Environmental Finance

Nature data - overwhelmingly complex, but a need-to-know

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By Genevieve Redgrave

Amid rapidly growing demand for nature data, changing investor requirements and artificial intelligence will shift the market, writes Genevieve Redgrave

As companies and investors wake up to the importance of measuring their nature risks, dependencies and impacts, demand for data is booming.

The launch of the recommendations of the Taskforce on Nature-related Financial Disclosures (TNFD) in September was a significant milestone in the development of the market.

The TNFD set out 14 'core' recommended disclosure points, covering impacts and dependencies. Organisations are also encouraged to carry out a LEAP assessment, to locate their interface with nature, evaluate their dependencies and impacts, assess material risks and opportunities and prepare a report.

As of the end of June, 416 organisations said they will report on a voluntary basis.

Nature and impact data provider GIST Impact tells *Environmental Finance* that the topic of nature data "has been supercharged by TNFD in many ways". Pavan Sukhdev, CEO and co-founder, says this has been "a huge force multiplier, in understanding risks and how a company's strategy, risk management and operations play".

While TNFD is "an amazing accomplishment", Thomas Moran, vice president and head of biodiversity data products at GIST Impact, argues that the framework is "not particularly prescriptive in terms of the actions that a company should take".

Many of its customers are "overwhelmed" by the topic of nature, he says, with many "finding it challenging to make sense of the disparate guidance that's out there".

Mahima Sukhdev, senior vice president of commercial development at GIST Impact, argues that "most sectors are approaching this with fresh eyes", with many financial institutions not knowing what data they are looking for.

Many still "haven't realised that nature cannot be measured through one metric", in a similar way that climate can be tracked through greenhouse gas emissions. While a high-level singular metric could theoretically be developed, she says "this would lose a lot of the important detail, and it hasn't been done successfully in the market".

Environmental DNA (eDNA) provider NatureMetrics says there are huge disparities in levels of understanding of the topic, and often the data provider's role is to help "frame how to think about nature and biodiversity [for the client], wherever they are in their journey".

Hannah Skeates, director of nature strategy for finance and environmental markets at Nature Metrics, says it is working with many on "the conceptualisation of not just how you can think about risks and dependencies and impact opportunities but also what that can subsequently mean for their organisation".

For those working on TNFD in particular, the data provider is supporting clients on how they might approach the LEAP framework, whereas others are much further along in the process, and are collecting eDNA on their sites to report in line with disclosure metrics.

Regulations a driving force

However, Laura Plant, business development director at NatureMetrics, argues that "actually most are looking to focus on their requirements [under the EU's Corporate Sustainability Reporting Directive], and said they'll worry about TNFD later".

Under the CSRD, large organisations based or operating in the EU will have to report in line with the European Sustainability Reporting Standards. These are largely aligned with the TNFD's metrics. So, for many, nature reporting is no longer purely a voluntary endeavour – further increasing pressure on data providers.

Serhat Öngen, nature and biodiversity product lead at Clarity AI, says regulatory requirements are pushing some organisations further ahead.

Financial institutions in countries such as France, where mandatory disclosures have already been in place for some time, "are typically ahead of the curve compared to their counterparts in other regions".

Introduced in 2021, France's Article 29 of the Energy and Climate Act requires financial organisations to disclose their biodiversity-related risks and strategies. It was seen as the first mandatory biodiversity reporting regime in the world.

French data provider Iceberg Data Lab launched one of the first biodiversity footprinting tools to support the implementation of this legislation. This uses Mean Species Abundance as a key metric to assess a company's impacts and dependencies.

Other footprinting tools are also now available, including a joint collaboration between Clarity AI and GIST Impact.

Data providers expect the anticipation of further mandatory reporting to continue driving demand, particularly after the International Sustainability Standards Board announced it will look at nature within its next programme of work.

It is not yet known whether this will culminate in a nature-specific standard – to join its existing sustainability standards – or merely extra guidance.

Growing sophistication of data demands

Since the TNFD's launch, conversations have "evolved into more substantive dialogues with financial institutions that have a more firm understanding of their nature-related needs", Clarity AI's Öngen says. He anticipates interest from financial institutions to continue growing.

