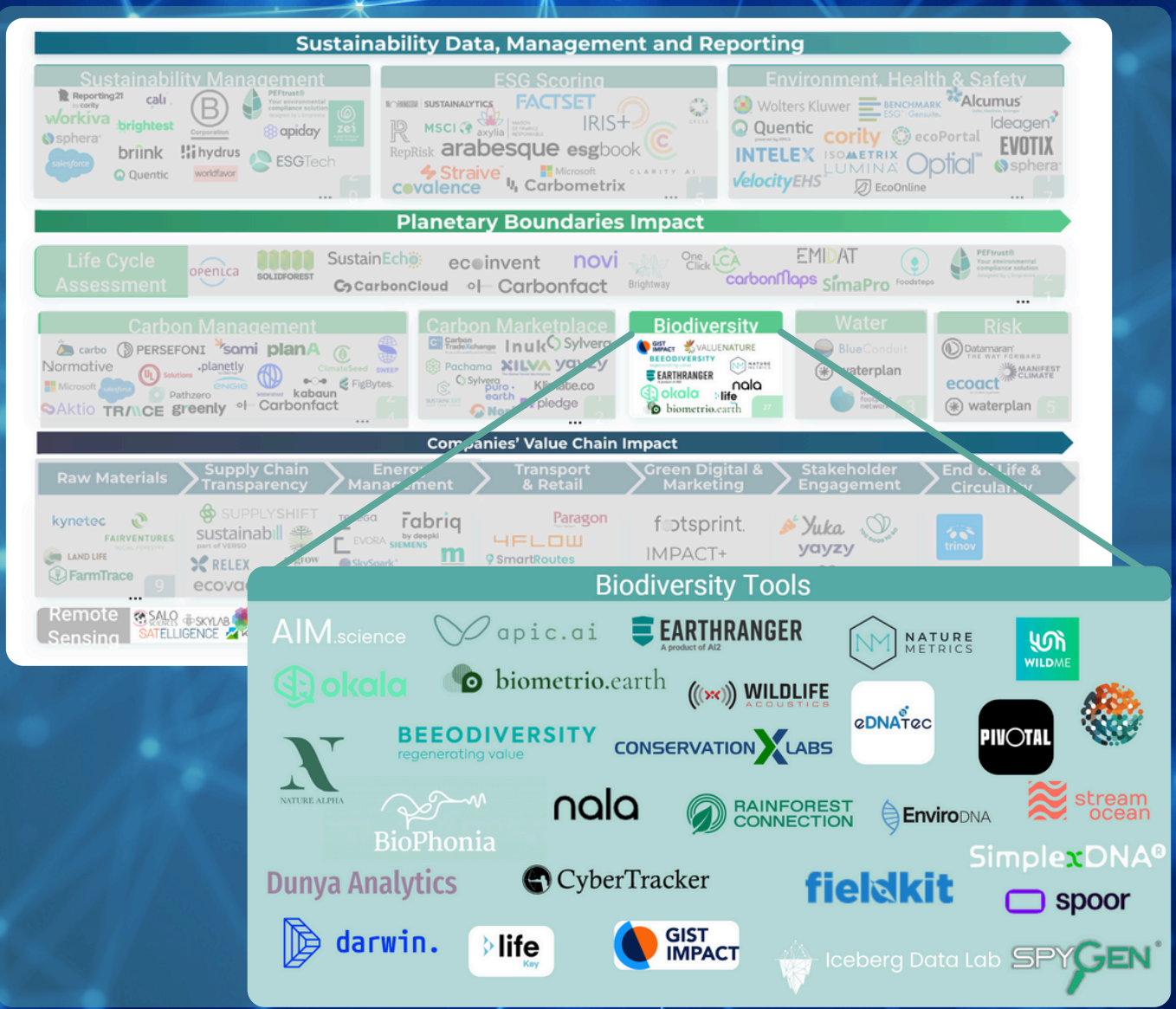
Digital4Impact Tech Radar

Biodiversity Deep Dive (BETA)



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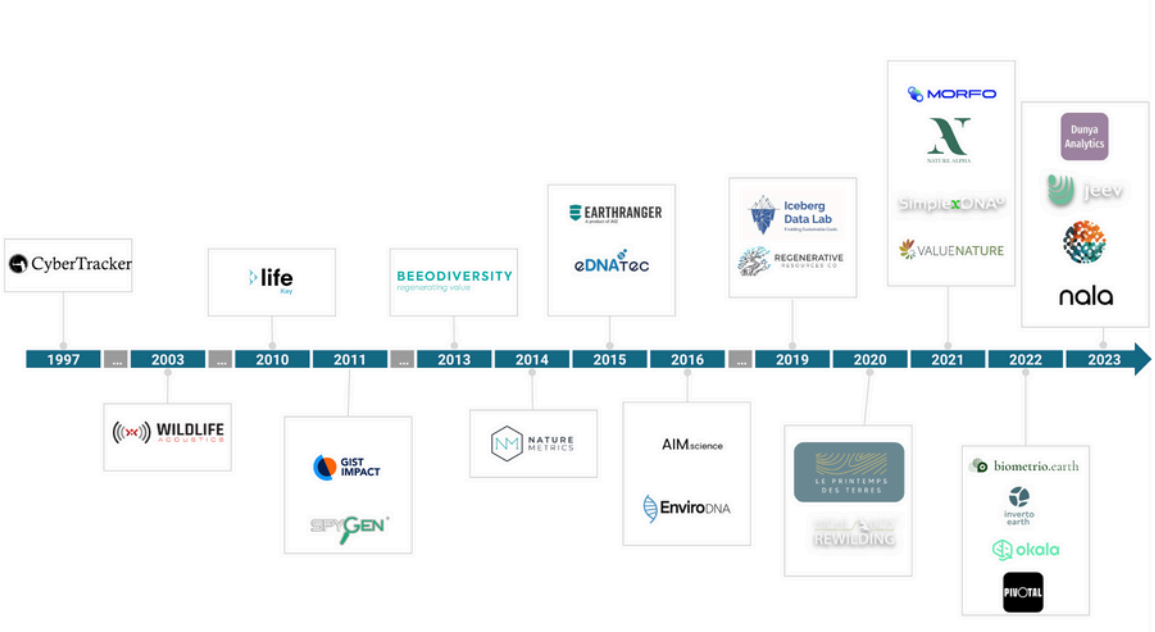
The Urgency of Measuring and Disclosing Biodiversity Impact

There has been a loss of **86% of wild mammal biomass on Earth**, and humans and livestock currently account for nearly 96% of all mammal biomass. This decline is intimately connected to the modification of 77% of land areas (excluding Antarctica) and 87% of the ocean, driven by human activities. Ecosystems like parts of the Amazon rainforest and wetlands, which absorb large amounts of carbon, are shifting from carbon sinks to carbon sources due to deforestation and other land-use changes.

Biodiversity impact disclosure is becoming necessary to achieve global goals of nature conservation and climate change mitigation. The multilateral Kunming-Montreal Global Biodiversity Framework, adopted in 2022, highlights the **pressing need to preserve and restore biodiversity**, and recent frameworks and standards, such as the SBTN and the TNFD, recommend or require the analysis of business impacts on nature, specifically stating that companies should assess species abundance and species risks. The inclusion of biodiversity targets and goals within sustainability strategies is stimulating an increase in digital tech specialised in biodiversity MRV and in streamlining the deployment of restoration/conservation projects.



