carbon footprint**, the nature of the data to be collected may vary. For this case, the level of granularity of data collection has been adapted in order to facilitate the completion of the biodiversity footprint (see Appendix 2 on the specificities and adaptation needs in the context of private equity). This adaptation of the type and level of granularity of the data collected is preferable for a first biodiversity footprint and will evolve with the number of applications of this tool.

The three main phases of a biodiversity footprint assessment

PHASE	OBJECTIVES	APPROACH	DURATION
1. Framing phase	• Definition of the scope of the footprint (activities covered, geographical scopes), • Diagnosis of data availability, • Creation of questionnaires and data collection templates, customised for each portfolio company, • Validation of any assumptions made	• Interviews were conducted with both the Private Equity managers and the assessed companies • External support	Total : ~1 month Company's mobilisation : 1h/week
2. Data collection phase	• Collection of activity data • Collection of scientific or technical data and hypotheses (e.g., conversion factors between finished product and raw materials)	• Mobilising the company's internal teams • External support	Total : ~1,5 month Company's mobilisation : 0,3-0,5 day/week
3. Analysis phase	• Assessment of the biodiversity (quantitative) impacts" • Analysis of the footprint's final results"	• Using the GBS tool • External support	Total : ~1,5 month Company's mobilisation : 2h for restitution

The entire project lasted around 4 months. The assessed companies were involved throughout the whole project, from the validation of methodological choices to data collection. It is important to note that the quality of the footprint produced depends greatly on the quality and granularity level of the data collected at the input.

EXAMPLES OF DATA COLLECTED FOR THE AGRIFOOD SECTOR

One of the main adaptations of the methodology for this experimentation was the use of sector-specific data collection grids, which were created based on literature reviews and interviews with the assessed companies and the Private Equity managers. This example shows the data that could be recommended for an assessment of a company belonging to the agrifood sector, specializing in the transformation of agricultural products.

Example of data collected for a company of the agrifood sector		
SOURCE OF IMPACTS	**DATA COLLECTED**	**SCOPE**
Agricultural purchases	Agricultural products purchased in tons Physical data related to the agricultural products purchased (land occupation, fertilizers, phytosanitary products, water consumption, animal feed in the case of cattle products, etc.)	Upstream Scope 3
Packaging	Tonnage of packaging, per type (cardboard, paper, plastics, pallets, glass, etc.)	Upstream Scope 3
Transformation processes	Energy used for the transformation (energy source x quantity) Water consumption	Scopes 1-2
GHG emissions	Verified greenhouse gases emissions for the whole value chain	Scopes 1-2-3

METHODOLOGICAL ADAPTATIONS FOR THE PRIVATE EQUITY SECTOR

Proxies were created, based on the available data, to estimate impacts for which the data directly needed was not available.

Scope exclusions were decided, when necessary, due for example to a lack of data available or an unbalance between the resources necessary to gather data compared to the importance of the impact.

A sectoral approach was adopted. Before the evaluation, for each sector, the most important impacts of the sector were identified as much as possible to prioritize the collection of the data corresponding to these impacts. A data collection grid was created specifically for each sector. This grid emphasized the data to be collected in priority for the most important impacts identified, and specified the additional data that could be collected to refine the analysis if the internal resources allowed it.

The first two practices are also carried out as part of a comprehensive Biodiversity Footprint Assessments, but the difference lies in the level of ambition and therefore the number of assumptions made. **The sector-based approach is the differentiating factor** that limits the workload for the companies being assessed. Using the methodology developed for this experimentation, only four months are required to complete the assessment.

3. Overview of the results

The GBS methodology was used to translate the activity data from each of the pilot study participants into one main result : **the quantification of the total impacts on biodiversity generated by all their activities**[1], considering the assumptions made during the framing and data collection phase, **expressed in MSA.m².** As a reminder, 1 MSA.m² represents the total destruction of an undisturbed ecosystem on a surface of 1 m².

Around this central figure, which illustrates the measured impact of a participation and allows comparison (from year to year but also between different companies analyzed, to a certain extent between companies from different sectors (ex : Agrifood sector with land occupation inevitable for food production), the results of the biodiversity footprint can be broken down into different categories :

- **Ecosystems** (terrestrial or aquatic), providing an order of magnitude for the natural environments in theory most impacted by the company's activities;
- **Impact categories** (static or dynamic) to differentiate between the impacts resulting from and accumulated over the course of the company's historical activities (static impacts), and the impacts specifically generated by the activities during the year under assessment (dynamic impacts);
- **Scopes** (Scopes 1 & 2, Upstream Scope 3, Downstream Scope 3, depending on the relevance for each company), to understand where the impacts are located in the company's value chain and its potential level of influence on the impacts on biodiversity it generates;
- **The pressure factors on biodiversity,** with the eleven pressures covered by the GBS, enabling the company to identify the subjects to prioritize for a future biodiversity strategy or action plan in order to mitigate its most significant impacts on biodiversity.

