POLICY DIALOGUES

Comparative analysis of biodiversity measurement approaches for public development banks

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Disclaimer

The study was conducted early 2024, based on the current state of development and testing of the tools and methods discussed. The findings, conclusions, and recommendations reflect the state of knowledge and the performance of the tools at the time of writing. Any future updates or developments in the tools or their functionality may impact the relevance and applicability of the information provided in this document. Therefore, we advise reviewing the latest versions of the tools or consulting updated documentation before making any decisions based on this work.

PITCH

This study provides a comparative analysis of biodiversity measurement tools for Public Development Banks (PDBs). The aim is to evaluate the accessibility and the added value of six predefined biodiversity measurement tools used across nine PDB-funded projects. The results highlight the tools' performance in quantifying biodiversity impacts and dependencies, offering insights into their potential use in project selection, monitoring, and risk mitigation.

ISSUES

PDBs play a vital role in financing projects that aim to achieve sustainable development while incorporating biodiversity conservation goals. With increasing commitments to achieving nature-positive outcomes, meeting GBF targets, and corporate reporting requirements, the need for robust biodiversity measurement tools is evident. While the current due diligence processes of PDBs already generate information on biodiversity state and expected impacts at project site, from both construction and operational phases, some indirect value chain impacts and ecosystem services are often missing from biodiversity impacts and opportunities assessment.

Six tools – STAR, GBS, ENCORE, ABC-Map, Bioscope, and CBF (see Table 1) – were tested across various projects to evaluate their utility in measuring biodiversity, assessing risks and impacts, identifying biodiversity opportunities and supporting decision-making at both project and corporate levels.

METHODS

The tested biodiversity measurement tools were categorized into two groups based on their scope: (1) Direct Operation Tools designed to primarily focus on a project's or organization's direct impacts and dependencies (STAR, ABC-Map and ENCORE), and (2) Value chain tools which extend the scope to include parts, or the entire supply chain (upstream, direct operations, downstream) related to a project (GBS, CBF, Bioscope).

The tools were tested on projects funded by AFD and EBRD in various sectors (energy, agriculture, infrastructure, water sanitation), and geographies (Central America, Central and West Africa, Asia and Europe).

Each project presents a different level of biodiversity risk, ranging from indirect impacts related to potential encroachment by local populations, to deforestation in classified forest, direct impact on migratory species or the risk of pollution in a sensitive environment.

RESULTS

The analysis of the biodiversity measurement tools across the selected projects revealed important insights into their strengths, weaknesses, and applicability.

Use Case-Specific Insights

Different tools excel in different contexts, from site selection and risk screening to corporate-level biodiversity performance tracking and value chain assessment. This use context can answer to various "Business Applications (BAs)", No tool is optimised to cover all BAs, so a tool should be selected based on the decision required by the PDB.

Table 2 summarizes which tools can be used for different BAs and Organizational Focus Area (OFAs). Note that, except for ENCORE, all tools cover site level assessment. Some

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Find out more about this project:
Full report will be released in November 2024 on https://www.afd.fr/fr/carte-des-projets/etude-comparative-de-metriques-biodiversite-pour-les-banques-publiques-de-developpement-bpd

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Geography Worldwide

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Table 1 - Overview of biodiversity measurement approaches described in this document