Date of creation of companies included in this Deep Dive
Source: Impact LABS Research & Analysis

A biodiversity assessment should include indicators that reflect **the state of biodiversity**, through appropriate metrics. This means that ecosystem condition, genetic biodiversity and biodiversity significance of a specific location (including identifying key biodiversity areas, protected areas, endangered species, species richness and ecosystem services) should be considered in biodiversity assessments.

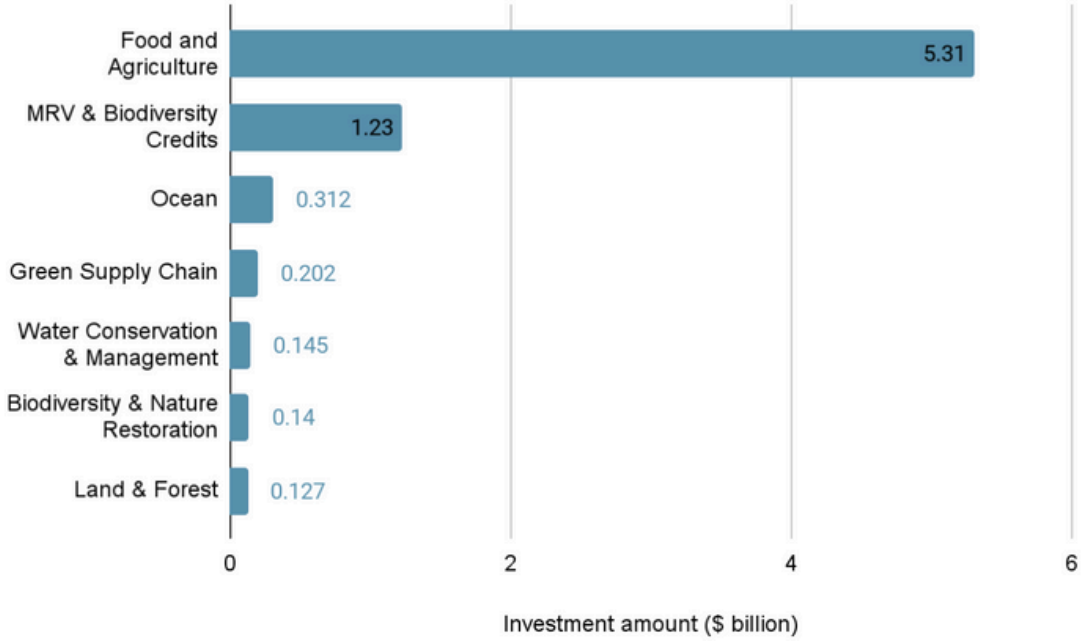
Biodiversity state indicator metrics help monitor the state of biodiversity and document its decline. IUCN's Red List Index and the Living Planet Index (LPI) are the leading indices for assessing species extinction at a global level.

Biodiversity footprinting metrics, on the other hand, are designed to **understand and report the impact an organisation has on biodiversity and the main causes of said impact.** For example, the Potentially Disappeared Fraction (PDF) of species was introduced in 1999 as a measure of the negative impacts to ecosystems caused by specific anthropogenic pressures. This metric was based on the life-cycle assessment methodology, and it combines local impacts from different types of pressures, accounting for the effective size of the area affected and the effective duration of this effect. The result is presented in PDF.m2.yr or PDF.m3.yr. A PDF of 1 means that all species are locally lost and a PDF of zero means that no species are lost, under a given pressure.

There are other ways to assess an organisation's biodiversity footprint, that can be based on pressure-specific information, like the PDF, monetary data or habitat mapping and rating. **Our research for the production of this Deep Dive covered tools that facilitate the assessment of Impacts, Risks and Dependencies, sensors that allow for automatic collection of biodiversity data and eDNA tools that allow for in-situ sampling and posterior analysis.**

Tools for Biodiversity as part of Nature Tech

Nature tech are technologies that can scale and accelerate the implementation of high-quality nature-based solutions, reverse the damage done to the environment, and aid in assessing, managing, and decreasing negative impacts on nature and the environment. Within nature tech, digital technologies for biodiversity data collection, Measurement, Reporting and Verification (MRV), biodiversity credit exchange, and restoration and protection of ecosystems are among the fastest-growing categories. Venture Capital funding in MRV and biodiversity credits tech amounted to $1.23 billion between 2018 and 2022, which is 16% of the total investment in nature tech. **Leveraging these technologies can contribute significantly to a nature-positive strategy and to managing the synergies and trade-offs between climate change mitigation/adaptation and biodiversity conservation.**

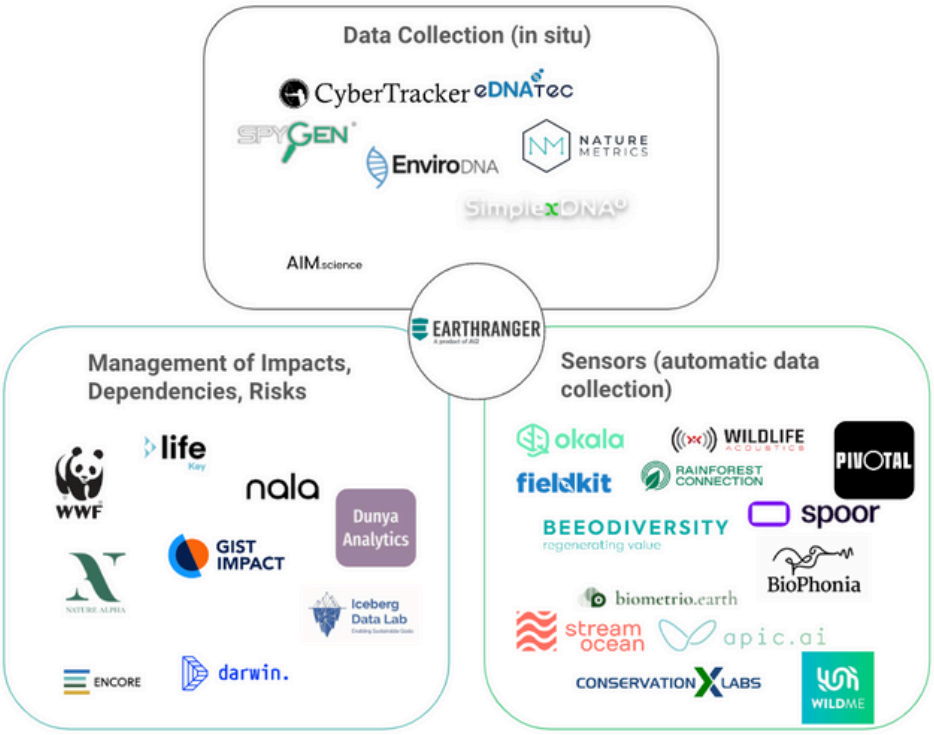


Amount of venture capital investment in different nature tech categories (Source: The State of Nature Tech report)

The different types of tools to manage biodiversity have different applications:

i) to measure the biodiversity condition, which can be achieved using a variety of tools, from **eDNA (in-situ data collection) to bioacoustics (automatic data collection through sensors)**. At times, companies choose to complement geographic information with modelled data and on-ground information, resulting in tools that have multiple data layers enriching the quality of information.