ILLUSTRATION : EXAMPLE OF THE RAW RESULTS OF A BIODIVERSITY FOOTPRINT

BREAKDOWN OF IMPACTS BY TYPE OF PRESSURE AND SCOPE

Pressures	Scopes 1 & 2	Scope 3 - upstream		Total
		Tier1	Rest of the value chain	
Land use	xx	xx	xx	xx
Human encroachment	xx	Xx	xx	xx
Fragmentation	xx	xx	xx	xx
Atmospheric nitrogen deposition	xx	xx	xx	xx
Total by Scope	xx	xx	xx	xx
Terrestrial ecotoxicity	xx	xx	xx	xx

Minimum value — Maximum value

Source: Andera Partners

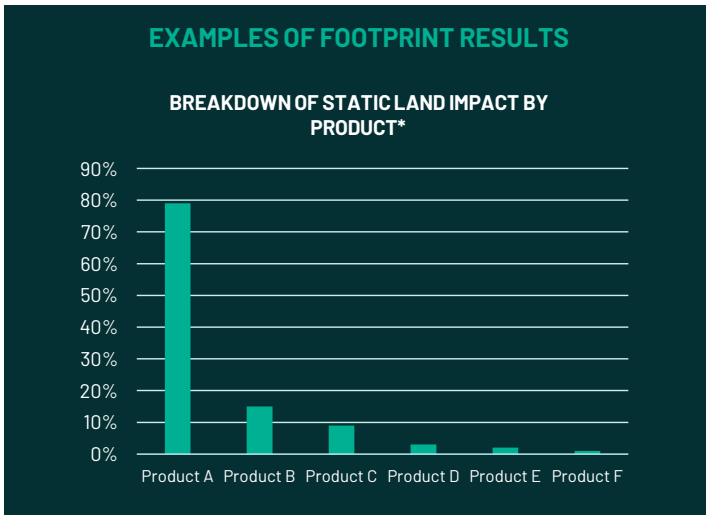
It should be noted that while the biodiversity footprint provides a vision of impacts expressed in a single metric (MSA.km²), it requires the simultaneous analysis of impacts of different nature and scale, which cannot be summed. Therefore, for the sake of clarity and conciseness, the results presented hereafter focus on terrestrial static impacts i.e., the cumulated impacts on terrestrial ecosystems.

1 The assessment of quantified impacts on biodiversity that was conducted covered the perimeter defined for the study.

Additional results and analyses can also be formulated based on the (raw) impact tables which come as outputs of the biodiversity footprint:

- **The calculation of impact intensities,** by relating the impact obtained to activity metrics (e.g., the amount of sales generated, by quantity or volume purchased, etc.);
- **A ranking of the top-X products with the greatest impact,** and the factors explaining this contribution (high impact per unit of product versus volume effect).
- **Analyses of impacts by type of product/service :** to identify the specific types of pressure associated with each of these products, as well as their preponderance in the company's total activity.

