eco.business Fund – Biodiversity indicator methodology

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1. Introduction

The eco.business Fund (EBF) aims to address the challenges of biodiversity conservation, climate change adaptation and mitigation, and resource efficiency while fostering economic development in Latin America and Sub-Saharan Africa. It supports economic development by providing financing and technical assistance to financial institutions and businesses that adopt sustainability practices, focusing on agriculture and agribusiness, fisheries and aquaculture, forestry, and sustainable tourism.

The fund's commitment to biodiversity conservation aligns with international agreements and standards, such as the Finance for Biodiversity Pledge, the United Nations Sustainable Development Goals, and IFC performance standards. As part of the commitment to transparency and accountability the fund reports on a set of impact indicators based on its Theory of Change.

To better understand and quantify its impact on biodiversity, the fund created a metric to assess progress, support decision-making, foster accountability, and align with global standards. The metric was financed by the EBF Development Facility and developed in collaboration with PRé Sustainability and the fund advisor, Finance in Motion, throughout 2024.

2. BFFI methodology

The Biodiversity Footprint Financial Institutions (BFFI) methodology[1] was created by PRé, CREM, and ASN Bank. It uses the life cycle assessment (LCA) approach to measure the environmental and social impacts of products or services from raw materials to how they're eventually disposed of. The BFFI relies on the ReCiPe[2] model, which tracks how natural resources (i.e. land, water, and energy) are used and how that affects the environment and human well-being. This model is combined with databases that contain environmental data, like greenhouse gas emissions and land use.

The methodology follows four steps to derive a single number for biodiversity loss called Potentially Disappeared Fraction of species (PDF). The PDF measures how much damage is done to an ecosystem, expressed as PDF.m^2.yr that shows what percentage of plant and animal life might be lost in a certain area over time.

[1] Biodiversity assessment - PRé Sustainability
[2] ReCiPe - PRé Sustainability

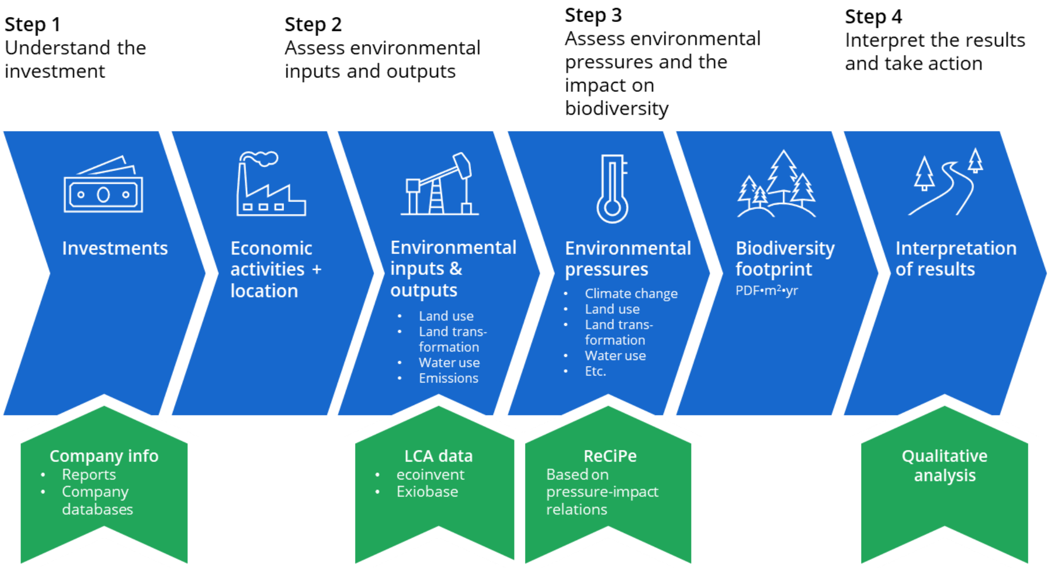

Figure 1 BFFI four-step approach to biodiversity assessment

The BFFI steps are as follows (Figure 1):

