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Unboxing Nature-related Risks

Insights from the
UNEP FI-led TNFD
Piloting Programme

Supported by:



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April 2023

Acknowledgements

The content of this document is based on the work undertaken in the UNEP FI-led piloting groups on the draft beta framework of the Taskforce on Nature-related Financial Disclosures (TNFD). Content and materials were also extracted from the TNFD and participating financial institutions.

UNEP FI greatly appreciates all the time dedicated, insightful discussions and commitment from the involved financial institutions and advisory firm throughout this project. Given the different findings and analyses, all content disclosed in the case studies throughout the report have been anonymized to maintain consistency.

Overview of Participants



With support from data providers and technical partners



Supported by:



In partnership with:



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Suggested citation

UNEP FI (2023): *Unboxing Nature-related Risk: insights from the UNEP-FI led TNFD piloting programme* UNEP Finance Initiative: Geneva.



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Foreword

From 'unknown unknowns', to 'known unknowns'

How can society act and report on risks it does not fully know or understand?

Healthy societies, resilient economies and thriving businesses rely on nature. The [IPBES Global Assessment report](#) in 2019 pointed out that an estimated 1 million species are at risk of extinction, most of them in the near future. This message was reiterated by the [WWF Living Planet Report](#) in 2022, which showed an average 68% decrease in population sizes of mammals, birds, amphibians, reptiles and fish between 1970 and 2016. This sharp decline of nature is driven mostly by human actions.

But how to report and act on evolving nature-related risk is an unknown unknown to most financial institutions today—and something we don't know, we don't know. How do you manage the unexpected? In project management there is only one way to tackle unknown unknowns, and that is by experimenting. Experimenting allows your unknown unknowns of today to become your known unknowns—better capturing and planning for the risks of tomorrow. Improved information will play a key role in granting financial institutions and companies to incorporate nature-related risks and opportunities into their strategic planning, risk management and asset allocation decisions.

As part of the UNEP FI-led pilot program in support of the Taskforce on Nature-related Disclosures (TNFD), we brought together **42 financial institutions from 19 countries in 7 sectoral and geographical groups and key technical piloting partners** to step into the unknown, and test the draft TNFD beta framework, share their lessons with their peers and provide recommendations to the TNFD secretariat that can inspire and improve their approach for financial institutions.

UNEP FI is a founding partner of the TNFD alongside WWF, UNDP, and Global Canopy, and it is an implementation and official piloting partner to the TNFD.

The journey of a thousand miles begins with a single step

We invite all our UNEP FI members to take their first, or hundredth step on nature with us today. In this way we collectively support the apex goal following the [Kunming-Montreal Global Biodiversity Framework](#)—to halt and reverse nature loss by 2030.



Executive summary

The Taskforce on Nature-related Disclosures (TNFD) was set up to develop and deliver a risk management and disclosure framework for organizations to report and act on evolving nature-related risks. Financial institutions are an important target audience for the framework under development. For this reason, UNEP FI has been piloting the framework with a representative selection of our members across sectors and regions.

This report presents the lessons learned and key findings from a global piloting project led by UNEP FI with the private finance sector to test the draft risk management and disclosure framework from the TNFD. UNEP FI is one of the founding partners, implementation partners, and official piloting partners to the TNFD. Through this partnership UNEP FI is gauging support from the private financial sector to drive the TNFD's mission—shifting global financial flows away from nature-negative outcomes and toward nature-positive outcomes.

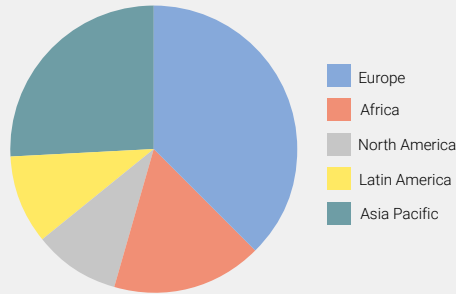
The objective of the TNFD pilot program was to assess the feasibility of v0.2 and v0.3 of the TNFD beta framework for financial institutions. The extensive pilot testing was developed within an 8-month time frame (July 2022–February 2023), involving 42 financial institutions from 19 countries and the collaboration with key technical partners—thereby forming the biggest single TNFD piloting cohort. During this time period UNEP FI and its partners organized nearly 40 piloting meetings and four webinars and other training sessions to help participants apply the framework. The compilation of all work developed and assisting materials was captured on a dedicated members-only webpage.

The collective work resulted in the collection of invaluable feedback and insights which provide guidance and clarity on the way forward—this feedback is now being integrated into the final set of recommendations to be published by the TNFD in September 2023. UNEP FI has prioritized the global spread and inclusion of emerging economies for the pilots, following the TNFD's mandate to be applicable to organizations of all sizes and in all jurisdictions. Participation was global, ranging from the largest global financial institutions to local retail, regional cooperative, and local agricultural development banks.

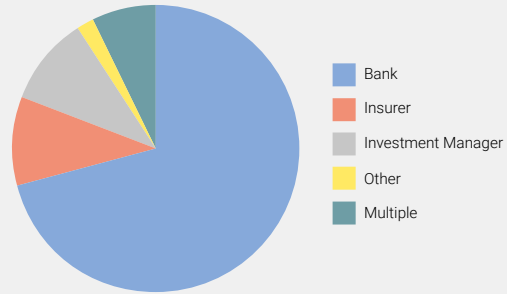
The proposed methodology involved assessing the LEAP approach for financial institutions, which is a voluntary guidance intended to support internal nature-related risk and opportunity assessments within financial institutions. Following an internal screening assessment, each institution identified a portfolio or sector approach. From this starting point, the process followed peer-to-peer discussions, providing institutions with a pre-competitive space to share key learnings. Guidance was provided during the process by the pilot supporting team.

Summary results: the UNEP FI pilots in a nutshell

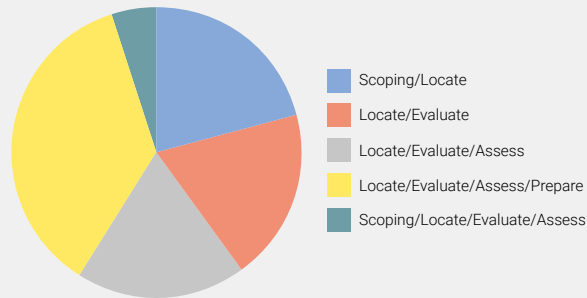
Geographic Representation of FIs



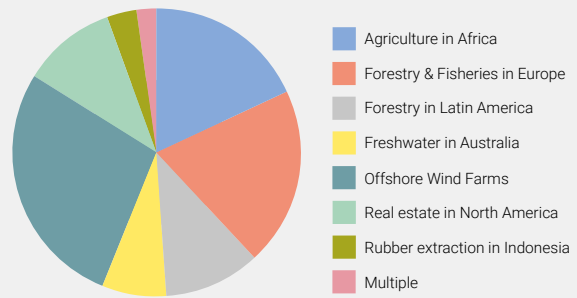
Type of Financial Institution



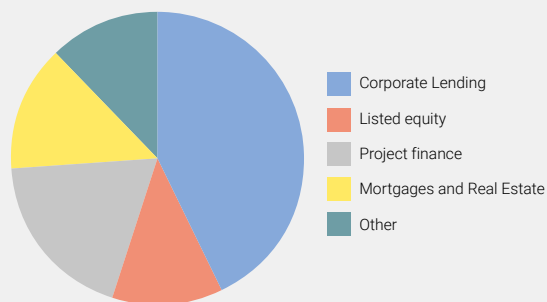
LEAP Steps Tested



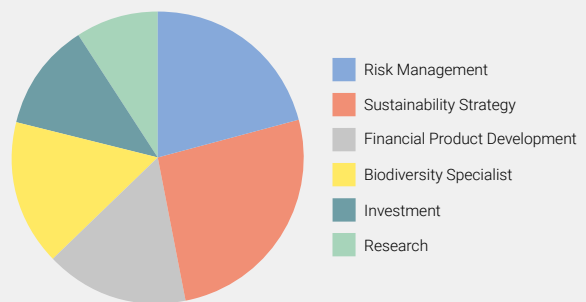
Pilot Testing Focus and Region



Type of Asset Testing



Staff Positions Involved



Main findings shared by financial institutions

This section captures key learning and recommendations from the piloting process. More detailed feedback can be found in the subsequent chapters.

The TNFD framework was appraised for providing clear direction for the sector. Financial institutions recognize that with guidance and team effort it is possible to start assessing nature-related impacts, dependencies, risks, and opportunities. However, further guidance is needed to refine the process and accelerate action, especially for those starting their nature journey

- The piloting exercise demonstrated that assessing nature-related risks may be easier for institutions which are already familiar with their climate risk assessment—or TCFD reporting. Nonetheless, institutions which are getting started in their nature journey will likely need more resource allocation to conduct a more robust assessment.
- The piloting journey has allowed for the assessment of one selected sector or asset. The challenge and current complexity of assessing multi-asset portfolios, or specific asset categories such as non-listed equities or types of financial instruments such as revolving credit facilities (RCF) is recognized, and these will require more guidance going forward.
- The framework has been commended for its ambition to create an approach for all businesses and for supporting a robust approach to consider nature within their operations. The TNFD's approach is also appreciated for pushing financial actors to focus on their environmental and climate performances instead of the methods used to assess this performance.

Capacity building and improved resource allocation are key components for greater comprehension on the urgency of acknowledging and acting upon nature-related risks

- Many financial institutions—especially banks—have noted the need to improve their internal IT systems to sustain robust nature-related assessments. Biodiversity assessments may require more processing power especially given the need to process maps and location images.
- Nature-related risks are treated many times as a siloed subject within many financial institutions. The piloting exercise allowed for institutions to acknowledge the need of a varied set of skills across teams including risk management, data management, biodiversity expertise, sustainability strategy and financial product specialists.
- The climate-nature nexus, and the resulting financial risks deriving from biodiversity exposure for a given asset are still not fully understood internally in financial institutions, seen by participants acknowledging the need to improve technical expertise.

There is a need for further guidance and development on specific technical components of the TNFD framework for an enhanced disclosure of the recommendations. Components such as data and metrics, nature scenarios, supply chain traceability, and risk valuation are evaluated as current gaps which are being addressed by the TNFD and its network of knowledge partners. Notably, more guidance has been published the TNFD's v0.4 released in March 2023

- The pilot participants expressed the need for further sector-specific information to facilitate the measuring of their impact on nature and to therefore enable reporting on nature-related disclosures, for high impact and dependency sectors.
- Despite growing recognition of the risks associated with nature, companies and financial institutions still lack a comprehensive approach to addressing these risks. Resulting assessments remain mostly qualitative and semi-quantitative, with reporting of modelled data potentially affecting the quality of disclosures.
- More guidance on specific high-impact sectors, biomes and asset categories would also be appreciated to ease the process, as partly included in the v0.4 release.
- Materials, tools and datasets developed by the TNFD knowledge partners, such as PBAF and UNEP-WCMC are acknowledged as essential for filling some of the current gaps. Case studies and biodiversity footprint assessments published by peers globally are also appreciated for shedding light in the initial journey of nature-related risk assessment within which most financial institutions currently stand.
- The sheer variety and complexity of financial products offered by banks, asset management firms, and insurance providers requires a need for comparability between financial products. While initial pilots have focused on analyzing the impact of a single financial product, there is a need for additional guidance on how to assess the dependencies and impacts on nature from multiple financial products.

