

Landscaping Existing Biodiversity Metrics into ESG: Examples

Biodiversity Policy Commitment

Other Names: Biodiversity Strategy, Nature Positive Commitment.

Definition: Corporate-level strategic targets or policies that commit to biodiversity conservation or restoration, including timelines, scope, and measurable outcomes.

Calculation Method: Qualitative review of public policies; scored by presence, scope, and ambition.

Frameworks: TNFD, GRI, CSRD.

Industry: Consumer Goods, Food & Beverage, Cosmetics.

Example Company/Initiative: L'Oréal's commitment to '95% bio-based circular ingredients by 2030 ([source](#)).

Habitat Footprint Measurement

Other Names: Biodiversity Footprint, KBA Impact Score.

Definition: Total land area and ecological condition of habitats impacted by operations, contextualized in relation to Key Biodiversity Areas or threatened ecosystems.

Calculation Method: Area (ha/m²) of natural habitat affected; GIS or LCA-based mapping.

Frameworks: TNFD, CSRD, SBTN, KBA Protocols.

Industry: Forestry, Mining, Consumer Goods.

Example Company/Initiative: IKEA mapping wood supply chain forests against IUCN Key Biodiversity Areas ([source](#)).

Ecosystem Service Dependency Assessment

Other Names: Natural Capital Dependency Score.

Definition: Measures reliance of operations on ecosystem services (e.g. pollination, water flow, erosion control), mapped by geography and seasonality.

Calculation Method: Matrix scoring of dependency on ecosystem services using ENCORE or stakeholder input.

Frameworks: TNFD LEAP, SBTN, CDP Forests/Water.

Industry: Food & Beverage, Agriculture, Water Utilities

Example Company/Initiative: Coca-Cola assessing dependence on watershed integrity around Kenyan supply reservoirs ([source](#)).

Species Extinction Risk Mitigation

Other Names: IUCN Red List Actions.

Definition: Corporate initiatives like habitat avoidance or species-specific conservation measures that reduce extinction threat to IUCN-listed species in impacted areas.

Calculation Method: % of sites/projects with measures for at-risk species based on IUCN or local data.

Frameworks: TNFD, SBTN, CSRD, GBF Target 2, IUCN Red List.

Industry: Forestry, Infrastructure, Energy.
Example Company/Initiative: IKEA using STAR framework in wood sourcing to avoid destabilizing threatened species habitats ([source](#)).

Habitat Connectivity Index

Other Names: Fragmentation Score, Corridor Viability.

Definition: Evaluates continuity of habitats affected by development, focusing on potential connectivity disruption.

Calculation Method: Calculated using GIS-based Patch Cohesion, IIC, or Equivalent Connected Area indices.

Frameworks: TNFD sector guidance, CBD Target 3.

Industry: Infrastructure, Real Estate, Energy,

Example Company/Initiative: Road-project developer modelling fragmentation across wildlife corridors ([source](#)).

Native Vegetation Retention

Other Names: Natural Habitat Cover %, Site-Level Retention Index.

Definition: Measures portion of original native vegetation preserved during land conversion or development.

Calculation Method: % of land retaining native vegetation vs baseline/legal requirement.

Frameworks: TNFD, national policies (e.g., Brazil Forest Code).

Industry: Real Estate, Mining, Construction.

Example Company/Initiative: Real estate projects preserving wetland buffers or endemic forest patches around construction zones ([source](#)).

Ecosystem Restoration Progress Index

Other Names: Biotic Recovery Tracker.

Definition: Monitors ecological recovery in restoration areas using metrics like canopy cover, species return or functional recovery.

Calculation Method: % of area under restoration; tracked by restoration phase and ecological endpoint.

Frameworks: UN Decade Restoration KPIs, TNFD R-metrics.

Industry: Oil & Gas, Mining, Construction.

Example Company/Initiative: Oil and gas companies restoring mangroves post-extraction and tracking amphibian / plant succession ([source](#)).

Biodiversity Measurement Training

Other Names: Ecological Literacy Programs, ESG Skills Training.

Definition: Training employees/suppliers to identify and manage biodiversity impacts.

Calculation Method: % of staff trained on tools (e.g., IBAT, TNFD LEAP); tracked by training level.

Frameworks: TNFD, GRI, SASB.

Industry: All.

Example Company/Initiative: Nestlé training 9,000+ cocoa farmers on wildlife-friendly practices ([source](#)).

Deforestation-free Sourcing

Other Names: Commodity Origin Verification, Certified Raw Materials.

Definition: Tracks raw materials to ensure no conversion of natural ecosystems.

Calculation Method: % of material sourced (e.g., soy, palm) with verified deforestation-free certification.