- **Step 1 – Money flows**: Analyse how investments are used and what types of businesses or activities they support;
- **Step 2 – Environmental flows**: Identify the environmental inputs and outputs from the economic activities supported by the investment using LCA databases (World Food LCA database - WFLDB and Ecoinvent 3.10);
- **Step 3 – Impact on nature:** Translate how emissions and resource use exert environmental pressures (i.e. climate change, land and water use, etc. in Figure 2)[3] and how they impact biodiversity;
- **Step 4 – Analyze results:** Combine the numbers and analysis to show how much harm is done (using the PDF.m^2.yr unit)

[3] Impact categories considered in analysis: global warming- terrestrial ecosystems, global warming- freshwater ecosystems, ozone formation- terrestrial ecosystems, terrestrial acidification, freshwater eutrophication, marine eutrophication, terrestrial ecotoxicity, freshwater ecotoxicity, marine ecotoxicity, land occupation, land transformation, water consumption-terrestrial ecosystem, water consumption-aquatic ecosystems

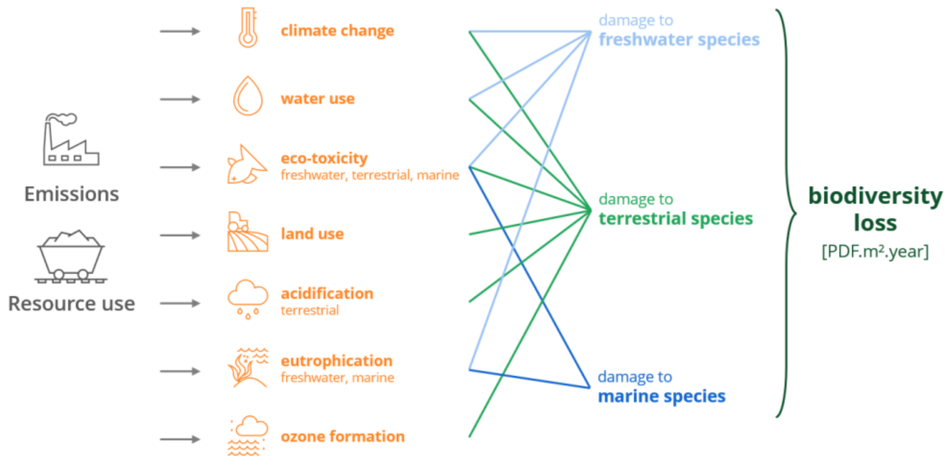

Figure 2 Step 3 in the BFFI method connecting environmental mechanisms in the ReCiPe method to biodiversity loss

1.1. EBF - BFFI methodology adaptation

The BFFI methodology assesses impacts on biodiversity, but it doesn't include the positive impacts from sustainability practices such the ones supported by EBF. Therefore, when applying the BFFI method to the EBF financing model, additional steps were needed to quantify the benefits of sustainable practices supported by the fund:

- Identify and quantify biodiversity improvements (e.g., reduced emissions, improved land management) resulting from eligible sustainable practices—such as sustainability certifications and Green List requirements—implemented by stakeholders financed through the fund's partner financial institutions or direct investments.
- Adapt databases such as the WFLDB to calculate the biodiversity footprint for each crop, country, and sustainable practice combination, to measure the fund's impact on biodiversity per year.
- Using data reported by the investees on the number of hectares cultivated across different crops and countries of the fund's operations, a comparison of the environmental footprint under conventional practices (reference situation) with the footprint under the sustainable practices financed by the fund is performed. Finally, the difference in impact between the two scenarios is calculated, this difference will be understood as the avoided impact due to the sustainable practices.