Need for better, data and tools and specific guidance on tools, alongside building of consistency and comparability.

- The journey from nature-negative towards nature-positive requires an all of society approach. For example, financial institutions are often dependent on the quality of data provided by their clients. Poor and non-inclusive client-related data can make it significantly challenging for them to make informed decisions.
- As financial institutions seek to improve their understanding of nature-related risks and dependencies, standardization of data and metrics is crucial. While there are currently significant variations in the data and metrics used to assess nature-related risks and dependencies across sectors and geographies, there is a growing recognition of the need for greater consistency and comparability.
- Through collaboration and coordination with governments, international organizations, industry associations, and other stakeholders, financial institutions can help develop and implement standardized data and metrics for assessing nature-related risks and dependencies. Financial institutions can leverage emerging technologies, such as artificial intelligence and machine learning, to automate the collection, analysis, and verification of data related to ESG factors, including nature-related risks and dependencies.

Further stakeholder engagement with corporates and retail clients is seen as an important next step to improve the collection of internal information and understanding of nature-related impacts and dependencies in a selected portfolio

- Many financial institutions have identified missing information regarding the location of their assets, and improved interaction with key clients will help bridge this gap.
- Improved due diligence process from the very beginning is also seen as a concrete next step that many financial institutions will take to avoid information asymmetry.
- However, organizations are wary that not all customers will understand the need for further information disclosure.

Participating financial institutions have found the exercise very useful and would like to continue piloting the TNFD framework to pioneer reporting on nature-related risks and opportunities

- Institutions acknowledge that piloting the framework has allowed them to especially understand main internal gaps they currently have but were not aware of before starting the exercise. The exercise has also provided them with a roadmap on how to address these gaps moving forward.
- Immediate improvements became visible during the pilots, with several financial institutions implementing internal taskforces, hiring new expert positions or better understanding the landscape of actors and institutions in the natural capital space.
- To support a shift towards nature-positive investment, there is a need to comprehensively capture the diverse ways in which an organization can affect the environment, especially when it comes to positive actions. In this way, it is essential to integrate the co-benefits associated with nature-based solutions, as well as any social impacts resulting from actions for nature such as job creation and community involvement.



SECTION 1:
Setting the scene



1.1 Understanding the evolving nature-related risk landscape

More than half of the world's economic output—USD44 trillion of economic value generation—is moderately or highly dependent on nature. Nature-positive transitions could generate up to USD10 trillion in annual business value and create 395 million jobs by 2030 (WEF, [New Nature Economy Report II, 2020](#)). The WEF Global Risks report ([2023](#)) has shown over the past years that nature-related risk—which can cause not only biodiversity collapse, but also water crisis or failure to halt climate change—is becoming more likely and impactful. However, the business case for environmentally sustainable investment remains unclear, and support is needed to enhance relevance and understanding for the financial sector.

The long-term sustainability of businesses and society depends on the health and well-being of our planet's ecosystems. To achieve this, as a first step there is a growing need and awareness for organizations to evaluate their investments and operations towards nature-positive outcomes, reduce their negative impact on the environment, and generate new opportunities for growth and innovation.

The [Kunming-Montreal Global Biodiversity Framework](#) calls on the private finance sector to play a part in delivering its apex goal—to halt and reverse nature-loss by 2030 by aligning their portfolios and shifting financial flows urgently towards the transition to sustainability. This important agreement complements market-led work such as the Taskforce on Nature-related Disclosures (TNFD).

For financial institutions to contribute to nature-positive outcomes, it is crucial to understand their dependencies and impacts on nature. This involves identifying (and quantifying the value of natural resources), assessing how they are used in business activities, considering the impact of their operations on the natural environment, and developing strategies to mitigate these impacts. The TNFD has been set up to deliver a framework to enable consistent and comprehensive framework to assess, manage and report on nature-related financial dependencies, impacts, risks and opportunities, based on earlier work on climate by the Task Force on Climate-Related Financial Disclosures (TCFD) in promoting climate-related risk management and disclosures among corporates and financial institutions.

The first beta version of the TNFD framework was launched in March 2022, followed by the v0.2 release in June 2022, the v0.3 release in November 2022, the v.04 release in March 2023 and a final version to be released in September 2023. As part of the piloting approach, the team worked to translate the draft framework into actionable steps for financial institutions using TNFD's "how-to guidance"—LEAP approach—profiting from UNEP FI's track record in existing programs. This included steps to identify nature-related risks, conduct resulting risk analyses, manage these risks and identify nature-related opportunities.

The pilots have provided a practical example of what the application of the TNFD beta framework could look like for specific targeted sub-sectors. More information about the pilot results can be found in the executive summary and subsequent chapters. General information about the TNFD beta framework and related guidance can be found on the [TNFD website](#).

1.2 About this report

Objectives

This report summarises feedback provided to the TNFD for further improvement and refinement of the beta framework. It also aims to catalyse the support and interest of financial institutions at large for adoption of the final TNFD framework. This document highlights case studies and examples on how to embark or improve their own journey on incorporating nature-related dependencies, impacts, risks and opportunities using the TNFD framework.

The TNFD pilots led by UNEP FI have been a novel and sometimes complex undertaking by the global financial institutions involved as this exercise entailed working with a draft framework under fast development. Nonetheless, as mentioned by participating institutions, despite the barriers and complexities along the way, it has provided participants with more clarity and identification of needed next steps on their nature and biodiversity journeys, which is essential to remove information asymmetries. The pilots have also confirmed the great momentum and rising interest in the TNFD, as it continues developing more guidance for financial institutions and corporates to help address their nature-related impacts, dependencies, risks, and opportunities.

Structure

The report structure mirrors the LEAP approach and provides an overview of each pilot step. The first section provides feedback on key concepts and definitions of TNFD along with feedback provided to the TNFD secretariat. The second section analyzes findings on the LEAP approach from across the sub-reports, identifying common trends and opportunities and challenges. The third section addresses questions and clarifications on the disclosure recommendations, along with the readiness of financial institutions to implement the TNFD. The fourth and final section presents the conclusions, outcome of the pilots, and next steps. This will be informed by an analysis of the collated findings of six sub-reports completed for each piloting sector (please note that group 7 is on hold now, so no concluding remarks can be given here). The concluding section brings together all the information discussed, presenting key lessons learned as well as feedback provided to the TNFD secretariat.

1.3 Getting started with the TNFD framework

For organizations new to the TNFD, the following steps are recommended to start their journey to understand and act on evolving nature-related risks:

1. Pilot and apply the TNFD framework to assess nature-related risks and dependencies across the portfolio of financial products and services. This can involve developing standardized metrics and methodologies to assess the risks and dependencies associated with different sectors and geographies.
2. Engage with clients to raise awareness of nature-related risks and dependencies and provide guidance on how to collect and report relevant data. This can involve partnering with industry associations and other stakeholders to develop best practices and guidelines for reporting on nature-related risks and dependencies.
3. Invest in building internal capacity to assess nature-related risks and dependencies by hiring experts, developing training programs, and investing in tools and technology to facilitate data collection and analysis.

What are the next steps for the UNEP FI piloting program?

Enjoying the momentum, many of the piloting institutions manifested their interest in continuing to pilot the TNFD framework with UNEP FI. Building on this interest, UNEP FI, the TNFD, and interested financial institutions have selected specific technical parts of the framework to look in more detail and bring further guidance to financial institutions. This continuous feedback will be key in delivering the final recommendations from the TNFD in September 2023.



SECTION 2:
Piloting design



2.1 Participants

The pilots had a diverse set of participants that included banks, asset managers, asset owners, and insurance providers of varying sizes. The total number of participants included 42 financial institutions, ranging from local and sector-specific banks to some of the world's largest financial institutions, providing a comprehensive representation of the industry. The testing was conducted on a global scale, with massive representation from emerging markets, making it an inclusive and diverse process. Although most pilot testing organizations came from the global North, through the chosen sectoral and geographical lenses it was ensured to capture sites with significant biodiversity representation, such as Indonesia, Costa Rica, and Brazil. As a result of the pilots, the asset categories assessed included corporate loans, mortgages and real estate, project finance, listed equities, bonds, and impact funds. Considerations for non-listed equities, other financing mechanisms and portfolios (e.g. underwriting) were also brought forward, especially regarding their current challenges. All financial institutions assessed either a portfolio or sector scope considering different organizational focus areas for financial institutions when measuring nature-related dependencies, impacts, risks and opportunities.

The diversity in participants and the variety of financial instruments tested ensured the project had robust test cases across sectors, financial products, and geographies. In the testing teams an overall gender parity was achieved, although this would sometimes differ from organization to organization.

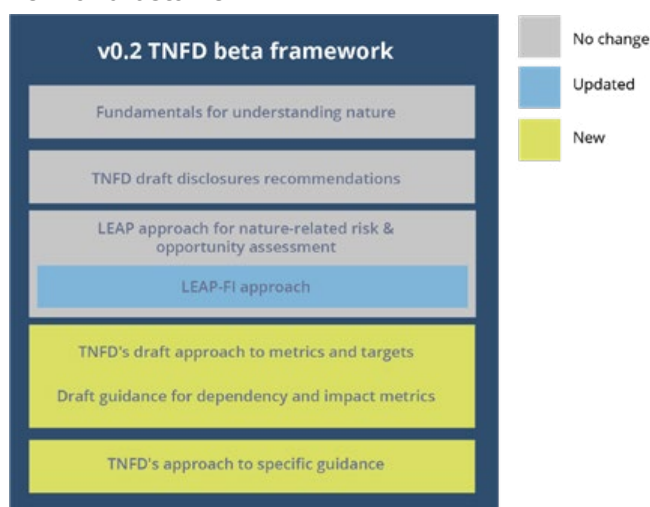
2.2 Purpose

The TNFD is committed to global pilot testing. The Taskforce encourages a broad and diverse mix of pilot tests being conducted by corporates and financial institutions across geographies (including nature-risk and biodiversity hotspots around the world), sectors, and realms (e.g. land, freshwater, ocean and atmosphere). As part of the UNEP FI-led piloting program, financial institutions were engaged in the testing of the TNFD framework and provided feedback for future iterations. These pilot programs are crucial in advancing the TNFD’s mission to redirect financial flows away from nature-negative outcomes and towards nature-positive ones.

The UNEP FI-led TNFD pilot testing programs started in July 2022 following the release of the second iteration of the TNFD beta framework (v0.2). The program ran from July 2022 until the end of February 2023, and was based on the TNFD’s ‘open innovation approach’—in which stakeholder engagement and market consultation is a central piece to inform development of the TNFD framework.