As understanding of the theme develops, this is driving a shift in the types of data being requested, NatureMetrics' Skeates argues: "There seems to be a move happening, from purely thinking about the negative pressures on nature to considering what the actual state of nature looks like across the sites, adding that up and tracking [it] over time". This requires more coverage of primary, site-based data.

"We're evolving our proposition to think about how to make that more accessible and create holistic measures for clients, so they can think about that relative to the ecosystems [being studied]", she adds.

GIST Impact's Moran agrees that most client interest is in site-level data. "Given the complexity of the topic, customers really like to start their journey with something physical and tangible they can connect with".

With growing concern about greenwashing, having the physical data to back up claims will be crucial, Skeates says.

Eye in the sky

Satellites were often cited as one of the key technologies driving the growth of nature data, with NatureMetrics labelling it as a gamechanger for its work.

"Technology on the ground is great, but you need to be able to scale this over large areas, and satellites allow you to do this", NatureMetrics' Plant says.

"Before, it was too difficult to directly measure the health of nature" but now, being able to combine eDNA with emerging technologies such as satellite data or bioacoustics has enabled the better understanding of habitats at large.

The potential of AI

Chris Baldock, head of data methodology at Planet Tracker, which provides country-level data on direct and indirect nature dependencies of around 5,500 products, says artificial intelligence (AI) has the potential to fill data gaps and analyse large sets of data.

It could also help 'clean up' data – particularly satellite data, which is often provided in the form of raw data and requires adjustments based on variables such as cloud coverage and satellite angle. AI could help the cleaning of this data at a much faster rate, he says.

Clarity AI's Öngen was also positive about the impact of AI, saying it has the potential to "better meet clients' expectations to really integrate nature-related data into their decision-making processes".

It could help speed up data collection as well as turn 'unstructured data' into data that would be useable for investors. This might include data from news sources or satellites.

"These are particularly powerful as they can be location-specific and critical for nature and biodiversity", he says.

GIST Impact is using machine learning to estimate missing data on around 6,000 companies, based on what it knows about the company, the sector and competitor companies.

"Clients need to wake up and realise this data is future-proofing them against the risks. It's worth spending money on" – NatureMetrics' Laura Plant

But Pavan warns there are "rough and ready" data estimates on the market, and says he is "very concerned" about the accuracy of some of the models. He calls for greater standards to help give "credibility", and free up smaller companies to innovate, instead of trying to develop internal standards and methodologies.

NatureMetrics – which has been using AI models to track nature changes over time, and then "ground-truthing" it each year with site-level technology – also says it is "aware of AI challenges".

Plant says: "Our recommendation to clients is to keep checking in and verifying that it's an accurate reflection of what's actually happening".

Data gaps

However, major challenges and data gaps remain. In particular, value chain data can be "elusive" and can be a real challenge for large companies who are having to track indirect impact across multiple geographies and sectors.

While Scope 3 emissions remain a challenge, indirect nature impacts from supply chains are "even more challenging because most of the impacts happen downstream", GIST Impact's Moran says.

"If you're a financial institution that has a global portfolio, there will be a lot of gaps in your ability to robustly quantify impact," he adds.

Having the physical data of where suppliers' assets are located, becomes "especially more important in that context", GIST's Mahima Sukhdev adds, "to create a picture of the overall biodiversity impact".

Kate Turner, global head of responsible investment at First Sentier Investors, similarly calls for "supply chain data to be cracked, as this will help solve biodiversity, human rights and climate change challenges".

First Sentier has developed a toolkit to help investors begin assessing water and deforestation risks within their portfolio. It pulls together a variety of publicly accessible data sources. When creating this toolkit, "what we saw was gaps, rather than conflicts [of data]", Turner says, "particularly on biodiversity sensitive areas where the vast majority of information is blank".

Data providers warned that the marine and ocean theme also has a significant lack of coverage.

Nature data is worth paying for

However, potential challenges for data providers could be much more fundamental. While many in the market may use data gaps or limited understanding of the theme as a reason for inaction, NatureMetrics' Plant says "they don't mean it's too hard, they mean it's too expensive. Their attitude needs to change".

She points towards some of its infrastructure clients who are "spending less than 1% of the total cost of developing the project on anything to do with nature". This funding is not exclusively channelled towards data either, and usually must cover environmental assessments as well.

"Clients need to wake up and realise this data is future proofing them against the risks. It's worth spending money on".