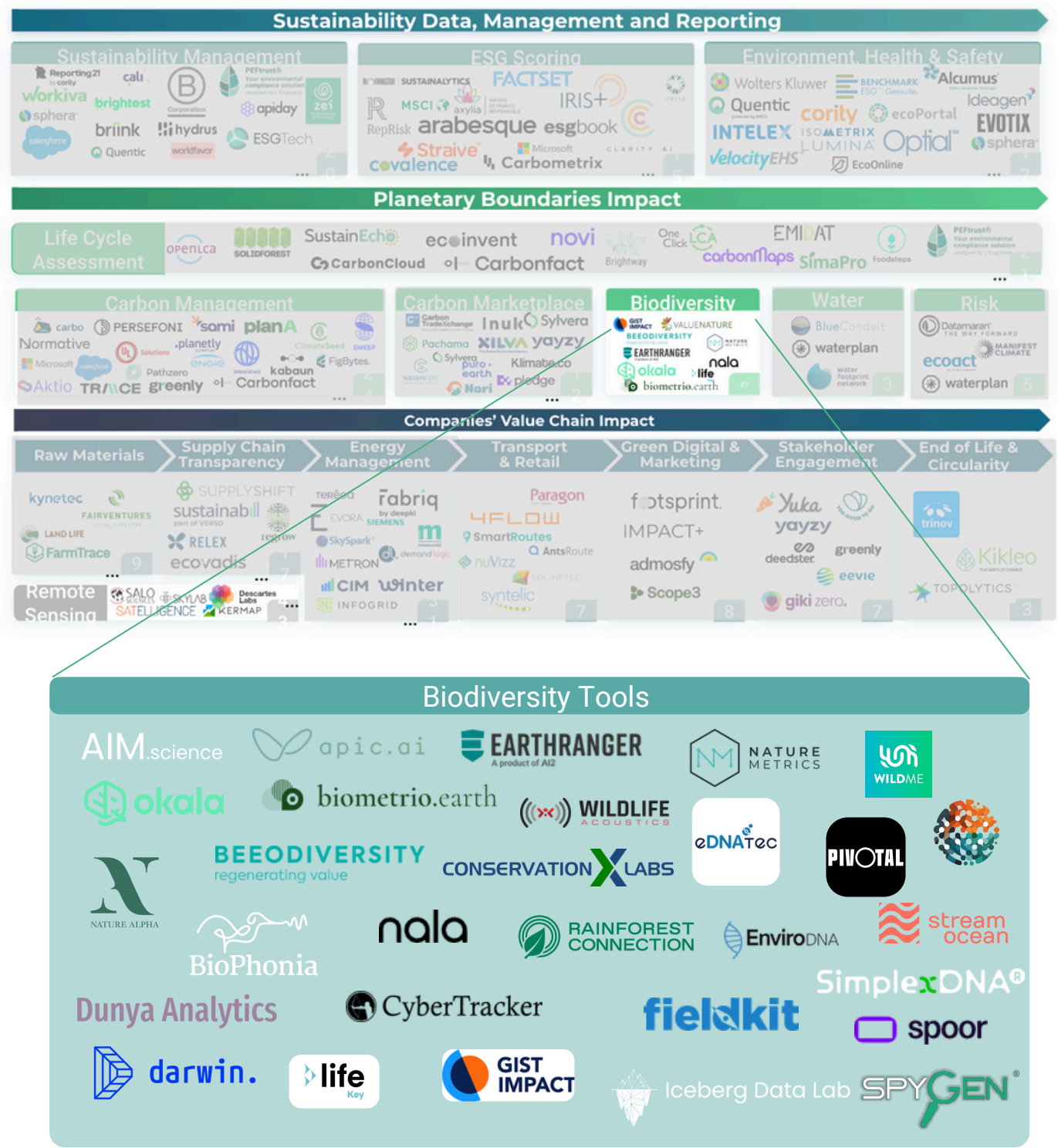
ii) to manage and estimate biodiversity impact, dependencies and risk across operation locations to facilitate decision-making in sustainability strategies, project development and investments. These tools rely on widely accepted databases, remote sensing data, and Machine Learning to model impacts and risks. They facilitate the uniformization of biodiversity risk information that enables benchmarking and informed decision-making.



Categorization of companies included in this Deep Dive

Zoom on Biodiversity:

Below you can find the Biodiversity solutions identified.



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Highlights

Considering the growth of nature tech geared towards biodiversity conservation and impact assessment, and the complexity behind the uniformization of biodiversity metrics across industries and locations, we decided to highlight 5 companies that show different strengths. This is meant to help businesses with different sustainability maturity and goals in regards to biodiversity impact to better identify which tool or tools are the most useful to address their needs.

	BEEODIVERSITY regenerating value	biometrio.earth	GIST IMPACT	nala	NATURE METRICS
Business Target	Private companies and Public entities	Small, Medium, and Large Businesses	Small, Medium, and Large Businesses	Medium,Large	Medium, Large
International Coverage	Europe, LatAm, Africa	Worldwide	Worldwide	Worldwide	Worldwide
Date of Creation	2013	2022	2011	2023	2014
Capabilities: Current capabilities to deliver the vision of the company	★★★★½	★★★★½	★★★★★	★★★★½	★★★★½
Momentum: Current traction on the market	★★½☆☆	★★☆☆☆	★★★★½	★★½☆☆	★★★★★
Vision: Understand where the market is going and/or has an idea to shape the market	★★★★½	★★★★★	★★★★½	★★★★½	★★★★½
Integration Capacity to connect the digital solution with on-the-ground conservation efforts	★★★★½	★★★★½	★★☆☆☆	★★★☆☆	★★½☆☆
Services Scope of services provided	★★★★★	★★★★½	★★★★★	★★★★½	★★★★½

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Capabilities

The parameters used for the assessment of the capabilities of biodiversity solutions are the following:

Species-level Assessment: Granularity of Biodiversity assessment for species.
Ecosystem-level Assessment: Granularity of Ecosystem Condition assessment
Impact Modelling: Whether the methodologies are backed by strong scientific research and models, and the accuracy of the results is quantified. Impact measurements are correlated with different pressures and external data, including the use of recognized climate evolution scenarios for forecasting.
Data Collection & Management: The aggregation of different data sources to provide robust information, using recognised databases and fostering partnerships that support and increase credibility in the data sources used.
Frameworks Compliance: Providing results that are aligned with the requirements of the main disclosure and target-setting frameworks, facilitating reporting.
User Experience: Providing data visualisations and insights that allow for an easier understanding of biodiversity and ecosystem condition metrics. Complex metrics are simplified and explained to facilitate decision-making. Allows for comparability across locations and/or same-sector companies.

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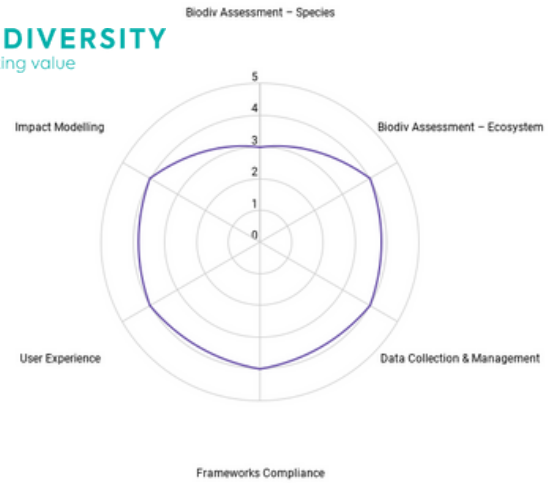
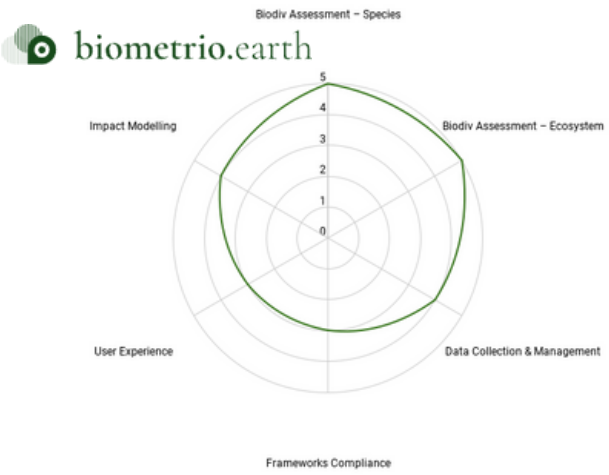
Capabilities