Figure 1: Overview of the beta framework versions tested during the UNEP FI pilots

Overview of the TNFD framework beta v0.1 and beta v0.2



The development of the TNFD framework: Lessons learned and continuous updates following feedback received from stakeholders

Stakeholder engagement is a key piece in the development of the TNFD framework. Continuous feedback received during the TNFD piloting process has helped inform substantial updates to new versions of the TNFD beta framework regarding the approach to disclosure and usability of LEAP, including:

- Broadening draft disclosure recommendations to incorporate dependencies and impact on nature alongside risks & opportunities to the organization;

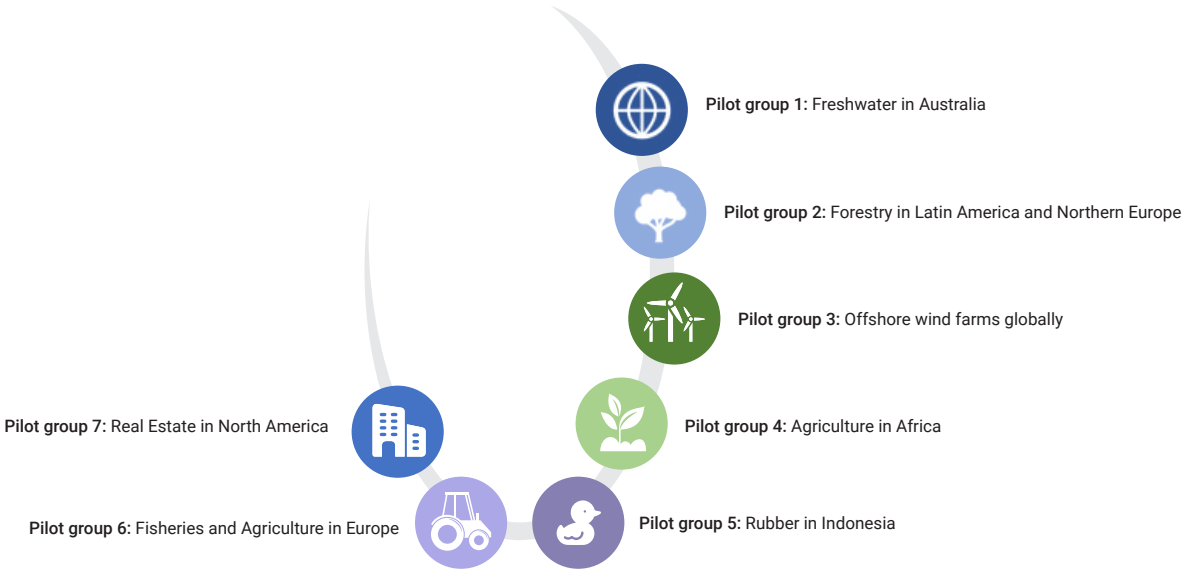
- Flexible approach to materiality to accommodate the varying materiality and reporting preferences and needs of report preparers, to support prompt action by companies and financial institutions and to encourage increasing disclosure ambition over time;
- New disclosure recommendations related to supply chain traceability of the quality of stakeholders including rights-holders, engagement and the alignment of an organization's climate and nature targets; and
- Enhanced practical usability of proposed risk and opportunity assessment (the LEAP approach).

2.3 Sectoral scope

The pilot groups focused on the intersection of nature realms and economic activities, combining the selection of high-impact sectors in priority geographical locations exposed to nature and biodiversity risks. This selection was based on the assessment of relevant studies (including the [WEF Nature Risk Rising, 2020](#); [UNEP FI, UNEP-WCMC, and UNDP Prioritising Nature-related Disclosures, 2022](#)), and on the sector guidance released by the TNFD on its v0.2 beta framework.

The pre-selection of sectors and locations was further refined following a scoping exercise conducted by financial institutions to judiciously match their portfolios and asset categories to develop robust analyses. This matchmaking process resulted in broadening specific sectors and expanding the global coverage to finally host all 42 financial institutions under one or more pilot groups of their choice. Within each pilot group the participants were given space to translate the sectoral and geographical focus to their own portfolio. This was further limited by other factors such as available budget to conduct additional research, team composition and experience. As such the pilot outcomes and results have some variation per organization. For more details on the specific findings for each of the following pilot groups, refer to the annex reports. Each report amplifies and provides further details on what is discussed in this main report.

The following sectors were ultimately chosen:



1. Pilot group 1: Freshwater in Australia: With much of the country arid or semi-arid, Australia has a high reliance on water in storage and groundwater to sustain communities, industries and agriculture. Competition for resources is growing with increasing demands from various sectors including the environment. The past years have shown the driest consecutive months ever (24-month period on record in 2020), with lower rainfall average rates. The agricultural sector accounted for 67% of the total water use in the country in 2020, but this level is 11% less than the year before—due to the continued dry conditions and low surface water availability across parts of the country. In common agreement between pilot participants, this group decided to focus on freshwater realm as part of nature realm and its interactions with key sectors from their institutions' portfolios, such as real estate and agriculture.

2. Pilot group 2 Forestry sector: Forests play an important role as providers of sustenance and livelihoods for people living in forested areas and are the largest repository of terrestrial biological diversity on the planet. They play a key part in climate change mitigation and adaptation because of their capacity to absorb carbon dioxide (CO₂) and fix it in the form of biomass. They also provide environmental services by regulating the water cycle, protecting soils and supplying resources such as timber, medicines, food, and fibres. For the forestry sub-sector, two geographies were looked at by financial institutions involved: one cohort assessed Latin America, while the second one assessed Northern Europe.

3. Pilot group 3: Offshore wind farms (Global): The need for alternative energy systems like offshore wind farms (OWF) to limit global temperature to 1.5°C as set in the Paris Agreement is undeniable—especially for the EU, which must achieve climate neutrality by 2040 to reach this objective. However, it is also increasingly clear that biodiversity loss and climate change are interconnected issues that must be tackled together. Offshore energy development helps avoid greenhouse gas emissions and toxic pollutants associated with fossil fuels. OWFs can also provide advantages for local wildlife through the establishment of 'no fishing zones' and the creation of artificial reefs where marine species can thrive. But if not properly planned and managed, the installations can adversely affect marine biodiversity and the trade-off between the benefits (climate goals) and risks (environmental and socioeconomic impacts) can be unbalanced in favour of risks.

4. Pilot group 4: Agriculture in Africa: The agricultural sector in Africa has a massive social and economic footprint, with more than 60% of the sub-Saharan part of the continent being of smallholder farmers, and about 23% of the region's GDP coming from agriculture. The main threats to the sector include more frequent and longer droughts, higher frequency of climate induced disasters and extreme weather events, and accelerated desertification. This sector is the most highly dependent sector in ecosystem services, with a high dependency on water. It is also a major polluter of water; with water management being at the heart of a more sustainable and productive agri-food sector. Mining activities can highly impact the surrounding environment, with possible impacts to freshwater and threats to local communities. Both sectors contribute to impacts including vegetation suppression, soil destruction, hydrological instability, and faunal displacement, making restoration of degraded ecosystems a challenge.

5. Pilot group 5: Natural Rubber in Indonesia: The tire industry consumes around 70% of natural rubber in the world. The growing demand for this commodity can harm social, economic and environmental opportunities associated with a lowering international market rubber prices over the past few years. Indonesia has the second largest rubber plantations in the world, exporting almost 80% of the production and accounting for nearly 2.5 million Indonesian rubber farmers. The industry's export volume of almost 3 million tonnes is worth USD7.6 million. Major issues faced by the industry are its lack of productivity and the transformation of agroforestry jungle rubber areas into monoculture productions such as oil palm and/or clonal rubber plantations. A growing monoculture rubber production in Indonesia is generating high impacts such as tropical deforestation, increased risk of soil erosion, reduced carbon sequestration capacity, plant and animal biodiversity loss, and a decline in downstream ecosystem services such as drinking water, biocontrol or pollination.

6. Pilot group 6: Forestry and Fisheries in Europe: Wild marine resources are overexploited and threatened, with around 76% of the world's marine fish stocks monitored by the Food and Agriculture Organization of the United Nations (FAO) now fully exploited, overexploited or depleted. The share of stocks fished at biologically unsustainable levels increased from 10% in 1974 to 33% in 2015. The EU is the fifth largest producer of fishery and aquaculture products in the world, and the European agri-food sector is lying at the heart of the European Green Deal, with biodiversity strategies playing a key role in shaping a more sustainable sector. Impacts with very high materiality ratings concern terrestrial, freshwater and marine life depending on the type of product and water use. Further impacts relate to other resource use, greenhouse gas (GHG) emissions, pollutants, disturbances, and biological alterations. Agricultural and forestry products is the sector most highly directly dependent on nature, with a very high dependency on direct physical inputs like water and fibres, and services that enable production, and provide protection from natural hazards.

7. Pilot group 7: Real Estate in North America: Although the construction sector is usually identified as an indirect driver of biodiversity loss, its impacts are spread throughout the supply chain given this sector's economic relevance, contributing to the five direct drivers of nature loss. The construction sector is also the largest sector dependent on nature, generating over USD4 trillion to global GDP. The construction sector is a major contributor to the US economy, with a market size of around USD1.6 trillion in 2021. The construction sector relies on either the direct extraction of resources from forests and oceans for the provision of ecosystem services such as healthy soils, clean water, pollination and a stable climate. As nature loses its capacity to provide such services, the sector could suffer significant losses. The highest impact of the construction sector is related to ecosystem use in all realms, by damaging or even removing natural habitats. Further impacts include a large water footprint, emissions of greenhouse gases, and pollution. It should be noted that this group was paused following common agreement and may reconvene at a later stage. For this reason, an annex report has not been produced with its main findings.

2.4 Methodology and stakeholder engagement: ramping up nature-related readiness through the UNEP FI pilots

Supporting financial institutions through concrete action steps

UNEP FI conceptualized the TNFD piloting programme to encourage financial institutions' engagement in the design phase of the TNFD framework, providing lessons learned, feedback to the Taskforce and insights for future iterations. Engagement through pilot testing remains crucial to advance the TNFD's mission to redirect financial flows away from nature-negative outcomes, and towards nature-positive ones.

To effectively support financial institutions in their piloting journey UNEP FI developed a technical guidance document that guided pilot participants in testing the TNFD beta framework through detailed steps of action. This document is fully aligned with the TNFD guidance, both summarizing this work and providing additional granularity and references where needed, supplementing the online TNFD platform alongside the [TNFD Piloting Guide](#). The technical guidance document was based on the second iteration of the beta (v0.2) released in June 2022 and was updated based on the subsequent third iteration of the beta (v0.3) released in November 2022.

Engagement strategy

The pilot participants were engaged through their respective pilot groups approximately every four weeks, adapting the timeline to suit different participant needs. Each pilot group comprised of at least three financial institutions, following an open discussion format which encouraged peer-to-peer exchange in a pre-competitive space. This format and the availability for bilateral meetings with the supporting team allowed for participants to provide oral or written feedback throughout the process. The goal was to adapt to different business and social cultures given the global nature of the project. All feedback received has been shared with the TNFD secretariat team.

Initial kick-off meetings for each of the six pilot groups were held between July and September 2022, with an exceptional group starting in November 2022. Subsequent calls followed until the conclusion of the project, covering the following topics; materiality assessment, Locate, Evaluate, Assess, and Prepare phase (see more details on the proposed program and calendar to one of the pilot groups in Annex 1).

Engagement challenges and barriers

It should be noted that the level of engagement from some institutions was affected due to unexpected changes in their internal teams involved. These changes incurred less engagement or even discontinuing the institution's involvement altogether—due to constrained staff or the long-term commitment required for this project. Another challenge referred to the language barrier—English was used as the main language for the meetings; however, this has also restricted the participation from financial institutions—notably from Asia and Latin America.

Partner engagement

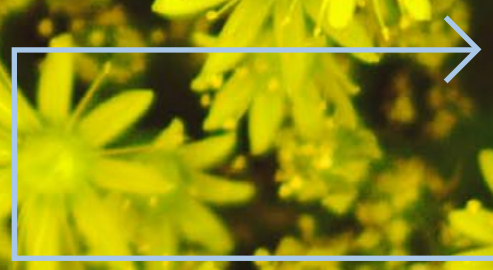
The piloting process benefited from extensive support and engagement from a rich variety of partner organizations, each with their own set of relevant expertise. As part of the piloting process, UNEP FI organised introductory webinars with UNEP-WCMC and a set of deep-dive presentations or technical inputs presented during meetings with the financial institutions by the project technical partners. These contributions helped pilot participants better understand the TNFD framework under development and its broader context.

