Biodiversity Footprints: Misleading Metric or Meaningful Signal for Investors?

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"In a world of ecological overshoot, even an imperfect compass is better than sailing blindfolded."

As nature-related risks are gaining traction in sustainable finance, biodiversity footprinting has become an important tool for evaluating the impact of corporate or portfolio activities on ecosystems. These footprints are expressed in ecological pressure units, such as MSA.m² (Mean Species Abundance[1]) or PDF (Potentially Disappeared Fraction of species[2]).

These figures are based on complex models: life cycle assessment (LCA) databases integrated with biodiversity loss simulators such as GLOBIO[3], which convert land use and emissions data into estimates of ecological degradation[4]. Despite the complexity, the footprinting tools offer a useful starting point for assessing systemic exposure to nature loss, leading to their wider adoption into the mainstream ESG data suite

The PBAF (Partnership for Biodiversity Accounting Financials)[5] requires its members to commit to exploring and disclosing biodiversity impacts and actively participating in developing harmonized methodologies which include footprinting approaches (MSA, PDF, CBF, etc.). In its Additional guidance for Financial Institutions[6], TNFD (Taskforce for Nature-Related Financial Disclosures) has included biodiversity footprinting approaches as additional disclosure metrics that can be used by FIs, with required detail.

Out of the 129 financial institutions[7] that have officially registered as TNFD adopters, majority seem to be members of PBAF, and hence, have been engaging with one or the other footprinting tools for their official reporting. As of July 2025, 15 of them, including BNP Paribas AM, ING, MUFG, and Robeco, have published their first TNFD reports, of which 30% have included some kind of biodiversity footprinting.

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[1] A measure of the average abundance of species in a disturbed area compared to their undisturbed state, expressed per square meter. It estimates how intact ecosystems are, on a scale from 0 (degraded) to 1 (pristine).
[2] Represents the percentage of species likely to disappear from a specific area due to environmental stress or land-use changes. Widely used in life-cycle assessments, it captures potential species loss over time
[3] GLOBIO - Global biodiversity model for policy support
[4] Damage or change to the natural environment that is perceived to be deleterious or to have negative effects
[5] https://pbafglobal.com/
[6] https://tnfd.global/publication/additional-disclosure-guidance-for-financial-institutions/
[7] https://tnfd.global/engage/tnfd-adopters/

But the growing enthusiasm is accompanied by caution. In its overall recommendations published in September 2023, the TNFD framework[8] had noted that footprints may inform nature-related risk materiality but are insufficient on their own due to high uncertainty, lack of geolocation, and inability to measure ecosystem condition. TNFD's discussion paper on Biodiversity footprints[9] with PBAF (Dec 2023) recommends a six-step selection and disclosure process for FIs using footprinting tools and emphasizes on addressing tool limitations through engagements and additional location-specific data.

For asset managers, the footprinting results can sometimes appear counterintuitive. Sectors, such as financial services, which have little direct environmental impact often register some of the highest biodiversity footprints. Indeed, capital allocation links them to high-impact sectors such as agriculture, energy, and mining, which are responsible for significant systemic biodiversity impact. A 2025 EU Commission study[10] confirmed that even with minor holdings in the sectors mentioned above, financial sector companies can contribute to nearly 50% of a portfolio's total biodiversity footprint.

In 2024, a study from Iceberg Data Lab[11] showed that in diversified portfolios, a **10% exposure to high-impact sectors can account for over 60% of the total biodiversity pressure**. This logic mirrors that of financed emissions. As investors, we inherit exposure to upstream impacts embedded in our holdings.

The value of biodiversity footprints lies in their **strategic use**—as a tool for screening, engagement prioritization, and thematic analysis. For asset managers, they can highlight portfolio exposure hotspots, inform sector tilts, and guide nature-related dialogue with issuers. But they are not a verdict. Their blind spots are significant.

The limitations of Biodiversity Footprinting

Most footprinting models rely on static or outdated life-cycle assessment (LCA) data and broad sector averages, which flatten the rich complexity of ecological systems. They focus only on overall pressures or negative impacts—such as pollution, emissions, or land-use change—without addressing key ecological realities like **ecosystem condition**[12], **spatial heterogeneity**[13], or **ecological tipping points**[14]. They also omit dependencies (i.e. the ecosystem services on which

[8] TNFD Recommendations
[9] TNFD's discussion paper on Biodiversity footprints with PBAF
[10] Assessment of Biodiversity Measurement Approaches for Businesses and Financial Institutions
[11] Biodiversity Measurement Approaches
[12] Refers to how degraded or intact an ecosystem is, which directly affects its ability to provide services like pollination, water purification, and climate regulation
[13] Recognizes that the same activity - say, deforestation - has vastly different impacts depending on location. Cutting trees in a biodiversity hotspot has far more severe consequences than in a degraded area
[14] Thresholds beyond which ecosystems may irreversibly collapse, even with relatively small additional pressures. Footprint models rarely capture these nonlinear dynamics

companies rely on to operate) and disregard any nature-positive contributions that companies might have.

Crucially, these models do not recognize regenerative action. For instance, an agribusiness restoring mangroves may still register as "high risk" due to its sector classification. This can distort incentives and penalize transition leaders.

Criticism is growing. A 2025 EU study[15] highlighted several concerns including: double-counting, insufficient alignment with TNFD's systemic framing, and underestimation of location-specific biodiversity baselines. From a stewardship perspective, there is a risk of acting prematurely on metrics that are not yet sufficiently accurate or reliable to support investment decision-making.

So, what should we do? Rather than reject footprinting, we should contextualize and complement it:

- First, biodiversity footprints should be considered **as signals, not scores**. Use them to highlight areas of potential risk across portfolios. They should not be interpreted as precise assessments, but rather as starting points for further inquiry, supported by qualitative and sector-specific context.
- Second, **integrate geospatial and ecosystem-specific assessments**. Biodiversity is inherently location-based. Tools like IBAT[16], WWF Risk Filters[17], and the TNFD LEAP framework can enable users to layer geographic relevance and ecological vulnerability into risk analysis.
- Third, **broaden the lens** beyond negative impacts. Understand biodiversity dependencies—using tools like ENCORE[18]—to assess how business models are exposed to ecosystem degradation through their reliance on ecosystem services such as pollination, water availability, or soil fertility. At the same time, factor in positive contributions, including ecosystem restoration, regenerative agriculture, or circular production models. A more holistic view of nature-related risks and opportunities can support better capital allocation and stewardship outcomes.
- Fourthly, **encourage better data & disclosures** through system-based engagement with companies, policy makers and data providers. Ask investee companies to disclose nature-related risks, opportunities, and targets through emerging and existing frameworks like CDP, TNFD and Science-Based Targets for Nature (SBTN[19]).
- Finally, **engage with companies to assess transition readiness and adaptive capacity,** not just risk. These should include reviewing nature governance structures, science-based targets, investment in innovation, and alignment with global and regional biodiversity frameworks and regulations.

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[15] Biodiversity Measurement Approaches
[16] IBAT | The world's most authoritative biodiversity data
[17] WWF Risk Filter
[18] ENCORE
[19] Science Based Targets Network

Biodiversity footprints are likely to remain part of the evolving nature-related risk toolkit—but their value depends entirely on thoughtful user interpretation. For asset managers, they are not an end in themselves but a point of entry into a more complex, systemic dialogue and inquiry; as cue cards to engage more deeply on the complex interplay between capital flows, ecological thresholds, and long-term resilience in a nature-constrained world.