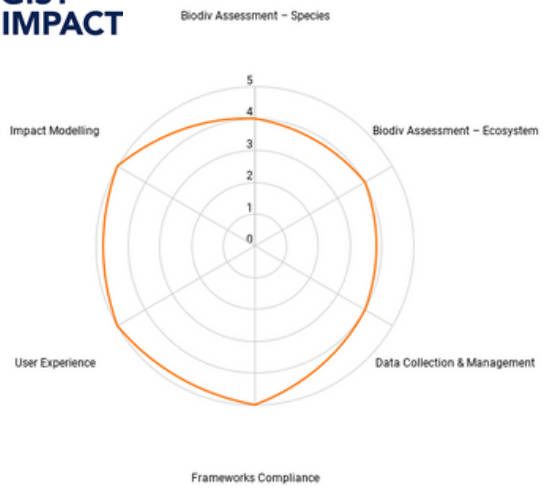
BEEODIVERSITY
regenerating value



biometrio.earth



GIST IMPACT



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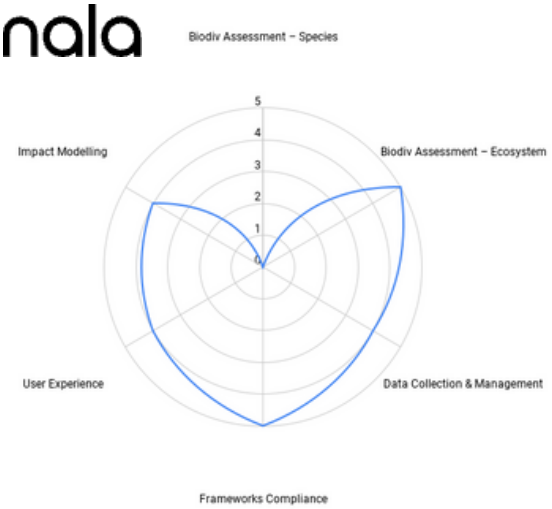
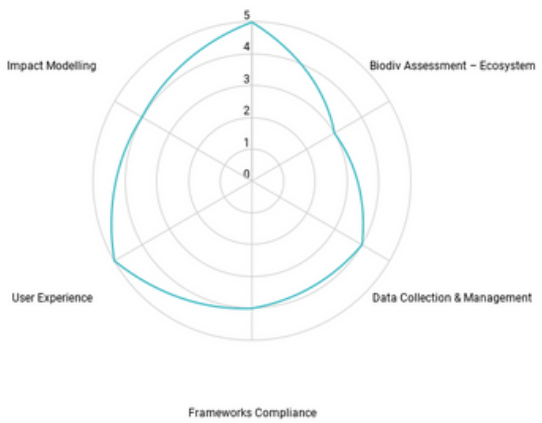


NATURE METRICS



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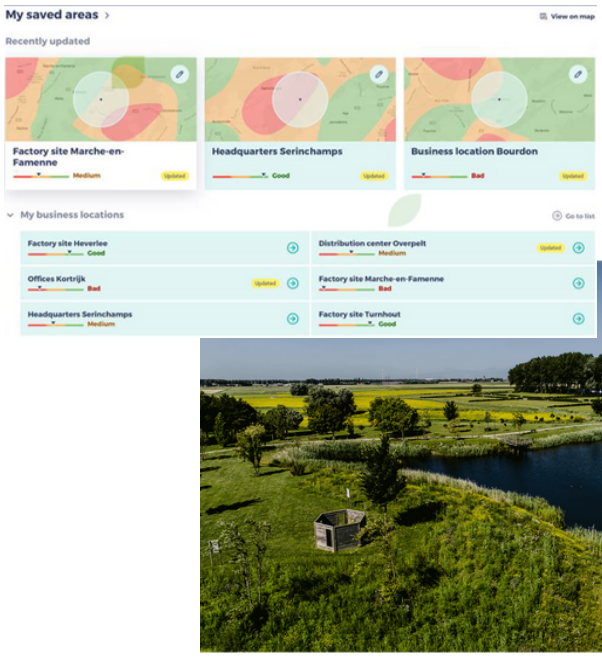
BEEODIVERSITY
regenerating value

Business Target	International Coverage	Date of Creation
Private companies and Public entities	Europe, LatAm and Africa	2013



Summary & Impact

- BeeOdiversity leverages the natural capabilities of bees to monitor environmental health and promote biodiversity.
- BeeOdiversity uses bees as bio-indicators to assess the health of ecosystems. Bees collect data on pollutants, pesticides, and plant diversity, providing a unique, natural means of monitoring environmental changes and pollution levels.
- They provide quantified data to evaluate the impact of the actions on the field and their services include biodiversity strategies, pollution monitoring, environmental impact analysis, ecological audits of sites, sustainable agriculture and advice on improve for biodiversity

VISION

- BeeOdiversity is rooted in the vision that biodiversity can create value for companies and stakeholders by collaborating with bees rather than using them.

INTEGRATION

- BeeOdiversity implements their services from materiality assessments, biodiversity and pollution assessments, to strategy and implementation of improved management practices.
- The insights obtained can be easily used to inform into conservation actions

SERVICES

- The cost of BeeOdiversity's services depends on location and scope. They offer 4 main services:
  - BeeOmonitoring
  - BeeOmetrics, available in Europe
  - BeeOimpact
  - BeeODNA

CAPABILITIES

- BeeOdiversity collects pollen samples from bees that allows for measurement of substances like pesticides and PFAS.
- The information collected is integrating in their platform, BeeOimpact, that also enables the assessment of risks and opportunities.

Digital4Impact Tech Radar

biometrio.earth

Business Target	International Coverage	Date of Creation
Small, Medium, and Large Businesses	Worldwide	2022

Summary & Impact

- Biometrio.earth is a company founded in 2022, specializing in AI-powered biodiversity assessments.
- They integrate data from remote sensing, wildlife cameras, and acoustic monitoring to offer a comprehensive analysis of ecosystems. Their approach includes using on-site sensors and remote data collection, which is processed with advanced AI to evaluate and monitor changes in biodiversity and ecosystem health.
- The company's services are designed to provide detailed, data-driven insights into environmental projects, making them highly transparent and reliable for stakeholders

VISION

- Developed from a project of monitoring and analysis of nationwide ecosystems in Mexico
- Partnerships with Indigenous Peoples and Local Communities
- Work with NbS projects to valorize carbon credits and increase project's transparency

INTEGRATION

- The data and resulting analysis are available in customised dashboards and are compliant with the reporting requirements of major disclosure frameworks
- The results are species and location specific, allowing for easy integration of the information in management of conservation efforts

SERVICES

- Biometrio offers 3 packages with different granularity of results and application of different tech (among bioacoustics, video imaging, eDNA and Remote Sensing)
- Biometrio will soon launch a new data product meant for rapid land assessments

CAPABILITIES

- Biometrio provides species-specific information and insights on ecosystem condition using biotic, abiotic and ecological indicators
- They use in-situ data that is layered with space-borne and sensor data, powered by their proprietary processing system

