

TNFD: Assessing the biodiversity impact of palm oil facilities using the L.E.A.P approach





Introduction

The Taskforce on Nature-related Financial Disclosures (TNFD) framework provides recommendations and guidance for organisations to incorporate nature-related risks, impacts, dependencies and opportunities into financial and business decisions. It is designed to support a shift in global financial flows away from nature-negative outcomes and toward nature-positive outcomes.

Due to the challenges of locating assets and facilities in supply chains and the complexities of measuring nature (every ecosystem is diverse and requires different data), it's not surprising that many sustainability teams are struggling with this. In this report, we demonstrate how to use Earth Blox to assess the biodiversity impact caused by palm oil facilities located in different countries around the world aligned to the TNFD L.E.A.P approach. While this approach is aligned with TNFD, it can also be used in reporting for other standards like CSRD and EUDR.

Key insights

Global footprint: 88% of facilities are in Indonesia and Malaysia. If you are a corporate or financial institution without full supply chain coverage, your palm oil supply chain will likely start here.

Certification challenge: Only 25% of facilities are RSPO certified. Most palm oil in your supply chain might not meet benchmark sustainability standards.

Biodiversity dynamics: Palm oil production is concentrated in ecologically critical regions of the globe. Yet, the environmental footprint of each facility is far from uniform, varying widely due to a plethora of local factors. Surprisingly, RSPO-certified facilities exhibit a similar biodiversity impact to their uncertified counterparts. This points to the complex nature of ecological impact beyond certification status.

Complex supply chains: The supply networks of four Consumer Packaged Goods (CPG) giants use 78% of the palm oil facilities. Most of these facilities supply multiple CPG companies, highlighting the broad geographical reach of supply chains as well as mutual interdependence. This entanglement presents unique challenges in driving sustainable practices but also paves the way for collaborative initiatives towards improvement.

Corporate ecological footprints: Among the CPG companies analysed, biodiversity impact per facility is consistent. However, one standout company has demonstrated that proactive measures can lead to a substantially lighter ecological touch. By strategically reducing its sourcing footprint to under 100 facilities, a stark contrast to others sourcing from upwards of a thousand, this company has set a benchmark for the industry, showing that targeted efforts can indeed yield tangible environmental benefits.



The importance of nature for sustainable businesses

The TNFD framework encourages businesses and financial institutions to consider nature from the get-go, rather than as an afterthought. Importantly, it is not a regulation or law, and therefore relies on organisations adopting it voluntarily. Luckily, this appears to be the case. <u>A TNFD survey</u> found that 70% of organisations across 11 sectors plan to start disclosing nature metrics aligned with TNFD Recommendations by financial year 2025 or earlier.

A key thing that is often missed in climate change discussions is that employing nature or climate-positive business practices will present opportunities that will give your organisation a long-term advantage. Consider the case where you are investing in a new supply chain in South America. Water is a key resource for your business and, therefore, critical to your financial sustainability. If you ignore your impact on nature, you may get lucky and all will be OK in the short to mid-term. Have bad luck, however, and you may be on the receiving end of a long-term drought, destroying your business. Identifying healthy nature habitats and investing in nature-positive practices, such as reforestation in water catchment areas, planting more trees, recycling irrigation water, and diversifying crops/intercropping, would help prevent this.

Assessing biodiversity using the L.E.A.P approach

So how do you assess your risk exposure? Handily, the TNFD has developed an assessment approach known as L.E.A.P: Locate, Evaluate, Assess and Prepare to guide you through the process of identifying, quantifying and mitigating risks.



The TNFD L.E.A.P. approach.

Source: Guidance on the identification and assessment of nature related issues: The LEAP approach, TNFD, Version 1.1 October 2023, Date Accessed: December 2023.

In this example, we focus on L1, L2, L3, L4, E2 and E4. These are metrics that we can assess without having internal company data. We can also measure dependency (E3), but do not in this example.