Engagement and nature-related readiness

Identifying and assessing nature-related dependencies and impacts in the context of the financial sector is a nascent topic to many institutions. The UNEP FI pilots experienced a variety in the level of readiness and maturity among participants, including institutions which have been familiar with natural capital or climate risk assessments for at least ten years, while others were just embarking on their nature journey. This variation resulted in different levels of comfort with the TNFD framework and the pilots' outcomes—while some institutions are already piloting the framework with their clients or advising its consideration for nature-related corporate disclosure, others were still exploring the implications of reporting nature-related disclosures for their own institutions first. In this regard, the level of readiness was many times directly linked to the level of familiarity that institutions had with the Task Force on Climate-related Disclosures (TCFD) reporting.

Finally, environmental protection policies and regulatory frameworks significantly influence the acceleration of the maturity level of institutions undertaking this exercise. For instance, in Europe the evolving regulatory and policy landscape for sustainability disclosures incentivized a more robust participation from financial institutions from that region. This growing interest from European organizations reflects the need to align an organisation's or investor's strategy and management with new regulations—in order to avoid potential risks arising from this misalignment.

SECTION 3:
**The TNFD
LEAP
Approach**



3.1 LEAP overview

Since the launch of the TNFD, market participants have indicated that simple, accessible guidance on how to understand and respond to nature-related would be a welcome complement to a set of disclosure recommendations. In response, the TNFD developed an integrated assessment process for nature-related risk and opportunity management called LEAP.

The LEAP approach is voluntary guidance intended to support internal, nature-related risk and opportunity assessments within corporates and financial institutions. LEAP is not a mandated process to adhere to the disclosure recommendations put forward by the TNFD. As such, not everything that is identified, assessed, and evaluated using the LEAP approach is recommended by the TNFD to be disclosed.

Given the unique needs of financial institutions, the TNFD has adapted the **LEAP approach for financial institutions**. This early prototype of LEAP focuses on the assessment of nature-related risks and opportunities in relation to financed activities (e.g. debt and equity investing, trading, and insuring). Complex financial products such as derivatives are not included within the scope of the LEAP approach.

The LEAP approach consists of the following steps:

Locate your interface with nature;

Evaluate your dependencies and impacts;

Assess your risks and opportunities; and

Prepare to respond to nature-related risks and opportunities and report

Each step will be covered next with main findings and feedback provided to the TNFD.

3.2 Key points of discussion

Making data work for nature

A common challenge identified by the pilot groups regarded the availability of data, in particular contextualized, comparable, and recent data that could help drive financial decision making, as an area for further improvement. As a result, many institutions have already taken steps towards addressing this challenge. As institutions identified gaps to access sufficiently detailed client-level data, part of the solution involved stakeholder engagement—by taking proactive measures to gather data directly from clients' databases; through on-site consultancy work; or by selecting key clients from the portfolio which would be either willing to share additional data or have joint conversations to overcome this challenge.

It is important to note that institutions' ability to conduct in-depth analysis during this phase was largely dependent on the data their organization collects and the data tools and resources available to them. While gaining access to more precise data can be time-consuming, institutions have recognised the value of such data for making informed decisions.

Overall, institutions' willingness to address the scarcity of data highlights their commitment to using the LEAP approach effectively. With continued efforts to improve data collection, institutions can leverage the application of the TNFD Framework to advance their sustainability goals and reporting.

Data tools recommended

To implement the LEAP approach in practice, organizations needed access to high-quality, trusted, decision-useful data on nature-related risks and opportunities. While LEAP already builds on and integrates existing, high-quality tools and data sources, pilot participants were encouraged to use the work of the following publicly accessible data tools including:

- **Exploring Natural Capital Opportunities, Risks and Exposure (ENCORE)**
Developed as part of the Natural Capital Finance Alliance comprising of UNEP FI, UNEP-WCMC and Global Canopy, [ENCORE](#) is a tool to help users better understand and visualise the impact of environmental change on the economy. ENCORE is a web-based tool that allows users to link sectors and sub-sectors to potentially relevant dependencies and impacts and provides an assessment of their potential material risks through consideration of impact drivers.
- **Integrated Biodiversity Assessment Tool (IBAT)**
[IBAT](#) is a web-based map and reporting tool that provides authoritative geographic information about global biodiversity through fast, easy and integrated access to three of the world's most authoritative global biodiversity datasets: The IUCN Red List of Threatened Species, the Database on Protected Areas, and the World Database of Key Biodiversity Areas. The tool allows for rapid visual screening for critical biodiversity, also helping users understand the "range rarity" (rarity-weighted species richness) of certain locations, which considers the number of species present at a given location and the relative importance of that location for the species, in terms of the proportion of its global range that it represents.
- **Partnership for Biodiversity Accounting Financials (PBAF)**
The [PBAF Standard](#) aims to provide guidance to financial institutions on biodiversity impact and dependency assessment and to define what is needed for these assessments to deliver the right information to financial institutions.

In addition to the tools above, pilot participants were also recommended the following other tools some that are available on a fee-for-service basis including:

Sectorial focus	Relevant toolsets
Ecosystem integrity/health	GLOBIO's mean species abundance ;
Water risk/stress	WWF Water Risk Filter , WRI Water Risk Atlas, the Aque-ductWater Risk Atlas ;
Ecosystem conservation status	IUCN Red List of Ecosystems database ;
Key Biodiversity Areas and the World Database on Protected Areas;	Integrated Biodiversity Assessment Tool (contains natural capital depleted hotspots), InVEST (quantifies maps and values ecosystem services), Ocean Wealth (maps ocean ecosystem services);
Natural assets/ecosystem services	GLOBIO Ecosystem Services, ENCORE ;
Biodiversity data	Global Biodiversity Information Facility ;

Relevant Data Providers



While several leading scientific and data organizations continue to develop new tools and data sets for assessing the integrity and resilience of ecosystems, there is currently no single global reference to make this determination. As a result, the TNFD continues to encourage organizations to use several different tools and data sets to triangulate an understanding of ecosystem integrity and resilience.

The TNFD Nature-related Data Catalyst: convening key actors to address data gaps

The Nature-related Data Catalyst brings together a range of actors from across the nature-related data landscape to identify shortcomings in current nature-related data and analytics, and recommend ways to accelerate the development of, and access to, nature-related data, analytics, and tools. The overall aim is to improve the ease, speed, and scale of adoption of the TNFD framework, once the Taskforce launches their final recommendations in September 2023. The Catalyst is exploring how to best address the data challenge and gaps identified in the [TNFD's Data Landscape Discussion Paper](#) released in March 2022 as part of the v0.1 beta release of the TNFD Framework.

Capacity building: building on climate risk learnings

Throughout the piloting groups and phases, a persistent theme was the complexity of the topic of “nature” and the institutional capacity of participating financial institutions to address the challenge adequately. A common conclusion involved the perception that nature-related disclosures seem more complex than climate disclosures. The reasons for this perception are manifold: while it is true that there is current absence of a standard nature-related metric unlike carbon in climate-related disclosures, it must be also noted that internal capacity building for climate-related risk in financial institutions has been evolving for almost one decade. Further, given the complexity of nature-related disclosures and a need for more guidance and development of technical components (such as metrics and target setting), participants also noted the importance of advancing internal assessments and closing main gaps to build senior management prioritization for this agenda.

How to scale the methodology across an entire portfolio?

Institutions have also noted that even when narrowing their scope for the purposes of the pilot, the analysis required in the LEAP approach is challenging and time-consuming, particularly for the Evaluate and Assess phases. The concern regarded the challenge of performing the same analysis across an entire sector or portfolio. Despite being willing and engaged, they perceived that more guidance was necessary on these points to move forward effectively.

To address this, many participating financial institutions have proactively sought out strategic partnerships with knowledge partners such as universities and industry peers. These partnerships are intended to support the financial institutions in enhancing their internal capacities for nature-related disclosures and to integrate effective risk management practices as the nature reporting landscape continues to evolve.

Another notable observation regarded the need to improve the current operating systems and tech architecture of financial institutions (especially banks). The upgrade of core legacy banking platforms could help these institutions to be better prepared in managing risks strategically - including nature-related risks - as current systems may have limited processing capacity to store, analyse, and monitor nature-related information from their client portfolios. Some institutions highlighted how working with partner institutions enabled them to overcome this challenge for now, as these institutions could perform initial assessments through their agile operating systems.

Paving the way for a standardized reporting system

The piloting institutions perceive the TNFD as a key piece in promoting the alignment of the multiple existing nature-related reporting frameworks and disclosure initiatives, making the reporting process more efficient and streamlined for companies. This perception comes from TNFD’s current expanded network of knowledge partners and signposts to collaborative work with many of these initiatives in the draft beta framework. This is particularly relevant for companies that have limited resources and time to allocate to this agenda, as they struggle to engage with all the different initiatives.

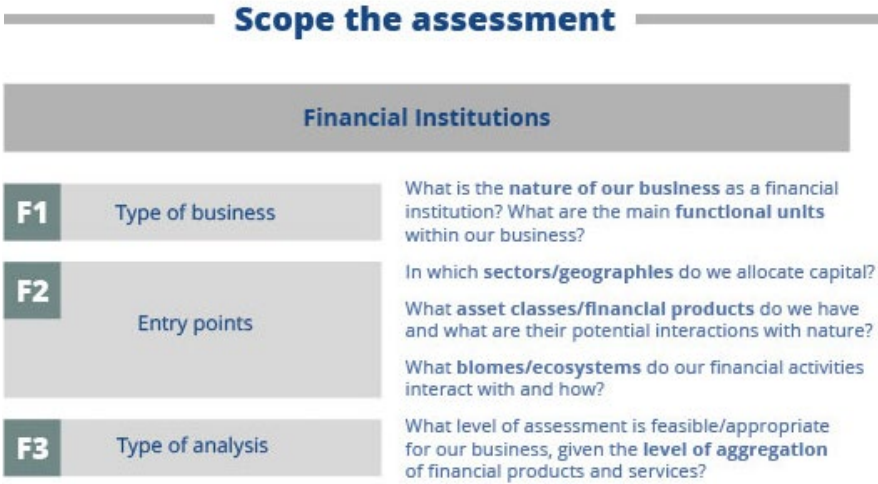
3.3 Entering LEAP: scoping the Assessment

As proposed in the draft guidance from the TNFD, the Scoping phase is designed to enable financial institutions to progress to the ‘Locate’ or ‘Evaluate’ phase of the LEAP approach, based on the type of financial institution, the type of asset classes / financial products and the level of aggregation. For example:

- Financial institutions engaged in project finance, real estate, some insurance (hazard assessment) and some private equity firms may already have access to location-based data and therefore can start with the ‘Locate’ phase of LEAP.
- Listed and unlisted equity and debt, sovereign risk and commercial lending are more likely to take a sector focused approach initially and would find it more appropriate to start with the ‘Evaluate’ phase of LEAP.

LEAP presents a preceding set of scoping questions to help financial institutions prioritise and focus effort as they assess their financial portfolios.

The output of the scoping questions could be, for example, an initial heat map revealing the priority nature-related exposures of the portfolio. After the prioritisation is complete, further deep dives can be undertaken. Financial institutions may choose to initially assess one area of their business. The TNFD believes that over time, they should assess all areas of their business.