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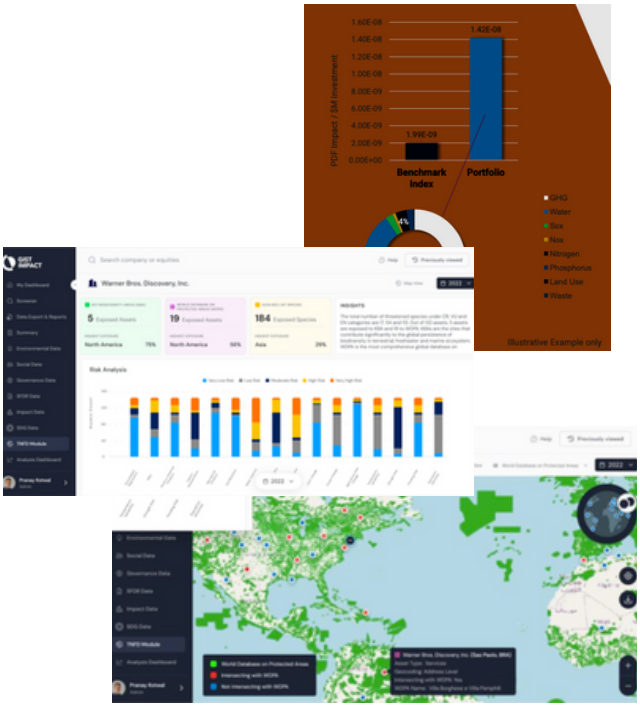
GIST IMPACT

Business Target	International Coverage	Date of Creation
SMEs	Worldwide	2011



Summary & Impact

- GIST Impact is a leader in providing impact data and analytics, specialising in measuring and valuing corporate impacts on biodiversity and nature.
- Their biodiversity solutions have a comprehensive and data-driven approach, helping investors and businesses understand and manage their biodiversity-related risks.
- GIST Impact provides detailed analysis of companies' biodiversity footprints, using methodologies based on Life Cycle Impact Assessment.
- Their data is used by a diverse range of clients, from corporate sustainability teams to consulting firms and financial institutions, who use the data to understand their exposures, mitigate risks and identify opportunities to reduce biodiversity impacts.
- They partner with leading organizations like the International Biodiversity Assessment Tool (IBAT) to provide one-of-a-kind asset level data.

VISION

★★★★☆

- GIST Impact aims to provide comprehensive, data-driven insights into social and environmental impacts, tracing its roots to the groundbreaking study The Economics of Ecosystems and Biodiversity (TEEB).

INTEGRATION

★★☆☆☆

- The data provided by GIST Impact is complex and detailed and might require additional training or consultancy to integrate the insights into a company's existing systems and processes.
- Their data is available via SFTP, API and their SaaS platform

SERVICES

★★★★☆

- Offers a wide range of services related to impact data
- The complex nature of GIST Impact's services is reflected in the prices. The price can vary significantly based on the specific datasets and scope of data required

CAPABILITIES

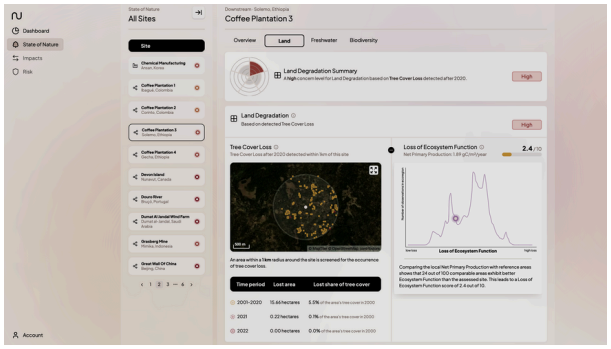
★★★★★

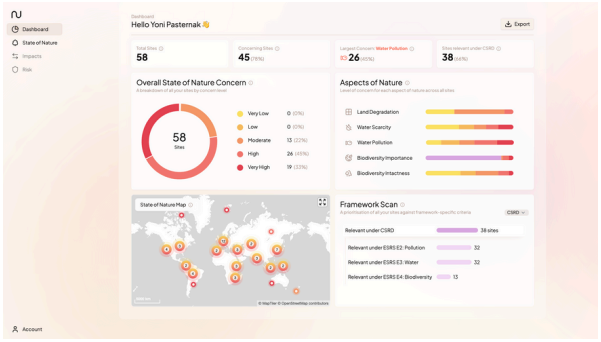
- GIST Impact measures impacts and pressures on ecosystems and biodiversity, fully aligned with the TNFD and other disclosure frameworks
- Measures include Potentially Disappeared Fraction of Species (PDF) and monetized impact valuation
- Coverage of 14k+ public companies allowing for benchmarking

Digital4Impact Tech Radar

nala

Business Target	International Coverage	Date of Creation
Medium-Large	Worldwide	2023





Summary & Impact

- Nala Earth positions itself at the intersection of technology and corporate nature & biodiversity management to provide software for compliance & reporting, nature & biodiversity risk management, and minimising negative impacts on nature.
- Nala uses satellite imagery, primary (in-situ) measurements, and environmental models (including AI) to monitor and analyse locations, scoring the level of nature risk across deforestation, water availability, water pollution, biodiversity condition & proximity to important areas
- Nala's platform assesses the State of Nature at locations in a company's value chain, a company's Impacts & Dependencies and Risks & Opportunities, and facilitates Target-setting & Monitoring

VISION

★★★★☆

- Nala Earth has nature at the center of it's vision, aiming to make businesses more resilient and manage nature impacts in value chains
- Holistic assessment, covering different aspects of nature across sites

INTEGRATION

★★★☆☆

- The information provided by Nala Earth is categorised by "Aspects of Nature", which are closely related to the main drivers of biodiversity loss. This allows for an easier integration of data in the decision-making process.

SERVICES

★★★★☆

- Nala's services cover the most important aspects of nature, when having an holistic approach to sustainability strategies
- The cost of the tool is tailored to each customer and varies depending on the scope of the analysis (supply chain coverage, # of locations)

CAPABILITIES

★★★★☆

- Nala Earth provides an assessment of business impacts and the state of nature, relying on satellite data and environmental models.
- Their platform allows for bespoke analysis and benchmarking.
- Their analysis and guidance aligns with the leading nature regulations and frameworks (EU's CSRD, EUDR, TNFD, GRI and SBTN)

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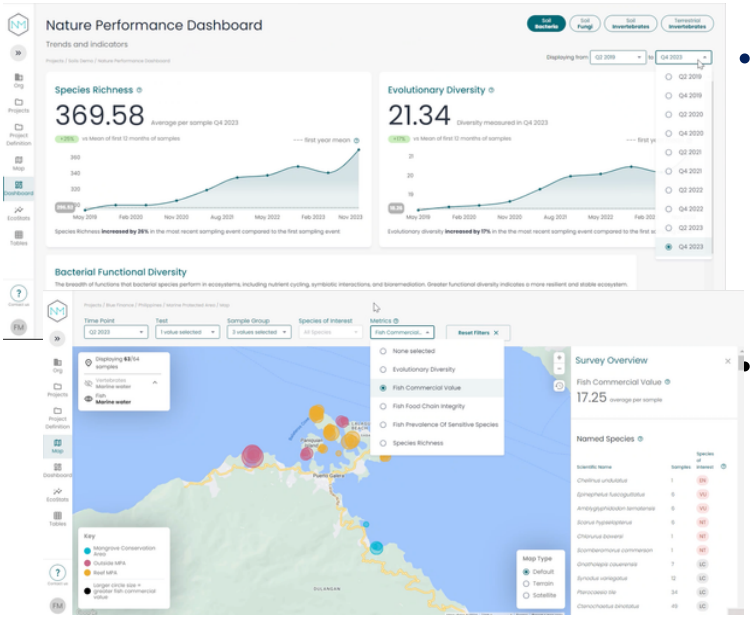
NATURE METRICS