	TOOL NAME	DESCRIPTION
VALUE CHAIN TOOLS	Biodiversity Footprint Financial Institutions (BFFI), implemented through Bioscope	**Developers**: ASN Bank / CREM / PRé Sustainability The BFFI is designed to provide an overall biodiversity footprint of the economic activities of a financial institution, a company or a site. The tool allows calculation of the environmental impacts of those activities based on scientific life cycle assessment (LCA) methodologies and the biodiversity footprint of an investment portfolio, company or site. In this study, BFFI was implemented through Bioscope, a biodiversity screening tool which provides users with an estimation of where the most important impacts on biodiversity in their value chain (scope 1, 2, and 3 upstream) could be.
	Corporate Biodiversity Footprint (CBF)	**Developer**: Iceberg Data Lab The Corporate Biodiversity Footprint measures the impact of corporates on biodiversity by means of a biodiversity footprint. It is designed to serve the needs of financial institutions to have a science-based and scalable approach capable of covering large portfolios with a bottom-up approach covering the most material impacts of constituents throughout their value chain.
	Global Biodiversity Score® (GBS®)	**Developer**: CDC Biodiversité The Global Biodiversity Score (GBS) is a corporate biodiversity footprint and dependency assessment tool which assesses the biodiversity impacts and dependencies of economic activities across their value chain, in a robust and synthetic way. It is measured with Mean Species Abundance (MSA) and based on PBL Netherlands Environmental Assessment Agency's model of terrestrial and aquatic pressures (GLOBIO).
DIRECT OPERATIONS TOOLS	Species Threat Abatement and Restoration metric (STAR)	**Developers**: BirdLife International / Conservation International / IUCN / UNEP-WCMC STAR measures the contribution that investments can make to reducing species extinction risk. It can help the finance community and investors target their investments to achieve conservation outcomes and can measure the contributions these investments make to global targets such as the SDGs. It measures the potential contribution towards reduction of global species extinction risk from threat abatement actions (score STARt) and the potential contribution towards reduction of global species extinction risk through restoration actions (habitat restoration and/or removal of stressors) in the same area of Interest (score STARr).
	Adaptation, Biodiversity and Carbon Mapping Tool (ABC-Map)	**Developers**: FAO / AFD The Adaptation, Biodiversity and Carbon Mapping Tool aims to find synergies between climate (adaptation and mitigation), biodiversity (natural capital value and MSA score), and crop suitability by providing users with a baseline situation of the area before the start of the project and looking at the potential impacts of the project's activities on the area, through a comparison of with and without project situation over a period of time.
	Exploring Natural Capital Opportunities, Risks and Exposure (ENCORE)	**Developers**: Global Canopy / UNEP-FI / UNEP-WCMC ENCORE's nature capital module enables users to visualize how the economy potentially depends on and impacts nature and how environmental change creates risks for businesses, for each sector, sub-industry and production processes. For agricultural projects, the biodiversity module provides a quantified estimate of impact of agriculture and pasture based on information about cropland / pastureland area and country where it is located.

Table 2 - Business context matrix (BA-OFA matrix) of biodiversity measurement approaches covered by the tested tools

		ORGANIZATIONAL FOCUS AREA (OFA)		
		Site level	Corporate	Supply chain
BUSINESS APPLICATIONS (BAS)	Risk screening in site selection for new projects To make informed decisions that minimize negative impacts on biodiversity (avoiding transition risks related to legal compliance, reputation)	STAR ABC-Map BIOSCOPE CBF	/	/
	Measuring biodiversity performance of new project developments To ensure to meet standards and contribute positively to biodiversity conservation, or identify opportunities for improvement	BIOSCOPE CBF GBS STAR ABC-Map	/	/
	Corporate biodiversity performance To evaluate and improve overall biodiversity performance, and to be compliant with disclosure requirements (such as those required by Article 29 in France, for instance)	/	BIOSCOPE CBF GBS STAR ENCORE	/
	Identifying material biodiversity issues in the supply chain of funded projects To be compliant with disclosure requirements	/	/	CBF BIOSCOPE GBS ENCORE STAR
	Balancing biodiversity loss and gain to achieve Net Gain or No Net Loss at the project level To be compliant with PDBs policies (if they exist)	BIOSCOPE CBF GBS STAR	/	/

tools cover different OFAs which can be relevant for obtaining corporate figures (aggregation of outcomes over different sites). Table 2 provides a first insight on how tools can be combined to cover the range of BAs and OFAs a PDB is interested in. A good example is the application of risk screening tools as a first step, to be followed by more in-depth assessment with complementary surveys and local sources. However, combining tools over different OFAs for obtaining an outcome at corporate level will require additional insights, such as aggregation potential of metrics and level of coverage of pressures.