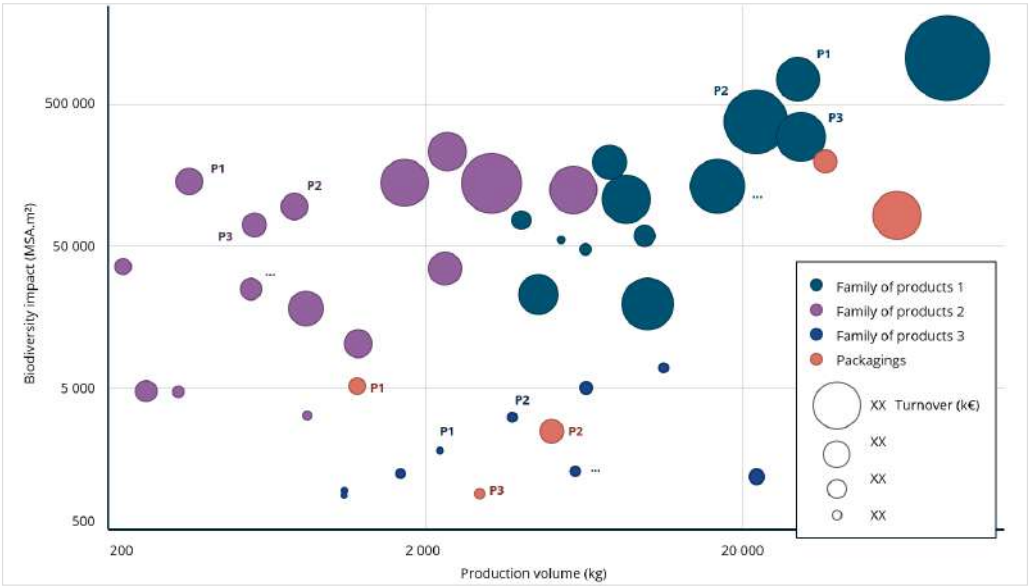
ILLUSTRATION: EXAMPLE OF A CHART SHOWING THE DISTRIBUTION OF TERRESTRIAL STATIC IMPACTS BY PRODUCT



Source: Andera Partners

These additional analyses, using the results of the biodiversity footprint, should be tailored to the specific business and/or sector of the companies studied to integrate the structural differences between sectors in particular regarding land occupation (e.g., intrinsic inevitable larger ground area in agrifood sector vs services sector). They will provide input for the development of a biodiversity action plan for the main impacts identified.

ILLUSTRATION: EXAMPLE OF A CHART COMPARING THE LAND-BASED STATIC IMPACTS OF SEVERAL PRODUCTS, BY CATEGORY



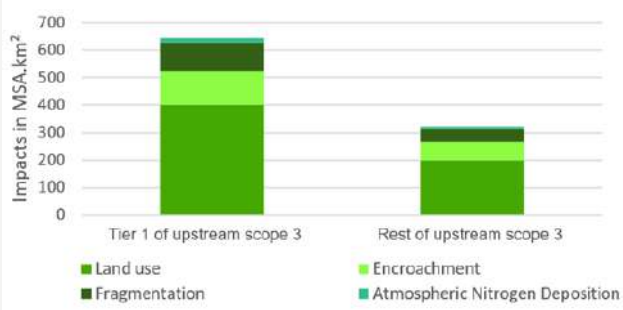
Source: Eurazeo

Overview of the results
Company 1 - Agrifood sector

Company 1 belongs to the agrifood sector and is specialized in the transformation of agricultural products. The assessment **focused on its value chain.**

As expected, and as highlighted in CDC Biodiversité's Agrifood Benchmark Factsheet[4], **the assessment shows that the impact is mostly driven by spatial pressures due to the cultivation of agricultural raw material. This impact is related to the land occupation that is inevitable for food production.**

This analysis must therefore be refined to better capture the agricultural practices. This could be possible with the Global Biodiversity Score but would require more time and data.

KEY RESULTS	UPSTREAM TERRESTRIAL STATIC IMPACTS OF COMPANY 1
A total upstream terrestrial static impact intensity of about 1800 MSA.m²/Keur of turnover. These impacts are mostly driven by spatial pressures (Land use, Encroachment and Fragmentation). **Two thirds** of the impacts are located at Company's **direct suppliers. Around 60 %** of the spatial pressures are due to the **main agricultural raw material used by the company.** For the other agricultural products purchased, a ranking was made to identify the ingredients that had the highest impacts relative to the amounts purchased.	
LEVERS IDENTIFIED TO IMPROVE THE ASSESSMENT	**LEVERS IDENTIFIED TO REDUCE IMPACTS**
The assessment **should integrate more granular data** at farm level and identify specific practices that have the highest impact of the biodiversity footprint. This would allow the classification and prioritization of specific agricultural practices and drive impactful and meaningful changes for biodiversity conservation. The assessment points out a large impact related to the land occupation, that is inevitable to produce food. It **does not integrate positive externalities** that are intrinsic to the agricultural sector (e.g., grasslands, agroecological practices, etc.), nor the ecosystemic services it provides (e.g., biomass production, landscape enhancement, etc.). Therefore, the results should be supplemented with other indicators on these topics, to have a comprehensive vision of the biodiversity-related risks and opportunities.	The main lever of action identified by the biodiversity footprint assessment is related to the reduction of the impact of the production of agricultural raw materials, through a **change of agricultural practices** (e.g., more sustainable practices).