Business Target	International Coverage	Date of Creation
Medium, and Large Businesses	Worldwide	2014

Summary & Impact



- NatureMetrics specialises in biodiversity monitoring using environmental DNA (eDNA) technology. They are able to detect a wide array of species from small environmental samples. They offer end-to-end services, from survey design to data analysis and reporting.
- Their Nature Intelligence Platform provides automated insights and clear metrics, making biodiversity data accessible and actionable for businesses

VISION

★★★★★

- NatureMetric's vision is rooted in sustainability, enabling nature positivity and access to on-ground data

INTEGRATION

★★★★★

- NatureMetrics is integrating diverse datasets with eDNA ground-truth data, such as information from satellites and bioacoustics
- The insights obtained in the platform can be complemented with their Nature Strategy services

SERVICES

★★★★★

- Offers Survey Design and Nature Strategy services
- Pricing can vary according to the location, number and type (soil or water) of the samples
- Cost of sample transport depends on locations and legislations

CAPABILITIES

★★★★★

- NatureMetrics can detect the presence of indicator species and estimate the relative proportion of species present, giving insights on ecosystem condition
- The data provided by NatureMetrics is easily understandable and facilitates target setting and compliance to different frameworks.

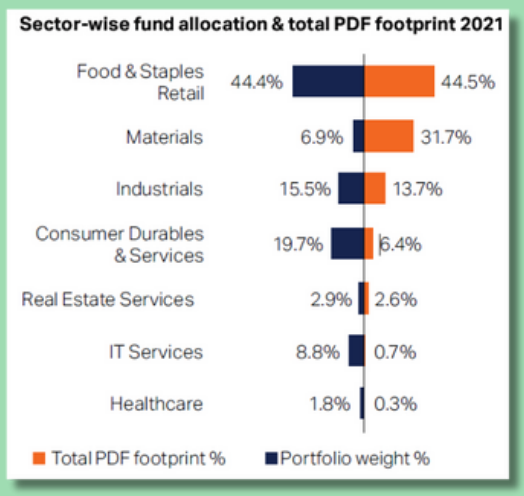
Measuring Impacts on Biodiversity and the State of Biodiversity

Biodiversity Assessment is still complex due to the lack of a unified metric. Unlike carbon footprint quantification in tCO2e, for biodiversity, there are multiple metrics that inform on the state of biodiversity and proxies that allow for impact quantification. For biodiversity, currently, not many tools can inform a company on their impacts at an ecosystem, species and genetic level, covering all biodiversity dimensions from data collection to analysis.

Different tools for different maturity

In a company's journey towards Nature Positivity, the first step is assessing which impacts are material. Tools such as WWF's Biodiversity Risk Filter and ENCORE allow for a facilitated screening of biodiversity risk and materiality.

Example of Biodiversity Footprinting for a institutional investor:



Source

An institutional investor used GIST Impact data to assess the biodiversity footprint of their portfolio. GIST Impact provided them with company-specific biodiversity footprints using the Potentially Disappeared Fraction (PDF), a peer-reviewed Life Cycle Impact Assessment methodology.

The granularity of the insights allowed the firm to inform strategic investment decisions, including the reallocation from high- to low-impact sectors and investees.

Companies with **low sustainability maturity** usually have no KPIs, targets, commitments, goals, policies or procedures in place and no awareness of the company's interactions with nature (impacts and dependencies), making it difficult to access the full benefit of biodiversity tools that provide complex information. In cases where biodiversity is a material topic, translating the biodiversity risk and impact insights into on-the-ground conservation/restoration actions can be difficult and require specialised knowledge. **In these cases, tools for Management of Impacts, Dependencies, Risks have the most potential in kick-starting a company's journey towards Nature Positivity.**

As sustainability maturity increases and companies develop a sustainability strategy, engage in collective action to address environmental issues across their supply chain, engaging all stakeholders (including nature) with clearly defined commitments, targets and long-term goals, **the need to have more detailed impact measurement arises. In these situations, tools that collect on-the-ground data, such as eDNA tools or sensors, allow for more accurate impact assessment and monitoring of impacts.**

Example of use of sensors by Nespresso:

In 2019, Nespresso's AAA Sustainable Quality Program partnered with Cornell Lab of Ornithology and the Institute for Computational Sustainability to study how specific sustainability management practices influence the habitat use of avian communities. They deployed 82 **Automated Sound Recording Units** and to detect the presence of bird species and analyse the impact of sustainable farming practices on bird populations.

Source

The industry a company operates in also impacts which type of tool is more relevant for them. **Companies in industries with high dependency on natural resources would benefit from tools in the Sensor and eDNA categories that allow for continuous monitoring.** This enables companies to quickly flag activities that have negative impacts and assess if regenerative practices are positively impacting local species and ecosystem health, as illustrated in the Nespresso's use of automated sound recording equipment.

At Impact Labs, we have the full capacity and experience to support organisations in assessing their materiality, prioritising actions within a robust sustainability strategy, and selecting the appropriate tool for maximum impact reduction.

The next stage is contributing to nature regeneration and (re)building of natural capital, which needs to be done with appropriate due diligence of Nature-based Solution projects.

Sources

State of Nature Tech Report by Nature Tech Collective (previously MRV Collective)

Bridging the Gap Between Biodiversity Footprint Metrics and Biodiversity State Indicator Metrics, by Mark Goedkoop, Axel G. Rossberg and Marina Dumont

Innovating Conservation: Digital Solutions for Preserving Biodiversity, Impact labs 4 Earth

Version 1
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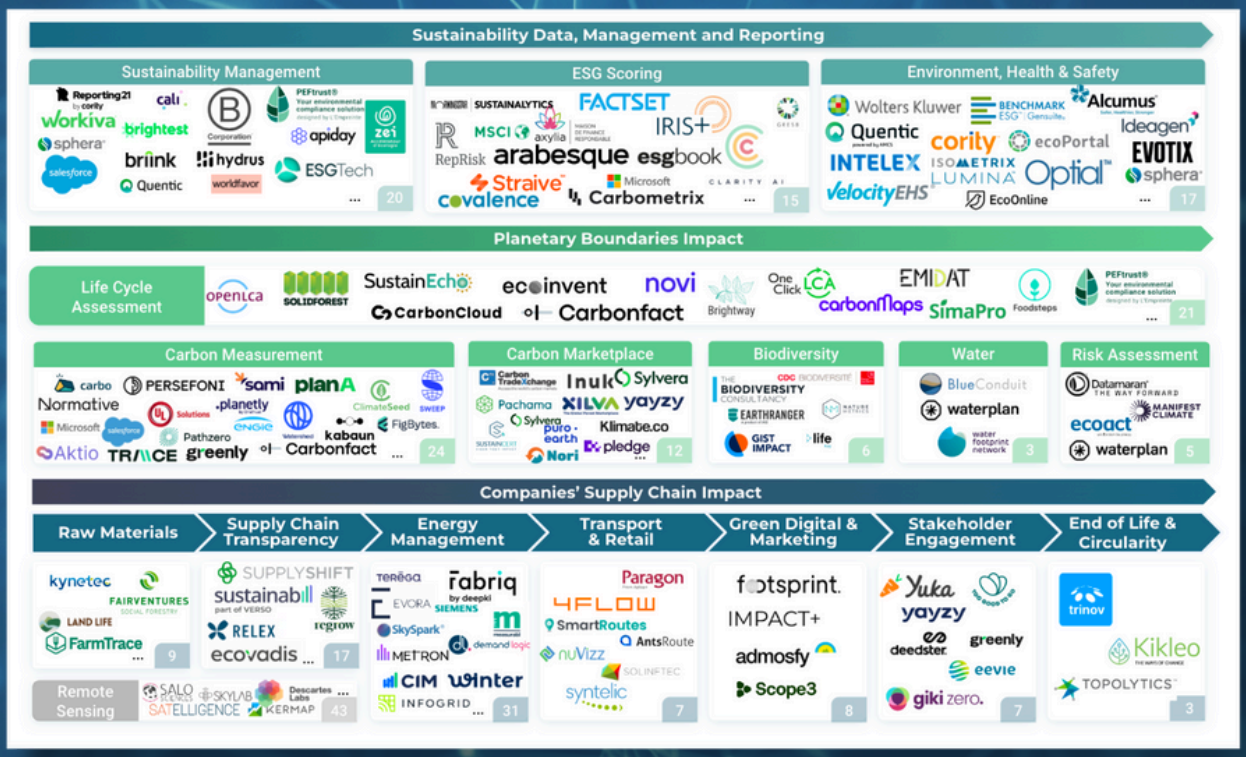
Contextualization



