



THE **BIODIVERSITY**
FOOTPRINT COMPANY

Case Study

TNFD LEAP Assessment for a Global Mining Company: No-Net-Loss (NNL) of Biodiversity for 100+ sites

Client: A Global Mining Company
Scope: 100+ direct operation sites on five continents
Duration: 10 months (June 2024–March 2025)



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LEAP Assessment: NNL of Biodiversity for 100+ global sites

Problem Statement







- 🌍 **Primary Goal:** To map and measure biodiversity-related impacts, dependencies, risks, and opportunities, aiding in the development of nature targets and KPIs.
- 📊 **Standardization Gap:** There is a lack of consistent data formats and standardized information across over 100 sites
- 🧩 **Complexity Perception:** Staff find biodiversity assessments technically challenging.
- 🔄 **Two-Phased Approach:**
 - 🌐 Conduct a global rapid screening to test and compare relevant methods.
 - 📍 Perform in-depth site-level analysis to apply insights and develop actionable recommendations.



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Objectives

-  **Site Prioritization:** Apply a 32-criterion framework to rank and select 33 priority sites.
-  **Global Ecosystem Condition:** Develop a new machine-learning global tool to assess ecosystem state for 2020 and 2023.
-  **Biodiversity Footprinting:** Quantify ecosystem condition for 2020 and 2023 through site-level deep dives to produce quality biodiversity footprints for selected sites with full accounts.
-  **Species Materiality:** Assess 467 threatened species within 10 km of operations and identify material taxa at priority sites.
-  **Ecosystem Services Analysis:** Model supply, demand, and stress profiles under single and double materiality.
-  **Strategic Guidance:** Define clear pathways to NNL, proposing KPIs aligned with TNFD, GRI, and ESRS standards.





Key Achievements (wins)



Locate

Applied 32 criteria across four categories (**Nature-Business interface, Impact Drivers, Ecosystem State, Site Experience**) to screen 100+ sites, identifying 33 priority locations and validating global databases (IBAT, ENCORE, WRI Water Risk).



Evaluate

Deployed an **ML-based tool** to map ecosystem condition for 2020 and 2023; conducted manual scoring at five deep-dive sites to generate **Total, Positive, and Negative Biodiversity Footprints** with confidence metrics; launched a dashboard tracking **467 threatened species** and drafted species-specific footprints.



Assess

Facilitated workshops to refine material risks and opportunities; modeled ecosystem **trajectories to 2050** under NNL commitments for selected sites.



Prepare

Proposed preliminary **KPIs aligned with TNFD, GRI 101, and ESRS E4**; developed draft guidance for **standardized ecosystem monitoring** and material species impact assessment.





Challenges faced (losses)

Inconsistent Data: Varied data quality and formats across jurisdictions.

Aggressive Timeline: Completing a global, multi-phased assessment in under one year.

Tool Limitations: Model accuracy varied across ecosystem types without expert validation.

Guidance Gaps: Absence of standardized accuracy protocols for biodiversity assessments.

Solutions and Innovations



Hybrid Assessment Workflow: Merged ML-driven global condition mapping with expert manual scoring for robust ecosystem evaluations.

Custom ML Ecosystem Model: Developed and calibrated a scalable tool to assess ecosystem state for 2020 and 2023.

Develop Accuracy Parameters: Introduced real-time validation protocols, confidence metrics, and interim accuracy checks for model outputs.

Interactive Dashboards: Deployed real-time dashboards tracking 467 threatened species and materiality assessments.

Scenario Forecasting: Built 2050 NNL trajectory models to inform strategic planning under future conditions.





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Project Impact

Ecosystem state measurement is possible at a large scale (100+ sites in <1 year!), but data accuracy levels are key.

We produced the business case for the formalisation of group NNL policies and the development of associated methodologies.

For more info contact us

www.biodiversity-footprint.com

We envision a future where biodiversity accounting is as rigorous as financial reporting, equipping organizations with the tools to navigate complexity, set meaningful targets, and take credible action for nature.