Key findings

The scoping phase was an essential but challenging step during the pilots. Its complexity emerged as many institutions still have not performed impact assessments, just beginning to understand which are priority sectors or portfolios of most nature-related material exposure. This phase led to the realization of needed expertise in the teams, including biodiversity, data management or strategic management support. Given some of the complexities and barriers encountered, the project’s timeline was extended and adapted before proceeding with the next steps.

Parameter	Outcome	Lessons learned
F1: Type of business	Participants included banks, asset managers/owners, and insurance providers.	Substantive difference was indeed noted in practice depending on the level of diversification of each financial institution. Flexibility and adaptation following the scoping phase were important—in some cases, institutions decided to prioritize the scope of work on their research or investment subsidiaries rather than the insurance activities, given the current limitations and barriers for the initial intended assessment.
F2: Sector and geographic interaction analysis	Institutions conducted a materiality assessment, and chose specific sub-sectors in locations with high exposure.	Many financial institutions were already familiar with climate materiality assessments, but new to the nature-related equivalent. The sector choice was also prioritized following the level of data the institution had. The granularity of this data could be influenced by policies and regulations demanding for more detailed disclosures for certain sectors than others.
F2: Type of financial products / asset classes	Financing instruments analyzed were corporate lending/non-corporate lending portfolio, real-estate and mortgage project finance, listed equity investments.	The level of collected information from clients depending on the financial instrument also allowed for more or less challenges in the next steps.
F2: Biomes/ ecosystems interaction	A minority of financial institutions had good knowledge of this interaction during this phase.	During the scoping phase, sector, geography and/or portfolio analysis were prioritized; the comprehension of biomes and ecosystems interaction was better understood during the process.
F3: Level of aggregation	No conclusive decision.	Due to their interconnection, aggregating data by product, service, and location poses a challenge for financial institutions. For instance, financial institutions typically offer a range of depository, lending, underwriting, and advisory services, each of which comprise numerous distinct products. The availability of location-based data can vary significantly depending on the geography, leading to incomplete or imprecise aggregation at this stage.

Feedback provided to the TNFD

Creation of an internal team: Financial institutions were requested to establish an internal team comprising diverse departments, ranging from the sustainability risk team to financial product teams, to obtain a comprehensive perspective of organisational-level information. Setting up internal teams representing all parts of the organisation’s operations also helps financial institutions gain a holistic view of their business operations. The participating financial institutions expressed significant benefits resulting from this approach.

Use case: Driving action—before having all tools and skills at hand

A piloting institution from Latin America highlighted the importance of building an internal ‘taskforce’ dedicated to the pilot and to include nature-related risk assessment to their sustainability strategy. The team included colleagues across the sustainability, strategy, risk management, financial products and data management, with each team member bringing complementary skills. One of the pilot’s outcomes involved immediate actions taken to strengthen the corporate lending due diligence process. The promising results from this approach would now be ‘exported’ to other countries where the bank has other branches in the region it operates.

3.4 Locate Phase: Locating your interface with nature

An organization’s assets, business processes, products and services (direct, upstream and downstream) interface with nature at specific locations. Nature-related dependencies and nature impacts—the sources of risks to business continuity, earning and ultimately enterprise value—are often location-specific. Location therefore matters greatly for the identification, assessment, avoidance, mitigation and management of nature-related risks facing corporates and financial institutions.

As the TNFD is cognizant of the complexity of this step—and assessing location-specific information—this is one of the key pieces in which feedback from market participants is welcome for additional guidance and tools to be recommended by the Taskforce and its network of scientific and disclosure mechanism organizations forming the TNFD Knowledge Partners.

Key findings

This step, although essential for nature-related risk assessments, is currently one of the most challenging ones. Most of the financial institutions encountered limitations in the location-specific information they can access. From these challenges, many next steps are envisaged, including strengthened stakeholder engagement with priority clients, and engagement with nature data providers.

Parameter	Outcome	Lessons learned
L1: Business Footprint	<p>A majority of institutions were able to spatialize their organization's operational locations by leveraging the use of IBAT and ENCORE tools.</p> <p>Review their company's exposure in the specified sector/geography;</p> <p>Mapping of materially exposed financial products on data tools such as ENCORE/IBAT; and a geospatial map of the organization's operational locations, and upstream and downstream value chain locations.</p>	<p>Location-specific information needs to be leveraged by most financial institutions. This step also highlighted to participants a key difference between nature-related and climate risk assessments.</p> <p>One exceptional case was that of asset managers, who in most instances engage with thousands of companies, and do not have granular information on the geographies that all these companies interact with.</p>
L2: Nature Interface	<p>Once L1 was completed, the majority of organizations went on to overlay this geo-spatial map of business activity with spatial data, including data from existing market tools, which can assist in mapping terrestrial, freshwater and ocean biomes and ecosystems, and their integrity and resilience.</p>	<p>With a few exceptions, the outputs from multiple data sources used such as IBAT and ENCORE were often not complementary, making standardisation and comparability of impact drivers and metrics challenging.</p>
L3: Priority location identification	<p>The institutions narrowed down locations in the broader geography of the pilot based on their portfolio's exposure on a province level.</p>	<p>Several institutions successfully overlaid the impact drivers identified on the province level data gathered in this step.</p>
L4: Sector identification	<p>Piloting participants chose their preferred subsectors based on the availability of data and their institution's material exposure.</p>	<p>Participating institutions arrived at common subsectors within the respective piloting groups to evaluate so they could collaborate and share findings during group calls.</p>

Feedback provided to the TNFD

Unique nature of asset managers interactions with nature

Many asset managers have thousands of companies in their portfolios, and do not have access to location-specific data for each of these companies. Given the unique nature of their interactions with the companies in their portfolios, further guidance for how this type of institution should conduct LEAP was identified, especially while looking at direct versus indirect operations.

Case study 1: Focusing on priority locations

Two asset managers conducted the pilot with external support from CDC Biodiversité, which used among other tools, the Global Biodiversity Score for its assessments of nature-related impacts and dependencies (further developed in the following step). Both asset managers focused on their agriculture sector portfolio highlighted in their findings shared challenges for the Locate phase. An overarching conclusion was the need for the development of asset-level databases for exhaustive findings.

L1 Business footprint	L2 Nature interface	L3 Priority location identification	L4 Sector identification
<p>An exhaustive assessment of this step currently faces two main challenges:</p> <ol style="list-style-type: none"> 1. Missing data at the company level—companies need to strengthen the level of granularity of information, especially on supply chain traceability. 2. The former step however also demands an improved level of corporate disclosure and/or publicly- available corporate information. 	<p>This step is reliant on the exhaustive assessment from the previous step, following its limitations. This step may also be time-consuming for large companies.</p> <p>For companies with numerous sites, using the complete version of IBAT can be required and useful.</p>	<p>This step is finally reliant on the exhaustive assessment for the L1 and L2 steps.</p> <p>An important point of consideration for this step is the consideration of priority locations. If only considering these for the 'Evaluate phase', it is possible that areas with high biodiversity value are overlooked following a focus on areas where the company's impacts are high.</p>	<p>In addition to exhaustive information on the location, this step requires exhaustive information on the activities at each location, which may be challenging to obtain.</p>

Case study 2: Locating priority locations for the offshore wind farm sub-sector

The following extract comes from one pilot participant during the 'Locate' phase for their investments in the offshore wind sub-sector in Europe. After mapping out their material exposure using publicly available nature-related data (L1), the organization used ENCORE and other tools and datasets (eg UN Biodiversity Lab, Ocean+ and IBAT) to assess the nature interface (L2). Applying findings from L1 and L2, the determination of priority locations (L3) was concluded based on the distance to Marine Protected Areas, and the overlap with bird flight areas.

The Financial Institution considers Priority Locations can be identified by the following process.

1. Identify locations of OWF facilities.
2. Identify locations of OWF facilities that overlap with Marine Protected Areas (MPAs) or bird flight areas, by using UN Biodiversity Lab and other tools.

L1 Business footprint	L2 Nature interface	L3 Priority location identification	L4 Sector identification
<p>Where are our direct assets and operations, and our related value chain (upstream and downstream) activities?</p>	<p>Which biomes and ecosystems do these activities interface with? What is the current integrity and importance of the ecosystems at each location?</p>	<p>At which locations is our organisation interfacing with ecosystems assessed as being low integrity, high biodiversity importance and/or areas of water stress?</p>	<p>What sectors, business units, value chains or asset classes are interfacing with nature in these priority locations?</p>
<ul style="list-style-type: none"> ■ Related Biome: Europe, Marine shelves: M1. ■ OWF Business flow: The following flow was confirmed from the document issued by the Japanese Ministry of the Environment (MOE) 1. <ul style="list-style-type: none"> ▫ Delivery of construction equipment and materials, etc. Operation of construction equipment. Construction of landscaping, etc. Alteration of landscape and existence of facilities. Operation of facilities. 	<ul style="list-style-type: none"> ■ From ENCORE and a MOE Document³, we have broadly identified the nature interface of OWFs (page 3). ■ The following databases are helpful in identifying locations of the MPAs. <ul style="list-style-type: none"> ▫ UN Biodiversity Lab⁴: It shows the location of MPAs, etc. on the world map (page 4). ▫ Ocean+5: It shows the location of MPAs, etc. on the world map. ▫ IBAT⁶: It shows the protected areas and the number of species on the IUCN Red List in a selected area. However, detailed information is only available in paid reports. ■ Bird flight areas could not be found in the tools introduced in the Technical Guidance Note of this pilot program, but we think many countries have developed such tools. <ul style="list-style-type: none"> ▫ For example, JMOE has developed the "Sensitivity Map of Birds in Wind Power"⁷. ■ UN Biodiversity Lab⁴ and GLOBIO-web⁸ show the integrity of the ecosystem on a world map, but both of them only cover terrestrial areas (on land), they can not be used in this case. 	<ul style="list-style-type: none"> ■ We think 'the distance' to MPAs could be a criteria for selection of priority locations. <ul style="list-style-type: none"> ▫ However, the specific distance needs to be defined. ■ The existence of overlap with bird flight areas could also be a criteria for selection of priority locations if we can find appropriate tool. ■ It needs more examination whether the number of species on the IUCN Red List in the identified location can be a criteria for selection of the priority area. ■ The integrity and importance of marine ecosystems are difficult to be used for selection of priority locations. 	<ul style="list-style-type: none"> ■ The candidates for priority areas are selected by the locations of OWF facilities (wind turbines, substations, meteorological observation towers, maintenance facilities, and submarine cables).