Frameworks: TNFD, Forest 500, SBTN, EU Deforestation Regulation

Responsible Alpha partners with all organizations on their transition to a net positive economy by 2050

Industry: Food & Beverage, Consumer Goods, Retail.

Example Company/Initiative: Unilever's use of 100% RSPO-certified palm oil with blockchain traceability ([source](#)).

Functional Diversity Index

Other Names: Trait-Based Biodiversity Index.

Definition: Quantifies ecosystem functionality via diversity of species traits (e.g. nitrogen fixers, pollinators), linked to resilience.

Calculation Method: Shannon/Rao's Q index based on trait data; requires ecological survey.

Frameworks: Academic, EU Biodiversity Strategy

Industry: Forestry, Agriculture, Ecological Restoration

Example Company/Initiative: A 2023 study by Ssekuubwa et al. examined how assisted natural regeneration (ANR) affects functional diversity and ecosystem recovery in tropical secondary forests in the Philippines. Using trait-based metrics such as Rao's quadratic entropy (RaoQ), the researchers found increases in functional richness, evenness, dispersion, and RaoQ with forest age. These values approached old-growth forest levels, while functional divergence remained stable ([source](#)).

Genetic Diversity Protection

Other Names: Agrobiodiversity Preservation.

Definition: Tracks efforts preserving intraspecific diversity, particularly crop wild relatives or native genotypes.

Calculation Method: Count/% of native species monitored or conserved via seed banks/in-situ projects.

Frameworks: CBD Target 4, SDG 2.5

Industry: Agriculture, Food & Beverage, Seed Industry.

Example Company/Initiative: IRRI's Genebank preserves over 132,000 rice varieties from 123 countries, including climate-resilient types from Bangladesh and drought-tolerant strains from Laos. Working with national seed banks, it regenerates and distributes genetic material. These efforts help restore diversity in agro-ecosystems impacted by monoculture farming ([source](#)).

Soil Biodiversity Index

Other Names: Soil Life Indicator.

Definition: Indicates richness of soil organisms (microbes, invertebrates) as proxy for ecosystem health.

Calculation Method: Composite index (microbial biomass, invertebrate richness, respiration) per FAO/GSBI.

Frameworks: EU Soil Law, FAO Soil Partnership

Industry: Agriculture, Forestry, Land Management

Example Company/Initiative: General Mills, in partnership with the Soil Health Institute, tracks microbial biomass, nematode diversity, and earthworm density on 175,000 acres of oat farms. After three years of cover cropping and reduced tillage, microbial biomass increased by 40% and earthworm counts doubled. These improvements raised the Soil Biodiversity Index score from 62 to 85 ([source](#)).

Invasive Species Management

Other Names: IAS Control, Biosecurity Risk Index.

Definition: Assesses monitoring and mitigation of invasive species risks in operations and logistics.

Calculation Method: % of sites with invasive species plans; measured by population reduction over time.

Frameworks: GRI, TNFD sectoral guidance

Industry: All.

Example Company/Initiative: Maersk Ballast Water Management Program : Maersk has implemented IMO-compliant ballast water treatment systems across its global fleet, reducing transfer of invasive marine species like *Mnemiopsis leidyi* comb jelly. In pilot monitoring at Port of Rotterdam, invasive species incidence in treated ballast water discharges dropped from 27% to <3% over 18 months ([source](#)).

Net Positive Impact (NPI)

Other Names: No Net Loss (NNL), Biodiversity Offset Index.

Definition: Ensures biodiversity gains from restoration exceed losses due to development.

Calculation Method: Net positive = biodiversity gains - losses > 0; assessed via habitat banking/offsets.

Frameworks: IFC PS6, BBOP, TNFD optional indicators

Industry: All.

Example Company/Initiative: Rio Tinto QMM Mine Biodiversity Offsets (Madagascar) : Rio Tinto's ilmenite mine offsets habitat disturbance by restoring 4,000 hectares of coastal forest and

funding community-led mangrove replanting. Independent audits show habitat gains (in "habitat hectares") exceed project impacts by 12%, meeting Net Positive Impact targets five years ahead of schedule ([source](#)).

Water-Ecosystem Interaction Score

Other Names: Hydrological Impact Index, Aquatic Stressor Risk.

Definition: Assesses how water use/discharge affects aquatic ecosystems.

Calculation Method: Score combining water stress × ecosystem reliance × operational intensity.

Frameworks: GRI, CDP Water, TNFD

Industry: All.

Example Company/Initiative: EDF monitors water withdrawals and thermal discharge at 19 nuclear plants, assessing impacts on fish spawning grounds. Cooling system upgrades at the Loire River site lowered discharge temperature by 2.1°C. This reduced fish egg mortality from 15% to under 5%, improving the Water-Ecosystem Interaction Score by 28% ([source](#)).