** 1 MSA.m² represents the total destruction of an undisturbed ecosystem on a surface of 1 m²*

4 https://www.cdc-biodiversite.fr/wp-content/uploads/2022/05/Fiche-benchmark-Secteur-Agriculture-et-agroalimentaire.pdf

Company 2 - Energy sector

Company 2, which belongs to the energy sector is specialized in the **production of renewable energy.** The assessment focused on the development of solar panel projects (for which data was available).

KEY RESULTS

A terrestrial static impact intensity of about 250 MSA.m²/Keur of turnover*.

Spatial pressures (Land use, Encroachment and Fragmentation) are the main driver of terrestrial static impacts.

Most of them are due to the **production of materials necessary for the energy production systems, bought by the company** (upstream of the company's value chain). These materials might also cause high ecotoxicity impacts, but these results have a higher degree of uncertainty due to the limitations of the methodology for ecotoxicity at the time of the assessment and are thus not presented here.

It was found that the type of land occupied by the power plant has a relatively low impact compared to the necessary materials for the production of solar panels, bought by the company. Rooftop solar plants also have a lower impact than ground-based solar plants.

TERRESTRIAL STATIC IMPACTS OF COMPANY 2

LEVERS IDENTIFIED TO IMPROVE THE ASSESSMENT

Collecting data related to the exploitation of the power plants would allow for a more comprehensive assessment, and as such would increase Scope 1 impacts, which are quite low in the assessment conducted.

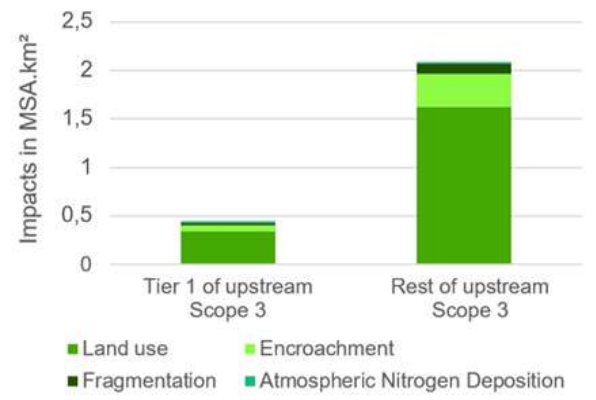
LEVERS IDENTIFIED TO REDUCE IMPACTS

- As the extraction of raw materials represents the company's main impact, a **circularity system** would considerably reduce the impact on biodiversity.
- A comparative assessment of available energy production technologies could help inform Company 2 on which system to install.
- During the assessment, impacts were computed for two types of energy production systems. It was determined that one system had comparatively less impact than the other. A literature review also highlighted that in general the most recent systems of the same category tend to have relatively lower impacts. The main lever to reduce impacts would thus be to **better analyze the environmental performance of the energy production systems, in order to choose the less impactful systems.**
- Finally, another important lever (even if it does not represent the main part of the impact) is to **prioritize non- sensitive locations for biodiversity** stakes when installing new power plants.

** 1 MSA.m² represents the total destruction of an undisturbed ecosystem on a surface of 1 m²*

Company 3 – Cosmetics sector

Company 3, which belongs to the Cosmetics sector, is specialized in **the sale of cosmetics and household products assimilated to cosmetics.** The assessment focused on the **products purchased and the ingredients necessary to process the cosmetics sold,** because it was expected that this is where most of the impacts would occur.

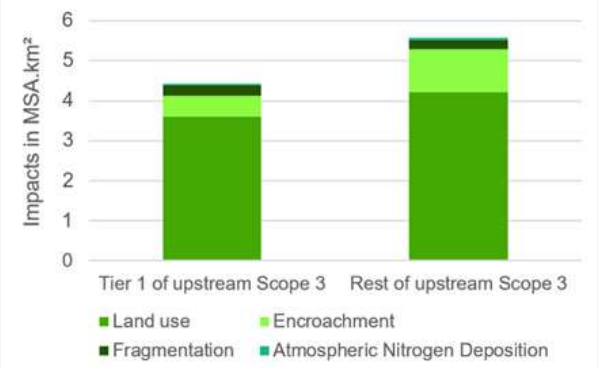
KEY RESULTS	UPSTREAM TERRESTRIAL STATIC IMPACTS OF COMPANY 3
The terrestrial static impact intensity is about 317 MSA.m²/Keur of turnover*. Most of the spatial pressures (Land use, Encroachment and Fragmentation) are due to the **production of the ingredients,** which are mainly agricultural raw materials. In particular, the land occupation necessary to grow the ingredients contributed substantially to the terrestrial static impacts. A ranking of the most impactful ingredients was created to show their relative impact intensity.	