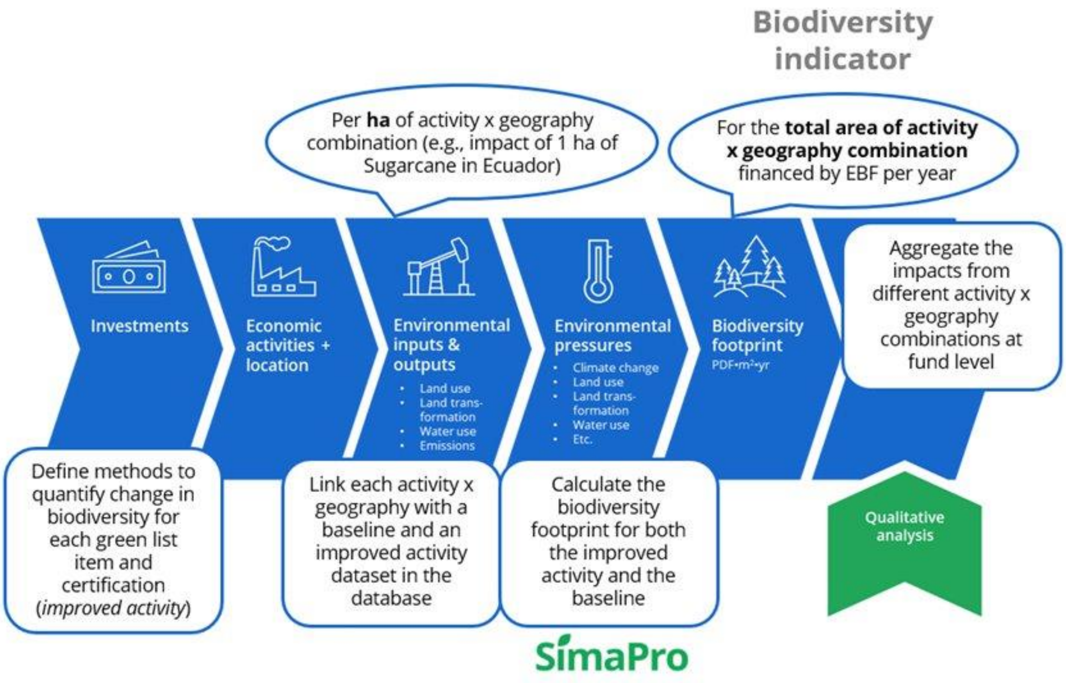

Figure 3 Adaptation of BFFI for the assessment of EBF's improved agricultural practices

When measuring the impact of the fund, only the sustainability practices and crops that made up a large part of the investment portfolio were included in the analysis Table 1 provides the scope covered by the indicator[4].

Table 1 Final scope for aggregate level

	N° Crops	N° Countries	N° GL items	N° Certifications	% of hectares reported for EBF in 2023
Initial data	40	14	29	20	100%
Final scope	17	11	8	13	LAC: 90% SSA: 99%

Translating sustainable practices into biodiversity impacts

The following section shows a few examples of how the practices can be translated into impacts on biodiversity.

[4] Scope covers:
- Per country and crop, the area reported should be at least 0.5% of the total area of the portfolio
- Goods that are below the 0.5% threshold but will most likely have a bigger share in the future portfolio
- Sustainability practices criteria are linked to the supply chain of the activity or the activity itself and has a material (potential) effect on biodiversity
- Sustainability practices were deemed quantifiable through e.g. explicit quantified thresholds

1. **Adoption of Dry Sugarcane Cleaning System (DCS):** The DCS is a sustainable practice supported by EBF, that cleans sugarcane without using water. It helps avoid yield loss and protects sugar quality, while saving water. Water savings are calculated by adjusting freshwater consumption in the WFLDB dataset, resulting in water use reduction compared to the baseline. These savings benefit both freshwater and land-based species by helping keep more water in natural ecosystems.