Dependencies and impacts of OWFs identified in ENCORE

	Ecosystem services/Impact drivers	Materiality rating
Dependencies	<p>Climate regulation Global climate regulation is provided by nature through the long-term storage of carbon dioxide in soils, vegetable biomass, and the oceans. At a regional level, the climate is regulated by ocean currents and winds while, at local and micro-levels, vegetation can modify temperatures, humidity, and wind speeds.</p>	<p>VH: Very high materiality rating The production process is extremely vulnerable to disruption. The degree of protection offered by the ecosystem service is critical and irreplaceable for the production process.</p>
	<p>Flood and storm protection Flood and storm protection is provided by the sheltering, buffering and attenuating effects of natural and planted vegetation.</p>	Not applicable for offshore.
	<p>Mass stabilisation and erosion control Mass stabilisation and erosion control is delivered through vegetation cover protected and stabilising terrestrial, coastal and marine ecosystems, coastal wetlands and dunes. Vegetation on slopes also prevents avalanches and landslides, and mangroves, sea grass and macroalgae provide erosion protection of coasts and sediments.</p>	Not applicable for offshore.
Impacts	<p>Marine ecosystem use Examples include area of aquaculture by type, area of seabed mining by type, etc.</p>	<p>H: High materiality Construction of OWFs leads to habitat modification in the marine environment.</p>
	<p>Disturbances Examples include decibels and duration of noise, lumens and duration of light, at site of impact.</p>	<p>M: Medium materiality rating Noise pollution during the construction phase can reach 80 km in the marine environment. Injury or death through collision with turbine blades is common, especially in birds and bats. Turbine construction can disrupt birds' breeding and foraging behaviour and, if inappropriately sited, can lead to habitat destruction. Disturbance to breeding and foraging birds has been recorded up to 800 m around individual wind turbines.</p>
	<p>Water pollutants Examples include volume discharged to receiving water body of nutrients (e.g., nitrates and phosphates) or other substances (e.g., heavy metals and chemicals).</p>	<p>L: Low materiality rating Maintenance activities can cause pollution from oil or other waste products.</p>
	<p>Terrestrial ecosystem use Examples include area of agriculture by type, area of forest plantation by type, area of open cast mine by type, etc.</p>	Not applicable for offshore.
	<p>Freshwater ecosystem use Examples include area of wetland, ponds, lakes, streams, rivers or peatland necessary to provide ecosystem services such as water purification, fish spawning, areas of infrastructure necessary to use rivers and lakes such as bridges, dams, and flood barriers, etc.</p>	Not applicable for offshore.
	<p>Soil pollutants Examples include volume of waste matter discharged and retained in soil over a given period.</p>	Not applicable for offshore.

3.5 Evaluate phase: Understanding dependencies and impacts

Most organizations, including financial institutions take for granted that nature will continue to provide ecosystem services to support the business processes that produce products and services, and ultimately, revenues, cashflow, and enterprise value. In this phase of the LEAP approach, an organization makes explicit the environmental assets and ecosystem services on which it depends and from which its business processes at each location generate financial value. Making dependencies more visible in corporate and investment decision-making is a first, critical step to better understanding nature-related risks.

Since the TNFD recognises that impacts on nature can be negative and/or positive, as part of evaluating their dependencies and impacts on nature, the TNFD proposes that organizations should evaluate their negative impacts, impact mitigation (reducing negative impacts on nature), and positive impacts. These should be assessed, measured and, if relevant, disclosed separately—not on a net basis.

Key findings

The main challenge highlighted in this phase regarded the need for biodiversity and nature experts, with understanding of ecosystems assets and natural capital. This expertise may need to be leveraged throughout financial institutions. Nonetheless, even institutions with expert analysts which performed an analysis on the size and scale of nature-related impacts and dependencies found the task to be complex and lengthy, for which institutions will need to consider long-term strategic plans to conduct a granular analysis across their portfolios.

Parameter	Outcome	Lessons learned
E1: Identification of environmental assets and ecosystem services	Because the pilots followed a narrow scope framework, financial institutions were able to identify their business operations (sub-sectors) in each priority location in L1.	There is a need for region-specific tools in order to comprehensively undertake dependencies and impacts. Current data tools do not always capture aspects that are material in one geography and not in another.

<p>E2: Identification of dependencies and impacts by priority location</p>	<p>In order to determine their dependencies and impacts at each priority location, pilot participants used various methodologies and tools such as: ENCORE and IBAT tools, ESG ratings, Environmental Impact assessments at a regional/national level, heat maps, and prior project due diligence reports. Examples of identified impacts included habitat destruction, noise pollution.</p> <p>However, piloting participants found the currently accessible tools still lacking to support a full scope of dependencies and impacts. Some of the issues included a lack of region-specific differentiation e.g. ENCORE not capturing invasive species as an impact driver even though it is a top 3 impact driver in regions like Australia.</p>	<p>Following a narrow scope, the majority of piloting participants could easily identify dependencies and impacts on a single business operation. However, it remained unclear to pilot participants on how to scale the same assessment to a portfolio level with multiple business operations. Part of the reason being topics dealt with in the Evaluate phase are found to be challenging and complex for the financial institutions to enact on their own at a wider scope. Pilot participants acknowledged more guidance is needed on this front.</p>
<p>E3 & E4: Dependency and impact analysis (size and scale of dependencies and impacts)</p>	<p>Pilot participants struggled to measure the full size of their impact and dependencies. A primary reason being lack of pertinent data tools. The available and accessible set of tools only facilitated qualitative assessment and semi-quantitative of impacts and dependencies.</p> <p>For pilot participants who used project due diligence reports to undertake the Evaluate phase, the due diligence reports were found to lack accurate up-to data granularity that would facilitate quantitative assessments.</p>	<p>Evaluating the size and scale of impacts and dependencies was a main challenge from this phase, with institutions requiring more guidance. On its practical aspect, it was acknowledged as being onerous and time-consuming, needing the dedicated expertise of biodiversity analysts.</p> <p>There is a need to avail more open-source data tools that would facilitate the quantification of determined impacts and dependencies. Environmental Impact Assessment (EIA) reports are an example of open-source information that provide granular information but not all regional EIAs are accepted across different geographies hence impeding quantification assessments.</p> <p>When collecting data from clients' sources to inform due diligence processes such as in project financing, financial institutions should give more attention to sourcing granular and up-to-date data information. This will better facilitate quantifying the size and scale of dependencies by providing pertinent inputs.</p>

Feedback provided to the TNFD

Reducing the complexity in estimating natural capital impacts: need for standardized list of nature metrics, exposure metrics and magnitude

Pilot participants generally found the Evaluate phase challenging to enact on their own with some participants employing third parties to conduct analysis on their behalf. Pilot participants mentioned the need for more guidance, including the useful addition of a standardized list of nature, exposure, and magnitude metrics. Having standardized measures and methodologies would ease the process, delivering more granular and comparable results across institutions.

Pilot participants expressed difficulty in estimating the relevant changes in natural capital and determining the likelihood of external factors to affect the different changes in natural capital due to the many possible parameters that could be used. The TNFD can support market participants in reducing complexities of the parameters by proposing, for example, two standardized methods: one of directly measuring natural change and another less detailed high-level method. The appropriate method of choice will depend on the level of detail required (or practical within the available time and resources), and the geographic scope under consideration.

Collaboration between government stakeholders

Collaborating with government institutions such as the Ministry of Environment, Ministry of Agriculture, Forestry, Fisheries, and others can play a crucial role in improving Environmental Impact Assessments (EIAs). While some regions may have more granular EIA requirements, these assessments may not be universally approved due to various reasons. Therefore, there is a need to extend the scope of regional EIAs to facilitate quantification across geographies.

Consider issuing more sector-specific guidance: the supply chain traceability conundrum

During the Locate and Evaluate phases, it became clear that mapping an institution's exposure to different sectors poses quite different challenges. Participants had varying degrees of visibility into their supply chain, with limited data about value chain impacts and dependencies posing obstacles. It was also noted that LEAP seems better suited, as of now, to businesses that have a direct impact/dependency on nature. For service businesses such as banks, the process for assessing downstream / upstream supply chain will be onerous, requiring several simplifying assumptions as a 'bottom-up' approach based on every customer. At the same time, despite this challenge, some financial institutions highlighted the need for an analysis across the entire value chain to avoid blind spots.

When mapping locations, specifically for the analyzed sub-sectors of forestry and rubber, complexities were observed due to significant lack of traceability caused by indistinguishable upstream producers and intermediaries. In contrast, offshore wind sector mapping is simpler due to the lower number of worldwide installations. It was suggested that the TNFD and its knowledge partners can further guide financial institutions on how to approach sectors and companies where transparency and traceability remain critical barriers, although these issues are inherent to many high-nature-risk sectors.

Despite the challenges, it was acknowledged that the TNFD is making a significant contribution by bringing together actors from across supply chains, sectors, and geographies to push for systemic changes. It was suggested that the TNFD can provide more sector guidance and help drive collaboration to create optimal solution, supporting the ongoing efforts of individual organizations and sector-specific initiatives to improve traceability and transparency in supply chains. Further sector guidance was provided in the v0.4 released in March 2023.

How to define the most adequate entry point to LEAP: between Locate and Evaluate

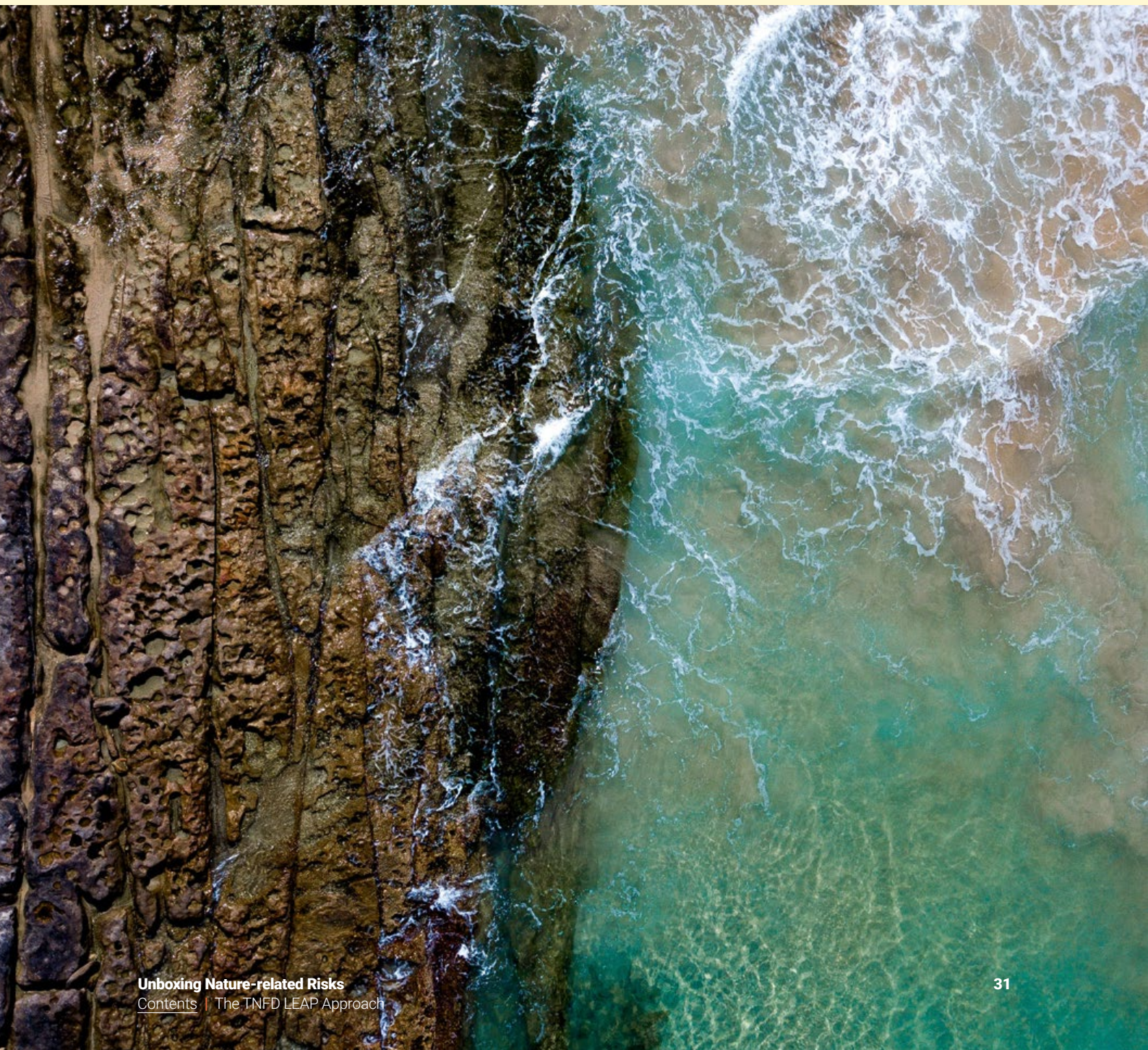
Financial institutions often engage with thousands of companies, and collecting granular data on all the locations that these interact with does not seem feasible as of now provided institutions will need time and processes to collect this missing information. For this reason, some pilot participants have found it interesting to adopt the iterative process proposed by LEAP. While for some institutions it was possible starting their assessment through the 'Evaluate phase' in order to identify what is most material before undertaking the 'Locate phase'. For other institutions, even as they applied the 'Locate phase' as their entry point to the LEAP approach, they found it most effective to go back and forth between the first steps.