LEVERS IDENTIFIED TO IMPROVE THE ASSESSMENT	LEVERS IDENTIFIED TO REDUCE IMPACTS
• The coverage of the ingredients was not exhaustive and mainly focused on agricultural ingredients. Improving this coverage would allow for a more precise assessment of Company 3 upstream impacts. • For the most impactful ingredients, a deep dive could be conducted to better understand their biodiversity impacts and to identify concrete actions to implement.	• The ranking of ingredients allowed to identify the ones with the highest and smallest impact intensities. For the most impactful ingredients, it is recommended to **engage with suppliers** in order to improve their practices. It was also recommended, when applicable, to **prioritize product formulations** using the less impactful ingredients. • Engaging with suppliers to increase the **share of sustainable agricultural practices** in the supply chain is a key lever to reduce impacts.

** 1 MSA.m² represents the total destruction of an undisturbed ecosystem on a surface of 1 m²*

Company 4 - Cosmetics sector

Company 4, which belongs to the Cosmetics sector, is specialized in the sale of cosmetics, as well as the processing of a part of the products sold. The assessment focused on the **production of the ingredients and the processing of the products.** As Company 3 and Company 4 belong to the same sector, many conclusions presented below are identical, but the experimentation allowed to identify priorities specific to each company.

KEY RESULTS	UPSTREAM TERRESTRIAL STATIC IMPACTS OF COMPANY 4
The terrestrial static impact intensity is about 340 MSA.m²/Keur of turnover*. Most of the spatial pressures (Land use, Encroachment and Fragmentation) are due to the **production of the ingredients**, which are mainly agricultural raw materials. As for Company 3, the land occupation necessary to grow the ingredients contributed substantially to the terrestrial static impacts. A ranking of the most impactful ingredients was created to show their relative impact intensity.	
LEVERS IDENTIFIED TO IMPROVE THE ASSESSMENT	**LEVERS IDENTIFIED TO REDUCE IMPACTS**
• The coverage of the ingredients was not exhaustive and mainly focused on agricultural ingredients. Improving this coverage would allow for a more precise assessment of Company 3 upstream impacts. • For the most impactful ingredients, a deep dive could be conducted to better understand their biodiversity impacts and to identify concrete actions to implement.	• The ranking of ingredients allowed to identify the ones with the highest and smallest impact intensities. For the most impactful ingredients, it is recommended to **engage with suppliers** in order to improve their practices. It was also recommended, when applicable, to **prioritize product formulations** using the less impactful ingredients. • Engaging with suppliers to increase the **share of sustainable agricultural practices** in the supply chain is a key lever to reduce impacts.

** 1 MSA.m² represents the total destruction of an undisturbed ecosystem on a surface of 1 m²*

4. Additional results from the pilot project

FEEDING REGULATORY REPORTING REQUIREMENTS

Private Equity managers can use biodiversity assessments made on their portfolios to feed regulatory reporting which require the disclosure of impacts and dependencies on biodiversity (e.g. Article 29 of the French Energy and Climate law, the TNFD or the CSRD for the invested companies…). This reporting can be based on both screenings of entire portfolios and deep dives on a handful of selected companies.

SELECTING RELEVANT COMPANIES FOR A BIODIVERSITY FOOTPRINT ASSESSMENT

In order to select priority companies for a quantitative Biodiversity impact analysis, it is recommended to target companies with high biodiversity risks…. One of the key lessons about how to select priority companies for a quantitative biodiversity impact analysis is: priority companies will be those with high biodiversity risks, but also with characteristics that make the exercise feasible.

THREE FACTORS FOR SELECTING COMPANIES TO ASSESS WITH A QUANTITATIVE FOOTPRINT (MSA.M²)	
PRE-IDENTIFICATION OF BIODIVERSITY MATERIALITY	**High-level qualitative dependency and impact analysis already carried out on portfolio company (e.g. ENCORE assessment), the results of which highlight that the investee company belongs to a high-impact sector on biodiversity.**
COMPLEXITY OF THE ACTIVITY	The more complex a company's activity (involving many different activities and/or a highly diversified value chain), the more complex it is to assess a biodiversity footprint. At this stage, the methodological adaptation implemented for the Private Equity sector is therefore recommended for companies with a "simple" structure and/or for more complex businesses with a focus on the most important activities.
AVAILABILITY OF HUMAN RESOURCES	**The availability of human resources dedicated to environmental topics and existing reporting processes are a key factor of success**