Tool Scope and Coverage

The biodiversity tools varied in their coverage and scope. **No single tool was able to address all aspects of biodiversity impacts comprehensively, but each had specific strengths**, depending on the project type and stage of development.

Regarding impact assessment, these tools do not aim to replace the current due-diligence process, which is much more accurate and complete in assessing biodiversity baseline and potential impacts of the project direct operations.

Biodiversity Pressures

The spectrum of pressures covered by the different tools ranges from only one pressure (e.g. land use) to multiple pressures. Only ENCORE natural capital module covers all main biodiversity pressures (land use change, climate change, pollution, alien invasive species and over-exploitation of natural resources).

Level of Efforts and Costs

The level of expertise required for applying the tools and the accessibility of the different measurement approaches (i.e. whether they are open source or not) **differ considerably, as do their costs and the efforts required for applying them**. CBF, GBS and STAR are under commercial license (which imply higher cost) and can require external expertise to be properly used. All the other tools are open source and provide guidance material. The level of effort is then related to the extent of the project. For instance, for ABC-Map, the level of effort scales directly with the scale and detail available on project activities – the more detailed and numerous the project activities are, the longer it will take to input them into the tool.

Sector-Specific Tool Performance

Different sectors showed varying levels of compatibility with the tools. Some tools were better suited for specific industries due to the nature of their impact drivers and data needs. ABC-Map is specifically directed to map the impacts of agricultural projects, land use and forestry projects, whereas Bioscope is specifically developed to support financial institutions. ENCORE does not consider conservation projects. All other tools can be used for a broad range of sectors.

Tool Complementarity

A key lesson from the case studies is that biodiversity tools often need to be used in combination to provide a full picture of project impacts and combined with onsite monitoring validations when possible. Each tool has its strengths, and using multiple tools can fill gaps in data and analysis.

FOCUS ON ONE CASE STUDY

Depollution project in a coastal urban area in West Africa

This project aims to restore the quality of the water in a large city by setting up wastewater collection and treatment infrastructure and discharging treated water into the sea.

Regarding the state of biodiversity at project location, none of the tools could provide valuable information.

Regarding the type of pressure or threats on biodiversity at the project location, STAR indicates that the main threats on species are related to biological resource use (hunting and collecting terrestrial animals, pollution related to cropland (agricultural and forestry effluents) and agriculture (livestock farming and ranching). This information shows an important limit to the threats assessment of the tool. Indeed, for this urban project we could expect threats related to urban development or domestic pollution, that could have reinforced the importance of a sanitation project in this area.

Regarding the potential negative impacts of the project on biodiversity in relation to the project activities, ENCORE indicates that the main impacts on biodiversity related to the project sub-industry and production processes are resource use (water and ecosystems) and pollutants (soils and water), which makes sense for this type of project but goes against the project's main objective to reduce pollution related to domestic and urban wastewater. This shows that the selected ENCORE sub-industry and production processes do not fully reflect the objective of the projects. The main impacts of the project identified by the value chain tools are (in no particular order): climate change and land use (GBS, Bioscope, CBF), ecotoxicity of metals (GBS), wetland conversion (GBS), water consumption (Bioscope), freshwater and marine eutrophication (Bioscope), and acidification/air pollution (Bioscope, CBF). However, only climate change is aligned with expectations regarding the type of project (related to construction, energy consumption, biological processes).

Regarding the potential leverage of the project to reduce threats and improve biodiversity, STAR scores were very low, which indicates a very low potential to reduce pressure on global threatened species through threat abatement or land restoration. However, it is important to note that most of the study area integrate marine area, which is not covered by the tool.