In some cases, the identification of nature-related impacts and dependencies was recommended or was discovered through practical insights. Asset managers from one piloting group and one Australian bank both found similar results when using ENCORE for this screening. For a given sector, it can be most useful first assessing nature-related dependencies (steps E1 through E3) and then proceeding to impacts (steps E2 and E4), which allow for a more straightforward Locate phase. This assessment is especially interesting for large companies or portfolios.

Case study 3: Overcoming the challenge to evaluate the 'size and scale' of impacts and dependencies

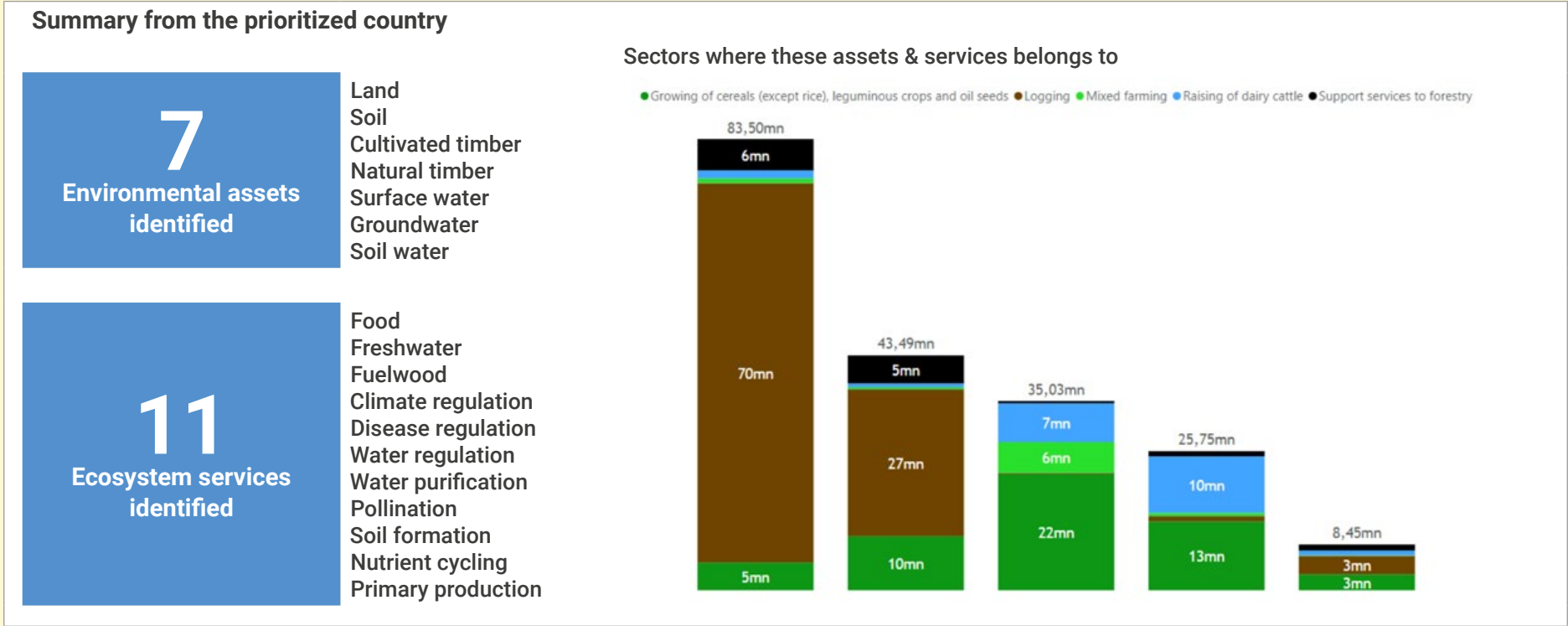
Examples of more needed guidance on this step emerged from the Australian pilot group diving into the freshwater realm highlighted:

To evaluate the significance of impacts of a particular customer, it is necessary to understand whether their water use efficiency is above/below average, the availability of water within the catchment in which the customer operates, and the extent to which the customers' consumption is infringing on other users' ability to access water (including the downstream environment and users).



Case study 4: Understanding for the forestry sector

This institution first identified country-level data for the most exposed countries in its agriculture and forestry portfolios, leading to the identification of two priority countries and five main agricultural sub-sectors. The identification of biomes and ecosystems included the use of the Global Ecosystems Typology; while for the identification of integrity and importance other classification frameworks and tools were used, including Globio, UN Biodiversity Lab, Resources Watch, and ENCORE. The institution then moved on to establishing key performance indicators to decide which priority locations would be chosen. The following extracts show the final list of analyzed environmental assets and ecosystem services to then understand nature-related impacts and dependencies.



Prioritized locations—environmental assets & ecosystem Services

		Location 1	Location 2	Location 3	Location 4	Location 5
		7	5	7	7	7
Environmental assets	Land	Land	Land	Land	Land	Land
	Soil	Soil	Soil	Soil	Soil	Soil
	Cultivated timber	Surface water	Cultivated timber	Cultivated timber	Cultivated timber	Cultivated timber
	Natural timber	Groundwater	Natural timber	Natural timber	Natural timber	Natural timber
	Surface water	Soil water	Surface water	Surface water	Surface water	Surface water
	Groundwater		Groundwater	Groundwater	Groundwater	Groundwater
	Soil water		Soil water	Soil water	Soil water	Soil water
		10	9	10	10	10
Ecosystem services	Freshwater	Food	Freshwater	Freshwater	Freshwater	Food
	Fuelwood	Freshwater	Fuelwood	Fuelwood	Fuelwood	Freshwater
	Climate regulation	Climate regulation	Climate regulation	Climate regulation	Climate regulation	Climate regulation
	Disease regulation	Water regulation	Disease regulation	Disease regulation	Disease regulation	Disease regulation
	Water regulation	Water purification	Water regulation	Water regulation	Water regulation	Water regulation
	Water purification	Pollination	Water purification	Water purification	Water purification	Water purification
	Pollination	Soil formation	Pollination	Pollination	Pollination	Pollination
	Soil formation	Nutrient cycling	Soil formation	Soil formation	Soil formation	Soil formation
	Nutrient cycling	Primary production	Nutrient cycling	Nutrient cycling	Nutrient cycling	Nutrient cycling
	Primary production		Primary production	Primary production	Primary production	Primary production

Dependencies and impacts per prioritized locations

		Location 1	Location 2	Location 3	Location 4	Location 5
Dependencies (Ecosystem services)		Freshwater	Food	Freshwater	Freshwater	Food
		Fuelwood	Freshwater	Fuelwood	Fuelwood	Freshwater
		Climate regulation	Climate regulation	Climate regulation	Climate regulation	Climate regulation
		Disease regulation	Water regulation	Disease regulation	Disease regulation	Disease regulation
		Water regulation	Water purification	Water regulation	Water regulation	Water regulation
		Water purification	Pollination	Water purification	Water purification	Water purification
		Pollination	Soil formation	Pollination	Pollination	Pollination
		Soil formation	Nutrient cycling	Soil formation	Soil formation	Soil formation
		Nutrient cycling	Primary production	Nutrient cycling	Nutrient cycling	Nutrient cycling
		Primary production		Primary production	Primary production	Primary production
Impacts		Population changes	Habitat modification	Habitat modification	Habitat modification	Habitat modification
		Habitat modification	Water abstraction	Water abstraction	Water abstraction	Water abstraction
		Water abstraction	Intensive agriculture & aquaculture	Population changes	Population changes	Intensive agriculture and aquaculture
		Landslides	Flooding	Landslides	Landslides	Flooding
		Fire	Conversion & degradation of natural habitats	Fire	Conversion and degradation of natural habitats	Conversion and degradation of natural habitats
		Conversion & degradation of natural habitats	Increased soil erosion	Conversion & degradation of natural habitats	Conversion and degradation of natural habitats	Increased soil erosion
		Increased soil erosion	Decreases in soil moisture	Increased soil erosion	Increased soil erosion	Decreases in soil moisture
		Decreases in soil moisture	Invasive species	Decreases in soil moisture	Decreases in soil moisture	Invasive species
		Invasive species	Human modification of genetic material	Invasive species	Invasive species	Flooding
		Flooding	Water pollution	Flooding	Flooding	Human modification of genetic material
	Human modification of genetic material	Soil pollution	Human modification of genetic material	Human modification of genetic material	Pollution	
	Pollution		Water pollution	Pollution		
	Water pollution		Soil pollution	Water pollution		
	Soil pollution			Soil pollution		

Identification of dependencies and impacts by priority location

Logging in location 1







Prioritized location 1
Economic sector/Business activity 1








Dependencies (Ecosystem services)

- Fresh water**
Resources from collected precipitation and water flow from natural sources
- Fuelwood**
Source of energy
- Climate regulation**
Changes in land cover can affect both temperature and precipitation
- Water regulation**
Hydrological cycle can be influenced by changes in land cover
- Soil formation**
Supports food production
- Nutrient cycling**
Way that soil nutrients move through the earth system
- Primary production**
Production of organic compounds










Impact drivers

-  Terrestrial ecosystem use
-  GHG emissions
-  Water pollutants
-  Soil pollutants

Environmental assets

-  Land
-  Soil
-  Cultivated timber
-  Natural timber
-  Surface water
-  Groundwater
-  Soil water

Impacts (derived from impact drivers)

-  Population changes★
-  Landslides★
-  Fire★
-  Conversion & degradation of natural habitats★
-  Increased soil erosion★
-  Decreases in soil moisture★
-  Pollution
-  Water pollution
-  Soil pollution