CAPITALIZING ON CLIMATE EXERCISE

As mentioned above, a biodiversity footprint mobilizes a large amount of activity data. It is therefore possible to **optimize and mutualize the data collection process with the one of a carbon footprint** to lighten the workload of the assessed companies. Indeed, all the data collected for a carbon footprint can be useful for measuring a biodiversity footprint. However especially for sectors which have large surface occupations (agrifood, mining, oil & gas, etc.), it is important to collect data in addition to the data collected for carbon footprint assessments.

USING THE CARBON FOOTPRINT ASSESSMENT DATA – IN LINE WITH CDC BIODIVERSITE'S RECOMMENDATIONS TO THE EFRAG	
Data available in the carbon footprint assessment used in the experimentation	**Extra data gathered outside of the carbon footprint assessments**
• Turnover • GHG emissions • Energy purchased • Commodities purchased • Products purchased • Surface occupation of direct activities	• Water consumption • Surface occupation of the value chain • Emissions of nitrogen and phosphorus (to estimate concentration in water) • Use of phytosanitary products

BEYOND THE BIODIVERSITY FOOTPRINT ASSESSMENT

While the results of biodiversity assessments (qualitative and/or quantitative) are particularly **useful for engaging with invested companies on biodiversity stakes,** these assessments can be advantageously complemented by other approaches :

- **Geographical approach** (cf. the recommendations of the Taskforce on Nature-related Financial Disclosure (TNFD) for the Locate phase, as well as dedicated tools such as IBAT[5]).
- **Defining a biodiversity strategy and concrete action plan:** the companies assessed can use the results to identify hotspots of impacts along their whole value chain, and thus the action levers that could contribute to reduce their biodiversity footprint.

DEFINING A ROBUST NATURE STRATEGY AND RELATED ROADMAP

Apart from setting a clear corporate vision and objectives, the strategy should be flexible to adapt to an evolving regulatory landscape and to incorporate sectoral guidance and best practices. The strategy implementation and success must be supported by an actionable roadmap, tailored governance and inclusive engagement with stakeholders. The Nature-related Strategy should include:

- The goals set and how they align with the Global Biodiversity Framework objectives
- The targets and milestones to reach the goals
- The time horizon
- The indicators, metrics and KPIs adopted to monitor and track progress against the targets
- The processes to engage with the relevant stakeholders
- The governance and resources needed to support the strategy

Building and piloting the strategy requires proper knowledge and skills development of the internal stakeholders.

5 IBAT: Integrated Biodiversity Assessment Tool

Part 3 |

Comparative summary of two biodiversity assessment tools (qualitative vs quantitative)

A qualitative assessment is an essential first step to identify impacts and dependencies of a company or portfolio on nature.

In addition to meeting regulatory requirements, it allows to identify and prioritize companies that require in-depth analysis with a view to defining a specific strategy to reduce the risks and impacts linked to biodiversity issues for each company concerned.

Biodiversity footprint measurement provides a quantitative assessment of a company's biodiversity impact that is "unique" and comparable. It is the counterpart of the carbon footprint and fulfils a similar role in understanding and reducing impacts on biodiversity.

COMPARISON BETWEEN THE TWO APPROACHES:		
	QUALITATIVE ASSESSMENT OF DEPENDENCIES AND IMPACTS (DOUBLE MATERIALITY APPROACH)	FOOTPRINT MEASUREMENT WITH THE GBS TOOL
RESULTS OBTAINED	Qualification of the **level of impact and dependency** of direct operations (provided by scores defined at sector level)	Quantitative measurement of a company's biodiversity impact, expressed in MSA.km² and broken down by segment of the value chain, nature of impact, ecosystems and type of pressures on biodiversity. The main advantage of this assessment is that it allows to identify **the most material sources of impacts of the activity** (products or processes that contribute the most to the impacts).
IMPLEMENTATION	• **Data requirements:** limited (breakdown of sales by sector) • **Time:** Quick (<1 week) • **Cost:** Low to none (if done autonomously) • **Use of tools:** simple, freely available • **Analysis of results:** simple but may require some basic knowledge of biodiversity The assessment can be carried out internally by the ESG team if it has some knowledge of biodiversity.	• **Data requirements:** high (information specific to investments), can be pooled with data collection for the carbon assessment. More details page 30 • **Time:** long (several months) • **Cost:** Medium to high, depending on complexity • **Use of tools:** complex, proprietary tools • **Analysis of results:** complex The assessment should be carried out with the external support of experts trained in the GBS methodology. Skills can gradually be brought in-house to make assessments autonomous.