The use of satellite data in regulation reporting

Satellite data is often regarded as a silver bullet; the single solution that will 'fix' all of the world's monitoring issues. Those who work in the sector know that definition couldn't be further from the truth and that it is one of many required data sources in any viable solution. Particularly for solutions in the financial sector, where there are strict auditing requirements.

At Earth Blox, we have many world-leading <u>experts in the use of satellite data</u>, and we agree with the above statement. This is why you will regularly hear us talk about a convergence of evidence approach being the best way to progress. Specifically, considering multiple data sources and evaluating them independently to determine an agreed conclusion. That's why our platform ingests many datasets, including satellite, drone, ground-truthed, proprietary and more.



Biodiversity analysis for palm oil mills

Selecting the correct datasets

For this study, we opted for our <u>pre-packaged biodiversity solution</u>, as it encompasses key environmental analyses such as change in land use, deforestation, biodiversity intactness and Normalized Difference Vegetation Index (NDVI for short). Combining these gives you insight into the high-priority biodiversity areas where companies operate, as well as the impact an organisation may be having on nature. We focussed on palm oil production, calculating the following metrics from the TNFD LEAP approach.

- LOCATE
 - **L1 Business Footprint**: Where are your assets located, and what is their area of operation?
 - L2 Nature Interface: Which biomes and ecosystems are interfaced?
 - **L3 Priority Location ID**: Which locations interface with areas of high nature importance?
 - **L4: Ecological sensitivity**: Which of our activities/direct operations occur in Ecologically sensitive locations?
- EVALUATE
 - **E2 ID of dependencies and impacts**: What is the impact of the organisation's activities
 - **E4 Impact Analysis**: What is the size and scale of the impact.

In order to address **Locate 1, 2, 3 and 4,** we required facility data. Some companies will have this data readily available in-house, while others may rely on external datasets for this information. In this example, we leant on the Roundtable on Sustainable Palm Oil (RSPO) who published a list of their certified palm oil mills and the Universal Mill list dataset supplied by Global Forest Watch – <u>Universal Mill List | Global Forest Watch Open</u> <u>Data Portal</u>, which contains both certified and non-certified mills. The dataset provides a geolocation of mills, along with ownership information, that have been certified to the RSPO standard. For clarity, we will refer to mills as facilities going forward.

For **Locate 2, 3, and 4**, we used datasets from Google, the University of Oxford, Telethon Kids Institute, the University of Twente, Open Street Map and Resolve. For Evaluate 2 and



4, we used datasets from WorldPop, Impact Observatory, Vizzuality, The Copernicus Programme and NASA.

What is the RSPO standard?

The RSPO was founded following a global drive for sustainably produced palm oil. Its founding members are the World Wildlife Fund, the Malaysian Palm Oil Association (MPOA), Unilever, AAK, and Migros. It publishes a standard that includes a set of environmental and social criteria that companies must follow to produce Certified Sustainable Palm Oil (CSPO).

The RSPO is voluntary, and therefore, companies are not required to follow the standard by law.

What does the Universal Mill List dataset include?

The dataset provides details such as the mill location (specific coordinates and country), mill name, mill owner, certification status, certification date and verification confidence level (Full verified, high confidence and low confidence).

What does the RSPO dataset tell us, and what does it mean for your organisation?

At a high level, it shows that the majority of mills (88%) are located between Indonesia and Malaysia, with Indonesia accounting for 64% of all mills, both certified and not certified. Overall, approximately 25% of palm oil mills are RSPO certified.

Insight

Some companies may not be fully aware of their exact supply chain locations as these are complex systems. As such, using a convergence of evidence approach, their first assessment could assume that they take Palm oil from either Indonesia or Malaysia and until proven otherwise, that they source from an uncertified mill. This gives them clear action to focus on proving their exact locations of mills and determining their sustainability status. Ultimately, reducing their risk associated with adversely impacting nature.





Country location of palm oil facilities.