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The Need for Digital4Impact Tech Radar

In today's business environment, we are witnessing an increase in innovative technologies to tackle climate change mitigation and adaptation issues. There is a clear acceleration in the adoption of sustainability solutions by industry leaders, enabling the next wave of sustainable transformation. Understanding the available technologies given the current climate landscape allows businesses to define robust sustainability strategies, and to move away from Business-as-usual, accelerating to the next phase of sustainable company growth.

At IMPACT LABS, we believe that frugality and changes in our way of living and consuming are essential to build Nature Positive Businesses. We also believe that technology can be instrumental in increasing the potential of impact companies and in accelerating the transformation of traditional businesses.

The Aim of Digital4Impact Tech Radar

The **Digital4Impact Tech Radar** is the map to help you navigate the ever-evolving landscape of digital technologies that are driving sustainability. The **Digital4Impact Tech Radar** is curated by scanning the horizon to identify emerging technologies and their capabilities across all stages of the sustainability value chain. Our purpose is not to provide an oversimplification of complex systems, but to share our expertise obtained through our business transformation consulting experience. Our in-depth tailored insights empower your decision-making processes with accurate and relevant information. Having high-quality sustainability requirements is the first step to transgress Business-As-Usual, followed by choosing suitable methodologies and technologies that allow at-scale impact.

Understanding the Categories:

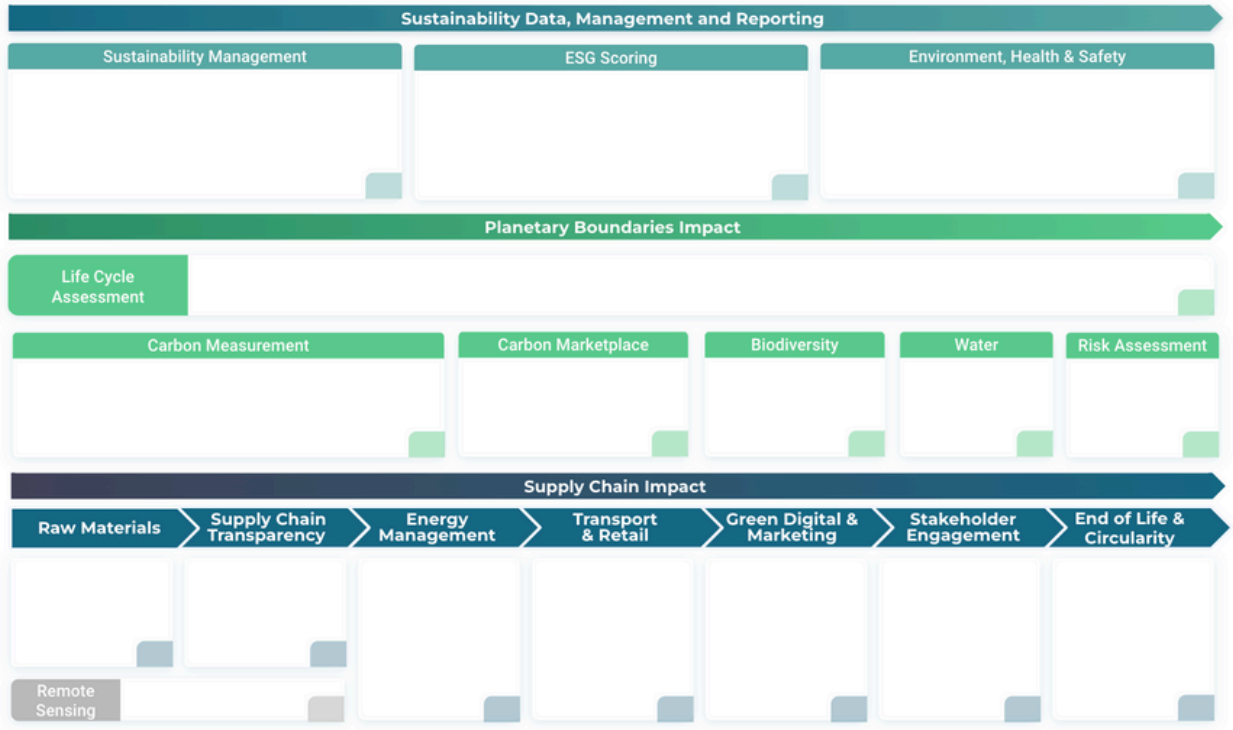
The **Digital4Impact Tech Radar** categorizes technologies based on three dimensions:

The sustainability transversal tools: Tools embracing multiple dimensions of ESG and sustainability. We can clearly see the evolution from the focus on health and safety to integrated sustainability measurement tools adapted to the latest reporting official requirements.

The planetary boundaries: Tools specialized in measuring and reducing impacts on one or several planetary boundaries. It is not to our surprise to see a large proportion of this category emphasizing on tackling the climate change boundary issues.

The company value chain: Tools that have been created to help companies reduce their impact at each stage of the value chain.

We believe this approach is crucial as sustainability is not a one-size-fits-all endeavor. By grouping technologies into categories, we help you understand how these solutions can enable sustainability transition throughout various stages of your business operations.