	QUALITATIVE ASSESSMENT OF DEPENDENCIES AND IMPACTS (DUAL MATERIALITY APPROACH)	FOOTPRINT MEASUREMENT WITH THE GBS TOOL
LIMITS	• The ENCORE database is still being developed, and some impact and dependency scores are missing for several sectors (preventing them from being assessed). • The levels of impact and dependency are generic (provided on a sectoral scale) and therefore do not allow for a specific or precise assessment of a company's impacts and dependencies (cf. biodiversity footprint for this purpose). • The sectoral scale removes the possibility of comparing companies within the same sector. • Not relevant for establishing a risk and impact management strategy or for monitoring portfolio performance	• As the methodologies are still being developed, some products or pressures on biodiversity do not yet have associated impact factors (leading to a partial assessment). • A demanding implementation • The generic nature of the impact factors by product type means that it is not possible to integrate and/or monitor the impacts of potential changes in practices related to nature (e.g., organic versus non-organic farming). In order to differentiate between specific practices in a production process, it is necessary to have granular data. Otherwise, the same processes in different companies will have similar impacts. For instance, to differentiate between organic and non-organic farming, it is necessary to have precise data such as phytosanitary products used, Land use for the cultures, etc. • The MSA.km² metric allows for a better public understanding of the impacts as it is an aggregated metric. However, in order to identify precisely the sources of impacts, a breakdown of impacts is necessary.
RECOMMENDED USE	Informative value during preliminary screening to assess the level of exposure of a portfolio and identify the most exposed companies (to initiate dialogue with these invested companies and go further in the analysis and definition of an action plan).	To be implemented for invested companies through a qualitative analysis or a quantitative screening of the whole portfolio. This more in-depth analysis will make it possible to identify the main areas of impact to guide the implementation of actions aimed at reducing impacts and managing risks.

These two approaches (qualitative and quantitative) to biodiversity impacts and dependencies assessmen are therefore complementary and enable a pragmatic "funnel" approach.

It is also important to mention that these assessments are not the final goal when it comes to incorporating biodiversity, but rather levers for identifying impacts, risks and opportunities in order to inform decisions:

- Investment (during the screening or due diligence stage)
- Support and definition of strategic priorities for portfolio companies most exposed to biodiversity issues, and for which it will be necessary to define an appropriate action plan.

Part 4 |
The road ahead

Financial institutions represent a lever to accelerate the integration of biodiversity stakes within portfolio companies' business models and practices, as called by the Finance for Biodiversity Pledge. Launched in September 2020 by financial institutions around the globe to call and commit to act on biodiversity, the Pledge has since been signed by more than 100 financial institutions committed to measuring their impact on biodiversity.

The relationship of Private Equity managers with their invested companies allows them to encourage companies to start their biodiversity journey and support them along the way, by providing expertise and resources focusing on 3 main pillars :

1. **Raising awareness and building internal capacity on biodiversity within the management company,** training collaborators to biodiversity stakes, key concepts and materiality assessment for instance. Key collaborators (Top Management, ESG team, Asset managers) should be provided with appropriate additional training (strategy and regulations, assessment methodologies, etc.) and resources to properly integrate biodiversity into their daily activities.
2. **Assessing the biodiversity-related Dependencies, Impacts,** Risks and Opportunities (DIRO) of their portfolios. Private Equity managers can leverage the existing assessment methods most adapted to their needs. The assessment, which can be qualitative and high-level at first, should seek to progressively cover the whole portfolio in order to inform the development and strengthening of a robust Nature strategy to better manage biodiversity-related risks and create added value. This milestone is key to the comprehensive assessment of the situation and prioritization of actions to be taken.
3. **Defining a robust biodiversity strategy** informed by the assessments and a roadmap to integrate biodiversity in the business. Apart from setting a clear corporate vision and objectives, the strategy should be flexible to adapt to an evolving regulatory landscape and to incorporate sectoral guidance and best practices. The strategy implementation and success will be determined by an actionable roadmap, tailored governance and inclusive engagement with stakeholders.

Given the scale of the environmental challenges in general and those associated with biodiversity in particular, pooling experience and efforts and sharing best practice will be a fundamental lever for the rapid and successful integration of these issues.