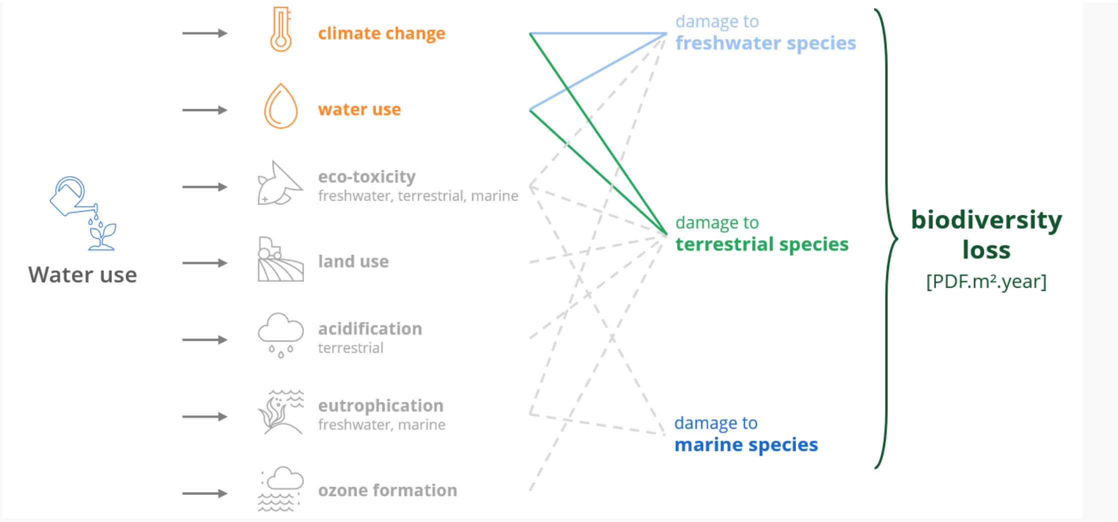

Figure 4 Biodiversity pathway of DCS

2. **Reduction of agro–chemicals use:** EBF supports farming activities certified under sustainability standards with stricter – comparing to national and international laws – and more environmentally friendly standards for agro-chemical use. The uncontrolled use of agrochemicals can harm soil, water, and air quality, disrupt ecosystems, reducing biodiversity. Some of these certifications ban or phase out certain chemicals over time based on factors like toxicity to bees, lack of safer alternatives, or broader public concern. In the analysis, chemicals that are already legally banned are excluded from both the baseline and improved practice data. For certifications that set stricter standards and prohibit specific chemicals, their use and emissions are recorded as zero. However, chemicals that are restricted but not phased out are still included in the analysis.

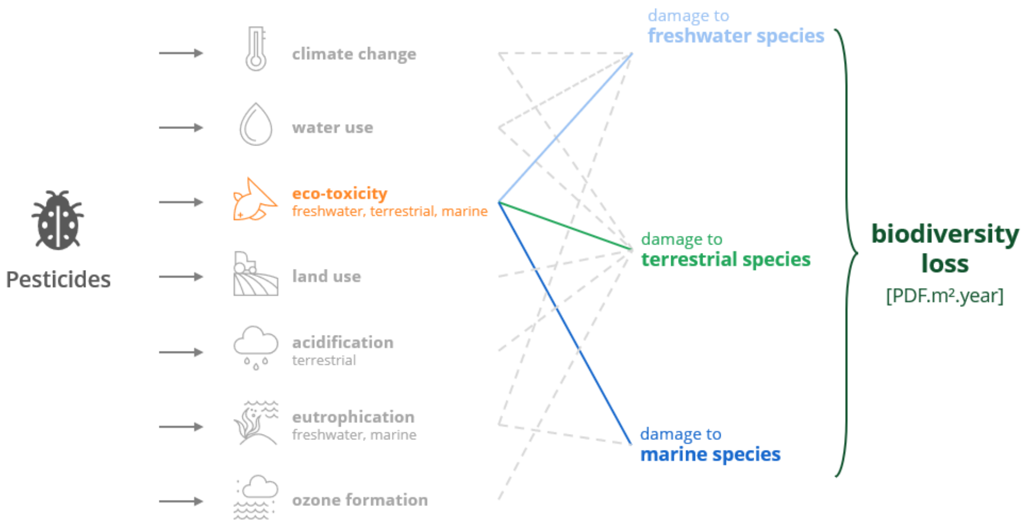

Figure 5 Biodiversity impact pathway of agrochemical restrictions

3. Interpretation of results

There is an ongoing debate about the definitions of "positive impact" and "avoided impact" with regards to biodiversity. The Partnership for Biodiversity Accounting Financials (PBAF) has not defined positive impact, while the Taskforce on Nature-related Financial Disclosures (TNFD) defines it as positive changes to nature through increasing positive drivers and reducing negative ones. In the financial sector, Multilateral Development Banks (MDB)[5] and the World Bank define nature-positive finance as activities that protect, restore, or reduce nature loss compared to business-as-usual. Due to the lack of consensus and limited site-specific data[6], this methodology focuses on avoided impact.