Esther An, chief sustainability officer at CDL, a Singaporean real estate company, recently told an event in London that the technology needed is often "not cheap', and it can be difficult to prove to boards why it is necessary to approve funding".

Highlighting the material importance of nature is critical to securing funding approval for data.

CEO of Iceberg Data Lab Matthieu Maurin recently told *Environmental Finance* that it is important to send "the right signals", which should include investing in quality data, models and action that will improve the models.

Thinking it should be a zero-cost approach is "misleading", he says. While he is supportive of an open-source hub of reported data, he said it is "delusional" for firms to wait that long.

Open-source data

An open-source hub of reported data would be beneficial for the data market as a whole, to help contribute to innovation, research and the development of new models, he said. It can also help emerging markets, which might not otherwise be able to pay for third-party data.

However, developing open-sources of modelled data should not be supported, Maurin argues, as it "breaks the incentive to invest" and suggests financial institutions should not put money into identifying and addressing nature-related risks and opportunities – and this notion is "absurd".

Other data providers are also broadly supportive of the premise of open data. GIST Impact's Mahima Sukhdev, says more recognition needs to be given towards NGOs which have been "collecting this data for some time", and often providing it for free.

This includes Global Canopy's Forest IQ which pulls together public data to create comprehensive coverage of deforestation. Niki Mardas, CEO, agrees that, given NGOs and charities have been working in this space before it became "trendy", they have extensive data records which can be used.

The TNFD announced in mid-2023 that it was working on a global, publicly accessible facility for nature-related data, similar to open-source platforms being developed on climate.

It suggested this would "connect and expand" existing national and sub-national level reported data and incorporate private sector nature-related data sources into a shared platform. However, it has been suggested since that the facility might not be a physical platform, but instead a data standard.

For more information about the ESG Data Guide see here.

NatureMetrics eDNA

UK-based NatureMetrics has become the de-facto leader of monitoring eDNA, the DNA that is found in blood, mucus, hair or deceased remains that have been left behind by organisms in water, soil, sediment or the air.

Companies around the world independently collect samples on their sites – led by NatureMetrics guidance – and are sent to a lab in the south of England or

North America to identify its 'barcode genes'.

Each sample has the potential to identify hundreds of species, with its database currently housing 'thousands' of different species from around the globe.

NatureMetrics has also recently started combining this ground-level data with satellite data, to help build a wider picture of habitat and species changes across sites.

Environmental Finance recently visited NatureMetrics' lab to find out more about its monitoring capabilities. Read here.

GIST Impact

GIST Impact's nature and biodiversity datasets cover 80 metrics at portfolio, company and asset level for over 14,500 publicly listed companies. This combines site-specific datasets with geospatial details to create a "holistic analysis of nature-related dependencies, impacts, risks and opportunities".

Over the past year it has also expanded its product offering, including a web tool which allows investors to "see the environmental cost" of a potential investments compared with other options.

It recently told *Environmental Finance* how it is using artificial intelligence in its operations. Find out more here.

ClarityAI

Clarity AI houses around 120 nature-related metrics, based on publicly reported data and estimations using machine learning models. Its tools fit into three themes: dependency and risks, biodiversity footprint and TNFD tools.

The latter includes a dataset with metrics for identifying exposure to sensitive locations as well as a dataset specific to identifying nature related opportunities.

Serhat Öngen, nature and biodiversity product lead, said it works with each company, as "many of the metrics involved can be quite complex at any level of sophistication". He added it will look to "select the right nature-related solutions based on their goals and sustainable investment solutions based on their goals and sustainable investment frameworks to ensure they rightly assess nature-related dependencies, impacts, risks and opportunities."

Iceberg Data Lab

Launched in 2019, Iceberg Data Lab's (IDL) Corporate Biodiversity Footprint tool has become one of the leading tools to assess biodiversity impact throughout a company's value chain. It uses the Mean Species Abundance metric to generate an annual biodiversity impact score.

Amongst IDL's other product offerings is Wonderpus, which creates an impact score for over 1,200 sectors and 2,300 products and services, and can be tailored to specific portfolios.

IDL, which is used by around 50 financial institutions globally, recently raised $10 million in its second funding round. It said this will be used to expand its global presence, develop its product pipeline and invest in new technologies.