Limitations and Gaps

While the tools offer valuable insights, there are limitations that must be considered:

- Model Accuracy: Some tools rely on **generalized, model-based data, which may not reflect local biodiversity conditions accurately**. For example, STAR relies on global IUCN data, which may not be up to date for specific project areas.
- Data Availability: **PDBs are asked to limit the cumbersomeness of their procedures, and the data requested from their customers**. Projects or companies could face challenges in providing the necessary input data for direct operation tools (i.e. precise location of project detailed activities) or for value chain tools (i.e. yearly consumptions of natural resources or yearly quantity of waste and pollutants released). This can limit the accuracy and applicability of the tools.
- Scope Limitations: While **value chain tools** like GBS and CBF offer broad assessments of biodiversity impacts, they **may not capture every site-specific nuances**, which are critical for localized biodiversity management.

These findings can guide PDBs in selecting and combining tools to improve their decision-making, project assessments, and biodiversity risk management.

RECOMMENDATIONS

- **Leverage tools for early-stage risk screening, site selection, and complementing traditional due diligence**: PDBs can utilize these tools in the early stages of project development to complement traditional due diligence. These tools provide high-level biodiversity risk screenings, identifying potential impact hotspots and revealing indirect risks. Sector based tools typically attribute impacts to sectors rather than specific investments and projects, resulting in generalized outcomes. Therefore, and if implemented with only high-level input data, such as sector, invested amount, and region, they are not suitable for detailed project-level assessments. However, they are beneficial for large portfolios with limited data collection resources, and can help fulfill disclosure requirements such as CSRD, TNFD, and GRI 101.

- **Combining these tools with primary data and comprehensive assessments is essential for balanced biodiversity impact evaluations**: These tools typically provide generalized data and are better suited for high-level overviews rather than project-specific assessments. Sector based tools attribute impacts to sectors, not individual projects, potentially overlooking critical local factors like species sensitivity. Additionally, these tools struggle to assess positive biodiversity impacts, such as reforestation efforts. Relying solely on them without detailed assessments could lead to misinterpretation.

- **Tailor and combine tools for sector-specific and comprehensive biodiversity insights**: PDBs should choose a small set of complementary tools that align with the specific needs and sector of each project. This approach helps ensure that the tools can effectively address gaps in the current due diligence processes. Using sector-specific tools can also help identify indirect and less obvious impacts throughout the value chain. However, given that no single tool can capture the full range of biodiversity aspects, it is important to combine multiple tools to achieve a more comprehensive understanding. For instance, some tools highlights ecosystem service dependencies, while supply chain tools provide biodiversity footprint figures. Using these tools together enhances the overall due diligence process, offering a more detailed view of a project's biodiversity risks and dependencies, but at the expense of additional effort and cost for PDBs.

- **Ensure adequate time and resources for data collection**: To ensure accurate assessments, tools like GBS and ABC-Map require detailed data inputs, such as financial data and precise location of project activities. Close collaboration between clients, local authorities, biodiversity experts and project managers is essential for gathering this data. Since tools often rely on sector classifications, such as EXIOBASE or NACE, discussions with project managers can help select and weigh the relevant sectors, improving accuracy.

- **Incorporate ecosystem services in assessments**: Tools like ENCORE help identify sector dependencies on ecosystem services and potential risks from ecosystem degradation. For PDBs, integrating ENCORE into assessments can fill gaps in understanding how ecosystem services affect project operations, both upstream and downstream. This complements traditional biodiversity assessments, offering a more comprehensive risk assessment approach.

- **Use value chain tools for supply chain and corporate performance assessment**: For projects with complex supply chains or corporate-level biodiversity performance tracking, tools like GBS, CBF, and Bioscope are suitable to provide a broader view of biodiversity impacts along the value chain, essential for regulatory compliance and corporate reporting.

- **Stay updated on the latest developments to ensure the most suitable tool is chosen**: In this study, six tools were assessed. However, there are many more relevant tools available. Since the landscape of tools is rapidly evolving, with new tools and data sources emerging regularly, it is crucial to stay updated on the new development and other tools available.

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