[5] MBD, 2 Common Principles for tracking nature-positive finance 023

[6] Biodiversity assessment relies heavily on site-specific information, as species, habitats, and ecological conditions vary widely by location, and understanding baseline conditions requires analyzing the current state of each specific site, which is unavailable for EBF's intermediate financing model.

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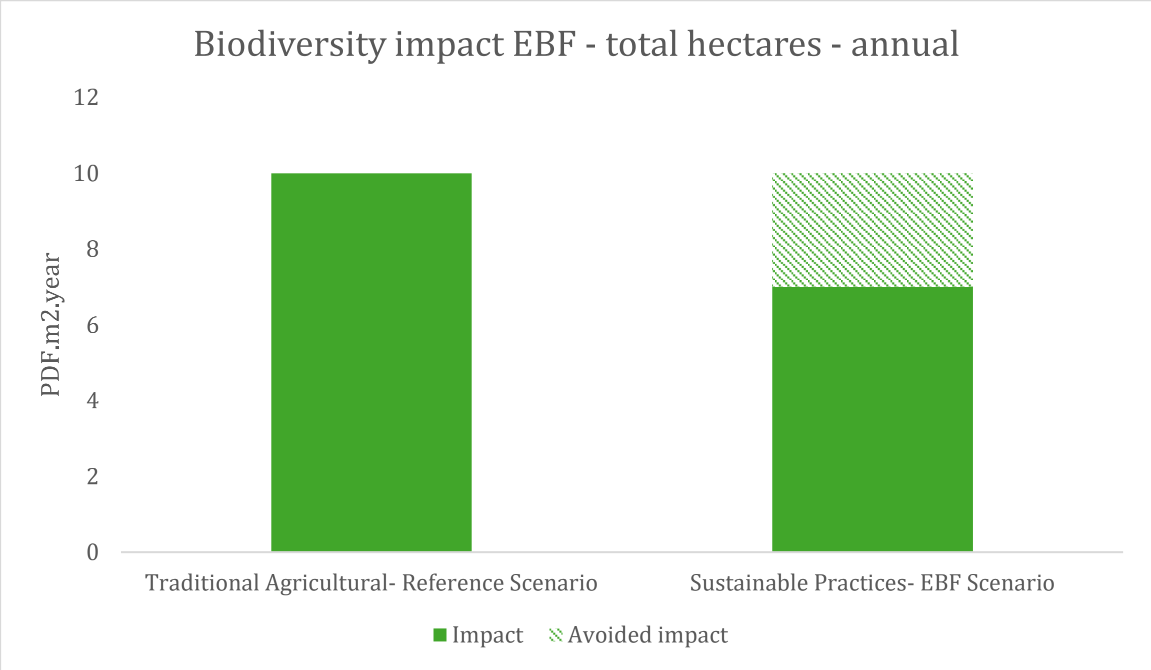

Figure 6 Hypothetical example of the biodiversity avoided impact

The biodiversity footprint alone does not indicate if sustainability practices had a positive effect on biodiversity. To determine the positive outcomes, a comparison between the footprint under conventional practices to the footprint of sustainable practices must be made. The difference is defined as the avoided biodiversity impact, showing how much harm was prevented (Figure 6).

To assess the biodiversity impact of the fund's activities, the focus of the measurement is placed on the avoided impact, rather than the total impact under sustainable practices. While sustainable agricultural practices are designed to minimize environmental harm, they still have a significant effect on biodiversity, influencing ecosystems, species habitats, and natural processes in ways that cannot be entirely avoided.