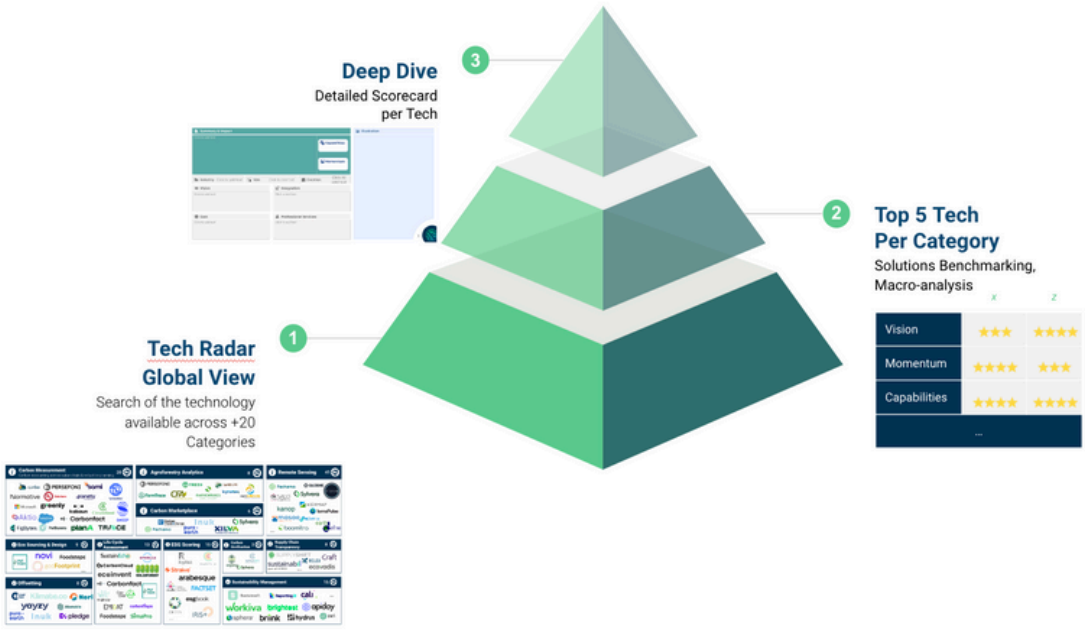
Methodology

Our methodology can be summarized into 3 key steps:

Scout – We continually scout the tech landscape for emerging solutions.
Analyze – We rigorously analyze these technologies, considering their sustainability impact and market viability.
Personalized Deep Dive – We provide you with detailed RFPs, enabling you to explore these solutions further.

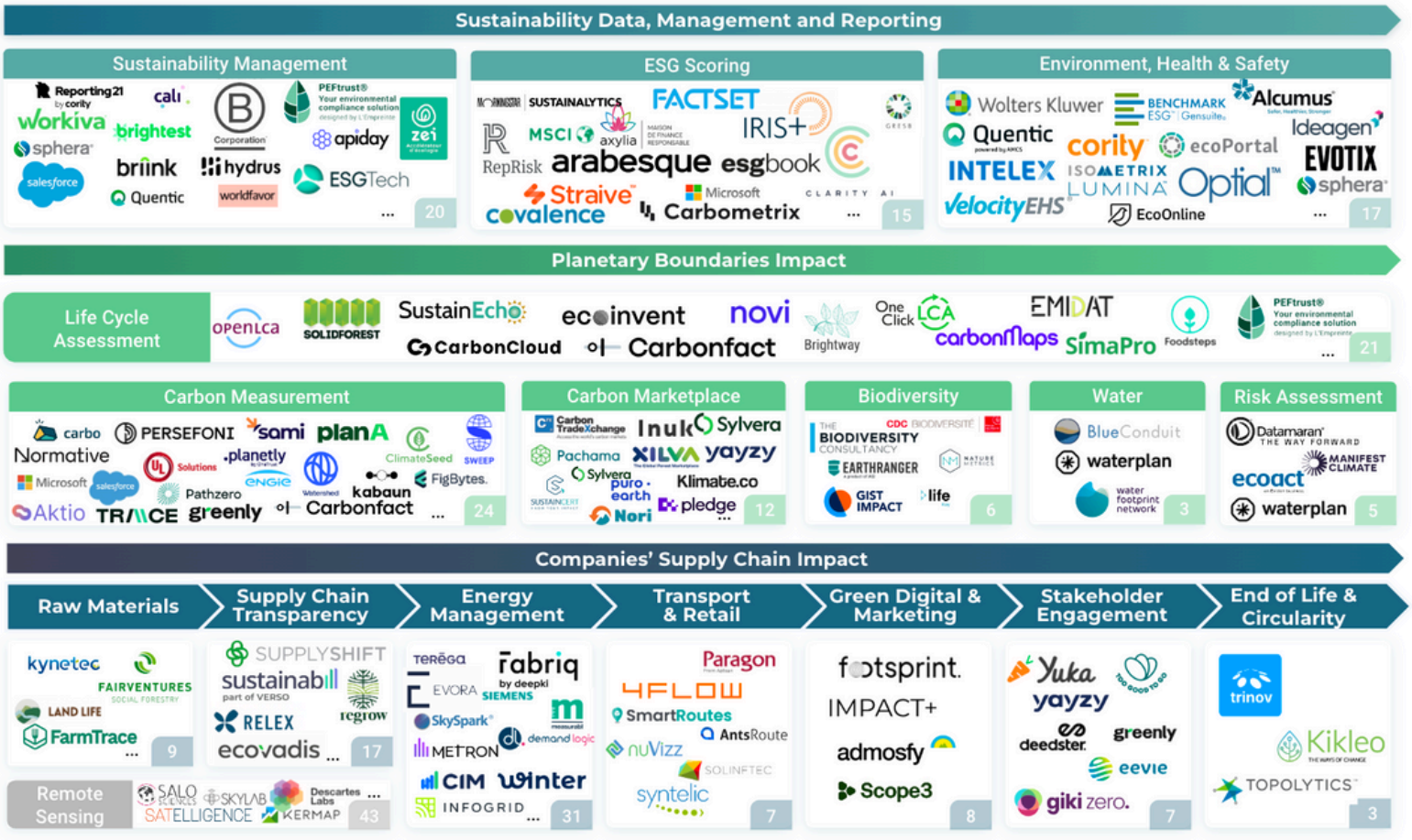
Our analysis has 3 levels, as represented in the image below:

Tech Radar Overview – Corresponding to the scouting step, it involves listing the company's key information, products and services, leading to an overview by category.
Top 5 Technologies per category – For each category, the top 5 companies are selected and in-depth analysis are performed, where their momentum and capabilities are scored.
Company Deep Dive – A detailed scorecard based on product demos.



Digital4Impact Tech Radar

The Tech Radar to accelerate your Ecological Transition



The Digital4Impact Tech Radar goes beyond merely identifying technologies; it helps you align these solutions with your specific company challenges. IMPACT LABS has deep industry knowledge on the features, capacity, and maturity of technology through the comprehensive analysis and research of the sustainability market. IMPACT LABS can provide you with a complete assessment of your company's actionable areas and conduct Requests for Proposals (RFPs) tailored to your sustainability needs.

Next Releases

Deep dives on all different categories will be released in the near future, so stay tuned for:

Sustainability data, management, and reporting technologies

- **Environment, Health, and Safety** historical tools with strong safety and health valence
- **ESG Scoring** tools introducing standard notation systems on ESG performance

Planetary boundaries tools

- **Carbon Marketplace & Offsetting** | Focus on climate change boundary, carbon credits trading platforms
- **LCA, Eco-Sourcing and Design** | Transversal to multiple planetary boundaries, those are Lifecycle assessment tech, including Eco-Sourcing/Design tools
- **Water management** | Focus Blue water use & pollution measurement & optimization
- **Risk assessment** | Technologies supporting risk management with strong focus on climate change, but not exclusively

Impact on company value chain

- **Agroforestry tech** | To create positive impact through sourcing
- **Supply Chain Transparency** | To monitor and drive positive change with suppliers
- **Energy Management** | Mostly building and factories energy management systems
- **Transport & Retail** | Reducing the impact of goods transportation and distribution
- **Green Digital & Marketing** | Tech to reduce the impact of your marketing tactics
- **Stakeholder Engagement** | Tools for consumer and employee engagement with your sustainability transformation
- **End of Life & Circularity** | Tech supporting better recyclability and tracking circularity of your business model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