WITHIN THE MANAGEMENT COMPANY

Raising awareness and building internal capacity on biodiversity

- C-level awereness raising (regulations, frameworks, strategy)
- Support the ESG team and portfolio managers to increase their biodiversity maturity and integrate biodiversity in ESG practices along the investment cycle
- Training of all the staff on nature and biodiversity
- Allocate resources to properly assess and report on nature

Support ⇄ Report

Define a robust biodiversity strategy and roadmap

- Establish your ambition level, set and prioritize your objectives accordingly
- Integrate and anticipate regulations
- Develop a roadmap to meet your objectives, monitor your progress, inform you performance, report and disclose
- Ensure success with adapted governance and stakeholders engagement (internal and external)
- Communicate transparently on you commitments and progress

IN PORTFOLIO COMPANIES

Inform ⇄ Execute

Assess biodiversity related Dependencies, Impacts, Risks and Opportunities (DIRO)

Portfolio screening of impacts and dependences	Deep-dive assesments on a selection of companies with quantitative approaches
Improve screening coverage	Engage with companies to improve the accuracy of the assessment
Engage in priority with companies screened as high DIRO	Engage with companies to define action plans
Move towards more quantitative approaches as maturity increases	

- Support maturity improvement and capacity building within participations (dialogue, training, ...)
- Manage nature-related risks and create added value

Guide ⇄ Inform

Appendix 1 :

THE USE CASES OF THE GLOBAL BIODIVERSITY SCORE

WHICH USE CASE FOR WHICH ECONOMIC ACTOR ?

Depending on the context, different approaches are possible for measuring the biodiversity footprint of an economic player. For financial players, there is a major difference between listed assets, for which public data exists, and unlisted assets. The reduced availability of public data on private companies implies that private equity managers work in close collaboration with their portfolio companies to collect the data needed to produce the footprint.

	BIA-GBS		GBS-FI – Loans and Equity		
Type of assessment	Screening			Advanced screening	Simplified Biodiversity Footprint Assessment
Asset class	Listed corporates (equities and bonds), sovereign bonds	All types of portfolios		Real estate, private companies, project finance	Infrastructure, private companies (Small to mid-caps)
Data collected by the end-user	ISIN and invested amounts	Sector and country of the financing Outstanding or investment amount Turnover, EVIC		Screening data < 20 portfolio-specific physical indicators** (GHG, land occupation, raw materials…)	Screening data <100 refined physical indicators**
Cost of the assessment	Subscription with annual fee	~25-35k€		~35-45k€	~15-20k€ / company ~10-40k€ / infrastructure
Time needed	Immediate (access to a database)	3-5 months *			
Business application	• Identification of hotspots of risks: key sectors and/or issuers for further analysis • Ground for engagement with corporates			• Identification of best-in-class players • Monitoring of portfolios' biodiversity performance	• Identification of hotspots of impacts • Definition of action plans for the issuer

* depending on the sector, the amount of data on hand for the assessment and the availability for data collection
** physical indicators are input data indicators entered into the GBS. There are around 100 core physical indicators, and then additional sector-specific indicators can be used to refine the assessment (e.g. pesticides used for the agrifood sector).

Appendix 2 :

ADAPTING THE BIODIVERSITY FOOTPRINT ASSESSMENT TO THE SPECIFICITIES OF THE PRIVATE EQUITY SECTOR

In addition to the usual complexities faced by financial institutions whose portfolios comprise a multitude of assets, **the Private Equity sector has specific stakes due to the size of companies in the portfolios**, which would usually range from unlisted small to mid-cap. This specificity creates various constraints.

First, **the company's reporting processes might not be as developed as for large companies**, given that they are not subject to the same regulatory requirements. Moreover, the company might have very limited **human resources to dedicate to the biodiversity footprint measurement**, therefore **limiting the access to relevant data.** Also, the company might have **a low level of influence on their value chain,** and therefore limited access to their suppliers' data.

The specificities of the Private Equity sector create constraints that require an adaptation of the existing biodiversity footprint methodologies and still need to be investigated based on the initial ideas for optimizing the collection of carbon footprint data and sectoral approaches.

The refinement of the methodology, developed for biodiversity footprint assessments tailored to Private Equity, would require conducting news rounds of experimentation on new sectors.

It would be interesting as well to conduct pilots on sectors already covered by the methodology, to ensure that all use cases of the sector are well covered, and to prove the robustness of the methodology over several comparable assessments.

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