Additionally, the RSPO data includes details of corporate structure, such as parent and subsidiaries, detailing the number of mills per organisation, and business reach. The following graph shows the split of certified/uncertified mills per corporate group. The largest spike, labelled *unknown*, indicates that not all companies have established a group/subsidiary corporate structure, and instead is representative of a collection of small companies that own fewer than three mills each under one single organisation. It does however highlight that these smaller entities are primarily made up of uncertified mills.

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Ownership of palm oil facilities at the corporate group level.

The Biodiversity Analysis

To determine a mill's area of operation, we used the fact that palm oil is highly perishable and must be processed within 24 hours. Using this information, we can estimate how accessible the surrounding nature is to the palm oil mill using a travel-time dataset addressing L1. Coupling this ecoregion data, we can identify specific ecosystem and biome data at the mill's location (L2). With population, biodiversity, and accessibility data, we can determine how exposed the nature assets are and determine their priority (L3 and L4).

Using the Earth Blox API, we rapidly assessed around 2000 facilities to determine their biodiversity priority scores. The colours represent the priority score, normalised from the highest \bigcirc to the lowest \bigcirc . The size of the marker indicates the magnitude of their score, with bigger markers indicating more impact.

Some initial insights:

• Palm oil is primarily grown in SouthEast Asia. Indonesia and Malaysia have by far the most facilities.

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• Generally palm oil is grown in areas of high nature importance. This may be obvious to some due to the interest there is in palm oil and its impact on nature.



Colour-Coded Biodiversity Priority Score of Palm oil facilities located in SouthEast Asia. High impact OMEdium Impact Dow impact

This priority score is a risk-score-per-facility for corporates and financial institutions to use in assessing their exposure through supply chain operations or investments.

The next step is to assess their specific impact on the surrounding nature (E2), quantifying its size and scale (E4). To do this, we consider the same RSPO and Global Forest Watch mill datasets, along with biomass, forest change, landcover and vegetation datasets. Importantly, to assess impact, we need to consider how the facility has changed the biodiversity in the region over a period of time. Effectively, using historical and current data to create a before and after snapshot of the natural environment. Focussing on Southeast Asia in this example, we can identify facilities that are having the biggest impact on nature through their operations.





Colour-Coded Biodiversity Impact Score of Palm oil facilities located in Southeast Asia. High impact O Medium Impact Low impact

It's worth remembering that these are all the palm oil facilities within the dataset and do not represent a single supply chain of one company. However, we can isolate single supply chains. By using open-source information, we were able to map the supply chains of some of the biggest companies in the world that rely on palm oil for their products. Below is the supply chain for one of the World's biggest food and beverage companies, with the biodiversity impact scores highlighted.

What's clear is that:

- This company relies on a large number of palm oil facilities in its supply chain, spread over a large geographic area.
- A small number of their facilities have a significant impact on the biodiversity of this region.





Colour-Coded Biodiversity Impact Score of Palm oil facilities located in Southeast Asia. High impact Orden Medium Impact Low impact

Actionable information

Using the biodiversity impact assessment, the company could prioritise high-risk facilities, as per the A-section in the LEAP framework. They can then plan to minimise these risk scores and report on progress (P section of the LEAP framework), ultimately working with these facilities to reduce their impact, or indeed remove them from its supply chain.

We analysed four companies' supply chains and found the following interesting information in terms of shared usage of palm oil facilities. It highlights that there is a lot of crossover between different corporations and perhaps an opportunity to collectively address their biodiversity impact.

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Count of companies that share usage of the same palm oil facility

About Earth Blox

This is an example of some of the work we do at Earth Blox, demonstrating the power and scalability of our analysis platform. Our library of modular, template workflows covers many different climate and nature metrics, such as flood risk, fire risk, drought risk, land cover classification and more. Depending on the problem you are trying to solve, or the regulation you would like to report against, these models can be combined to create a customised solution.

To see Earth Blox in action, watch our webinar on '<u>How to report on biodiversity impacts</u> <u>at scale for TNFD using satellite data</u>'. Or, to discuss how we can help you with TNDF reporting, <u>book a consultation</u>.