The results are presented in the PDF.m^2.yr unit, which represents the area of ecosystems lost per year. PDF, area size, and time are interconnected and can be adjusted. For example, a result of 100 PDF.m^2.year could mean a complete loss (PDF = 100%) of biodiversity on 100 m^2 over one year, or it could mean a 10% loss of species on 10 m^2 over 100 years. To simplify the results, the time is set for one year and the PDF to 100% (indicating complete biodiversity loss). This allows to express the result as the area (in m^2) where all biodiversity is lost in one year.

Communication of results

In order to make the indicator easier to understand and communicate externally, the fund reports the percentage difference between the two scenarios under the label "Avoided Impact on Biodiversity from Sustainable Practices." This figure shows how much the negative impact on biodiversity is reduced as a result of the sustainable practices supported by the fund. For example, a 10% "Reduced pressure on biodiversity from sustainable practices" means that the sustainable practices funded by EBF result in a 10% lower negative impact compared to a scenario using conventional practices.

4. Assumptions and limitations

3.1. Assumptions

In the calculation of the metric the following assumptions were made:

- The intervention is assumed to have a 100% impact on biodiversity starting in year one. While timing is factored into how inputs and outputs are calculated, the effect is treated as immediate and stable over time. For example, if full impact is only achieved after four years, the value is averaged across those years. Regardless of any changes, the yearly impact is considered consistent over the loan period. Moreover, it is assumed that the impacts are permanent during the of the loan.
- Given the limited information on the financial sources of the end clients, it is assumed that the sustainability practices are funded entirely by EBF.

3.2. Limitations

Several limitations were identified due to the current scientific status quo, methodological choices, and the availability and quality of data. These factors should be considered when interpreting the results and when making decisions, communicating with EBF stakeholders, or engaging in public consultations.

General limitations:

- Invasive species impact is not captured by the PDF and therefore not accounted for in the BFFI methodology. Moreover, the PDF looks at present or absent species but not species density.
- Downstream value chain effects are complicated to analyze therefore their exclusion from the BFFI allows for a more streamlined and focused analysis.
- Secondary effects from sustainability practices are not included in the scope as they require more primary data and on-site data.
- The focus on major drivers of biodiversity loss ensures that the most significant impacts are addressed.

- Some secondary datasets may be outdated, but they provide a historical perspective that can inform current practices.
- Actual reference states may differ, making avoided impact estimates hypothetical.
- Only quantifiable sustainability practices are included in the scope. Therefore, the calculations presented with the indicator are conservative estimates, as other known benefits of sustainable practices cannot yet be quantified with the information currently available.
- Additionally, the carbon sequestration from the funded agroforestry activities was included in the calculations; however, following reporting standards such as ISO 14067, the carbon storage is not considered in the overall footprint to prevent overestimation of the avoided negative impacts.

EBF-specific limitations:

- Select EBF financed activities are included in the scope to allow for targeted approach.
- For some crops and country combinations, such as flowers and wood, the selected datasets come from different databases than the main database used for other crops or proxied with representative ones, to compensate for limited data availability.
- Certain interventions are not covered due to the lack of data granularity, scientific research, or unavailable characterization factors.

5. Future steps for indicator integration, maintenance, and continuous improvement

The indicator will be integrated into the fund's regular reporting cycle, with semi-annual updates of the figures aligned with the reporting requirements of the investees. Beyond routine monitoring, the indicator can also serve as a forward-looking tool to assess the potential impact of prospective investees before investment decisions are made. This approach ensures alignment with best practices in impact management and measurement, supporting both accountability and informed decision-making throughout the investment process.

To keep the developed tool for calculating the indicator up to date, two key aspects will require regular review and updates:

- Updating LCA databases: Since updates to LCA databases typically occur at a relatively low frequency, the need for revising this part of the tool will be assessed over the coming years, ensuring that the most current and reliable data is reflected in the calculations.

- Fund growth: As the fund expands and begins supporting new crops, countries, and sustainable practices, updates will be necessary to incorporate these elements into the tool. This will depend on the availability of relevant information in LCA databases and the capacity to calculate avoided impacts accurately. The fund's growth will be closely monitored, and an update process will be initiated whenever it is deemed relevant to maintain the tool's robustness and relevance.