Eco Design Product

Other Names: Design for Environment (DfE), Sustainable Product Design.

Definition: Design approach aiming to minimize environmental impacts throughout a product's life cycle, including material selection, manufacturing, use, and disposal.

Calculation Method: Lifecycle assessment (LCA) with eco-design tools (e.g., SimaPro, GaBi) to evaluate cradle-to-grave environmental footprint.

Responsible Alpha partners with all organizations on their transition to a net positive economy by 2050

Frameworks: EU Ecodesign Directive, ISO 14006, GRI, SBTN Scope 3 guidance.

Industry: Consumer goods, electronics, automotive.

Example Company/Initiative: Cisco designs products for circularity, applying 25 Circular Design Principles across material use, modular design, and repairability. Examples include using recycled materials, lightweighting, and removing non-functional cosmetic features. These efforts aim to extend product life while minimizing environmental impact ([source](#)).

Take-back recycling initiatives

Other Names: Product Stewardship, Extended Producer Responsibility (EPR).

Definition: Programs enabling consumers to return products for recycling or safe disposal, typically driven by EPR regulation or voluntary commitments.

Calculation Method: Volume or % of products returned/recycled annually; often tracked by material type or EPR compliance.

Frameworks: GRI 306 (Waste), OECD EPR principles, Ellen MacArthur Foundation

Industry: Tech, fashion, consumer packaged goods (CPG)

Example Company/Initiative: Cisco's Environmental Sustainability Specialization program encourages partners to support take-back schemes. Customers receive up to a 7% discount on new products when committing to return used hardware. This initiative supports circular business models and responsible disposal ([source](#)).

Businesses Assess, Disclose and Reduce Biodiversity Related Risks and Negative Impacts

Other Names: Biodiversity Risk Disclosure, Biodiversity Footprinting.

Definition: Corporate evaluation and disclosure of impacts and dependencies on biodiversity, with a focus on minimizing negative effects and managing related risks.

Calculation Method: Qualitative and quantitative risk mapping using ENCORE, IBAT, or TNFD's LEAP methodology.

Frameworks: TNFD LEAP, GRI, CDP Forests/Biodiversity module.

Industry: Finance, food & beverage, extractives.

Example Company/Initiative: Unilever evaluates deforestation exposure across supply chains using TNFD metrics, while L'Oréal tracks regenerative sourcing progress. BNP Paribas screens portfolio biodiversity risks using IBAT tools. Such disclosures improve investor decisions and drive targeted impact reduction.

Strategy and Engagement, Responses to Natural-related Issues

Other Names: Nature-related Strategy & Response, TNFD LEAP Actions.

Definition: Strategies and active measures companies implement in response to nature-related risks and dependencies, aligned with TNFD and similar frameworks.

Calculation Method: Percentage of operations/sites with biodiversity action plans or nature-aligned strategy disclosures.

Frameworks: TNFD Disclosure Recommendations, GRI, SBTN Action Framework.

Industry: Corporate sustainability across all sectors

Example Company/Initiative: Numerous.

Pollution / Pollution Removal

Other Names: Pollution Control, Emissions Removal, Remediation Efforts.

Definition: Reduction or removal of pollutants from air, water, or soil through technology, treatment, or behavioral shifts, to restore or maintain ecosystem health.

Calculation Method: Tons of pollutant removed (air/water/soil); % reduction from baseline; measured via emissions data or monitoring tools.

Frameworks: GRI, TNFD Impact Drivers, SDG 6.3 and 14.1.

Industry: Manufacturing, energy, extractives

Example Company/Initiative: Coffee agroforestry systems in Honduras. Using shade tree integration, cover cropping, and no till practices to increase soil

organic carbon, removes 9,800 tons CO₂ (verified through carbon program).

Driver of Nature Change: Land/freshwater/ocean-use change

Other Names: Nature Driver: Land-use Change, Ocean-use Alteration, Freshwater Conversion.

Definition: Identification and measurement of company activities contributing to nature change through conversion or degradation of terrestrial, aquatic, or marine ecosystems.

Calculation Method: Area (ha) of natural habitat converted; % of operations affecting priority ecosystems; classified by biome or activity type.

Frameworks: TNFD Drivers of Nature Change, IPBES Global Assessment

Industry: Agriculture, infrastructure, mining, real estate.

Example Company/Initiative: Gulf of Mexico: Partnership with a local conservation NGO to restore degraded mangrove forests vital to nursery habitats for commercial species (e.g., shrimp, snapper).