Dependencies from Logging may trigger some impact drivers

These impacts create changes in natural capitals

These changes causes different impacts across stakeholders

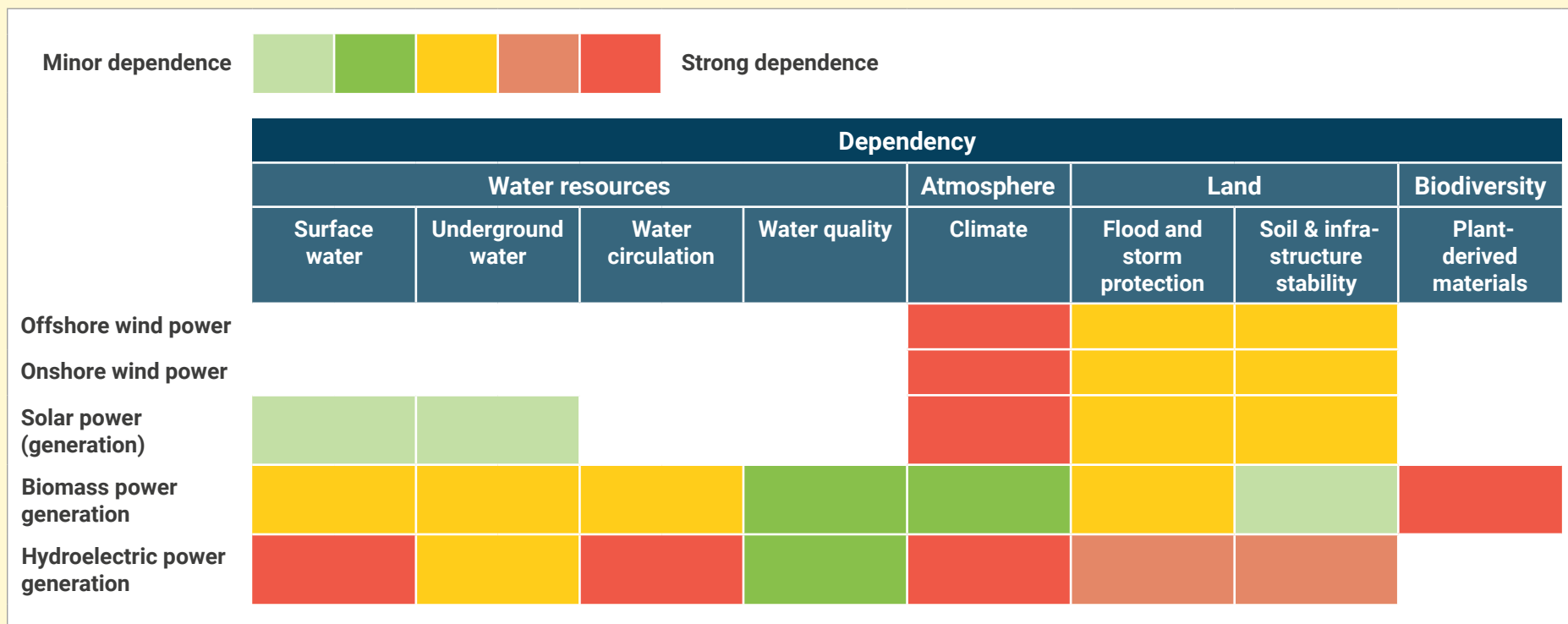
★ Highest materiality

Case study 5: Understanding the climate-nature nexus by assessing nature-related impacts and dependencies in the energy sector

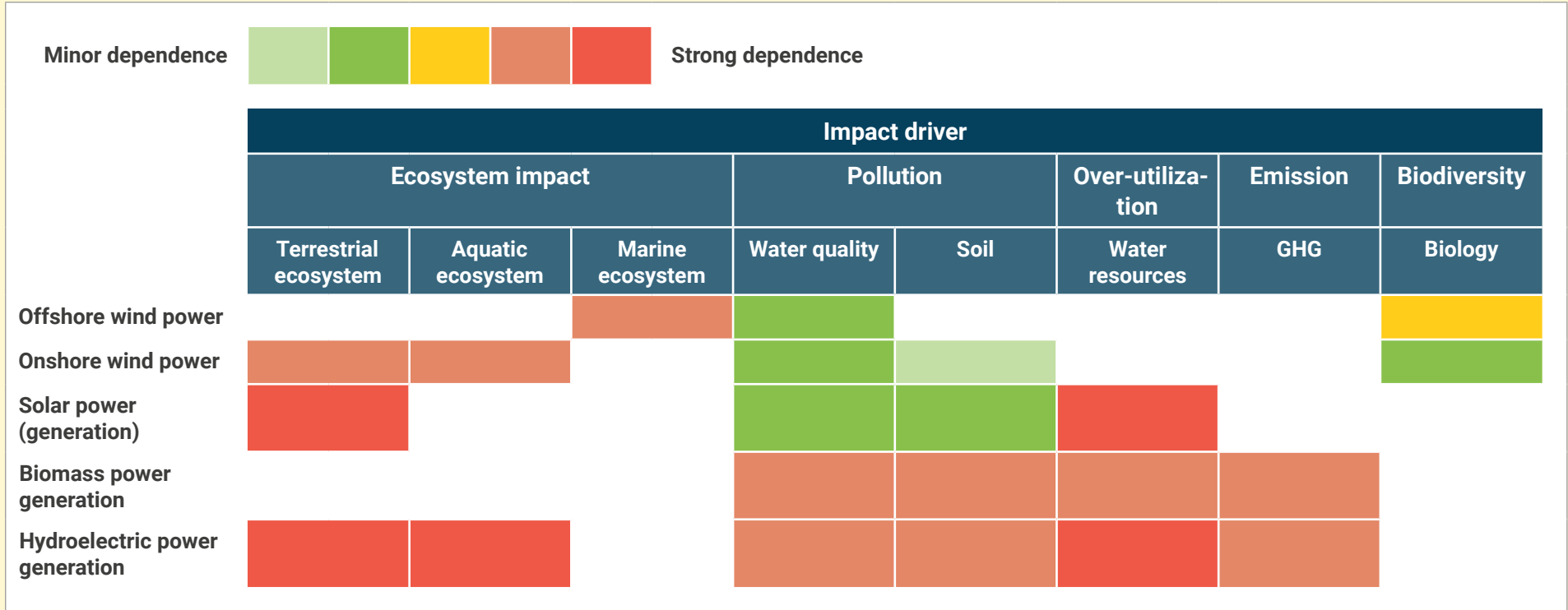
The following extracts were shared by a piloting participant assessing their impacts and dependencies on natural capital and ecosystem services in the renewable energy sector for their operations in the North Sea. The institution used the ENCORE tool following its materiality rating to then conduct its internal analysis.

The analysis depicted a strong dependency for the offshore wind power sector on the following environmental assets: “atmosphere” (wind condition) and “land” (seabed ground). The institution then used climate scenarios to assess the probability of major physical risk events and spill over to financial risks in their investment areas in the North Sea.





The institution also conducted an analysis to understand related impact drivers of environmental change based on ENCORE’s methodology and findings. Assessing the whole renewable energy sector from their investment portfolio, the offshore wind farm sub-sector was highlighted with having a relatively minor impact on natural capital when compared to other renewable energy types. Main impacts identified were damage to “marine ecosystems” and disturbance to “biodiversity” (e.g. changes to ecosystems inhabited by fish, seaweed, birds, mammals, and other species, impacts on marine species by noise during the construction phase, and concerns about birds colliding with turbine blades). This analysis allowed the institution to then proceed to the Assess phase, in which pathways to analyse risk management actions and investment opportunities for the sub-sector were analysed.



Case study 6: Assessing impacts from the natural rubber supply chain—blind spots from corporate disclosure and supply chain certification

Despite the challenges regarding the need for more transparency from corporate actors along their supply chains being consistently highlighted from participating institutions, this challenge was especially relevant for the group assessing the natural rubber sub-sector. Financial institutions assessing the natural rubber supply chain were among those facing main barriers as this economic activity still does not have supply chain certifications established. In this regard, stakeholder engagement was key; the involved financial institutions mentioned how reaching out to their main clients operating in the sector was a main component to overcome this current barrier and finding common solutions together going forward.

On the step-by-step assessment performed by one Asian institution, the chosen methodology to assess impacts was a multi-regional input-output model, in which global inter-industry trade was looked at, enabling to understand economic spillover effects on a global basis through investment and procurement. Following on this first analysis, the institution then multiplied the economic spillover effects by land input area by country and industry from the rubber supply chain, using IBAT to understand biodiversity-related impacts on species' abundance. The estimation also allowed to extract land-use information to understand which parts of the priority locations in Indonesia were being affected by deforestation—for monoculture or agroforestry, providing the institution with a granular understanding on how biodiversity impacts had been affecting the country over the last few decades.

3.6 Assess phase: Assessing risks and opportunities

Leveraging the dependency and impact analysis developed in the Evaluate phase of LEAP, this next phase seeks to identify how these impacts might translate into risks for the organization. The LEAP approach has also been designed to help organizations surface not just risks, but also potential commercial opportunities; either to eliminate or mitigate risks or to create new commercially valuable business models, products and services that contribute to nature positive outcomes for society. In this sense, the ‘L’, ‘E’ and ‘A’ phases of the process can play an important role in shaping a wide range of leadership decisions about strategy, growth, and capital allocation, going beyond just disclosures.

Key findings

The Assess phase presented some barriers to its full application by financial institutions, given the need for further development and guidance on technical components, including nature scenarios and ‘Value at Risk’ analysis. Although the majority of institutions could successfully translate the analyzed nature-related impacts and dependencies to risks and opportunities, the analysis remained qualitative and semi-quantitative at this stage—a process that can already drive internal action but that may hinder urgency to embed nature in strategic decision-making. The v0.4 release from March 2023 was set to start addressing these challenges.

Parameter	Outcome	Lessons learned
A1: Risk & opportunity identification	The analysis was limited as the outcomes of the evaluate phase were largely qualitative; Institutions were largely unable to conduct scenario analysis.	Assessing tipping points for biodiversity degradation is crucial to determining the timeframe and therefore likelihood of the occurrence of nature-related risks.
A2: Existing risk mitigation and opportunity management	Institutions had no problem identifying existing company policies and risk-mitigation processes. Generally, it was observed that it was common to have sector-specific company policies in place to deal with nature-risks (for example, exclusion criteria for oil palm producers), but not company-wide policies and risk-mitigation processes that address ‘nature’ more broadly.	This outcome is indicative of the reality that participants were very early in their journeys of considering their interactions with nature. As processes mature and thinking evolves, it is likely that company policies and risk mitigation processes for nature will evolve as well.

A3: Additional risk mitigation and opportunity management	Most institutions did not feel prepared to place any specific risk mitigation policies in place considering the analysis in the L, E, and A phases. Still, a few institutions already took steps to include nature-related considerations in their client advisory strategy.	Need a defined pathway for banks to move from impact/dependency analysis to financial risk assessment It was recommended that exposure and magnitude metrics outlined in the TNFD risk and opportunities register need further clarification.
A4: Risk and opportunity materiality assessment	Institutions didn't feel ready for reporting on risks as they only analyzed a portion of their portfolio and individual financial products, and feel like the synergy were not reflected in their current analysis.	The interconnectedness of financial products will play a huge role in the assessing risks and opportunities material enough to disclose in line with TNFD recommended disclosures.

Feedback provided to the TNFD

Define the pathway for financial institutions to move from impact/dependency analysis to financial risk assessment

It has been recommended to the TNFD that a clear pathway for banks to transition from impact and dependency analysis to financial risk assessment would be helpful. This should involve outlining a step-by-step process for identifying and prioritizing nature-related risks, conducting scenario analysis to assess their potential financial impact, and integrating this analysis into the bank's overall risk management framework. This recommendation comes from the perception that LEAP seems better suited to businesses that have a direct impact/ dependency on nature.

Closer correlation between exposure metrics and magnitude metrics

It has also been recommended that the framework allows for each exposure metric to be mapped to multiple magnitude metrics and vice versa, enabling a more nuanced understanding of the nature-related risks faced by an organization.

Distinction between internal operation vs investments impact

In the guidance regarding the distinction between operational impacts (such as those associated with commercial properties) and impacts resulting from investments would be helpful..

Development of scenarios with nature-related considerations: defining the pathway from nature-related risk to financial assessment

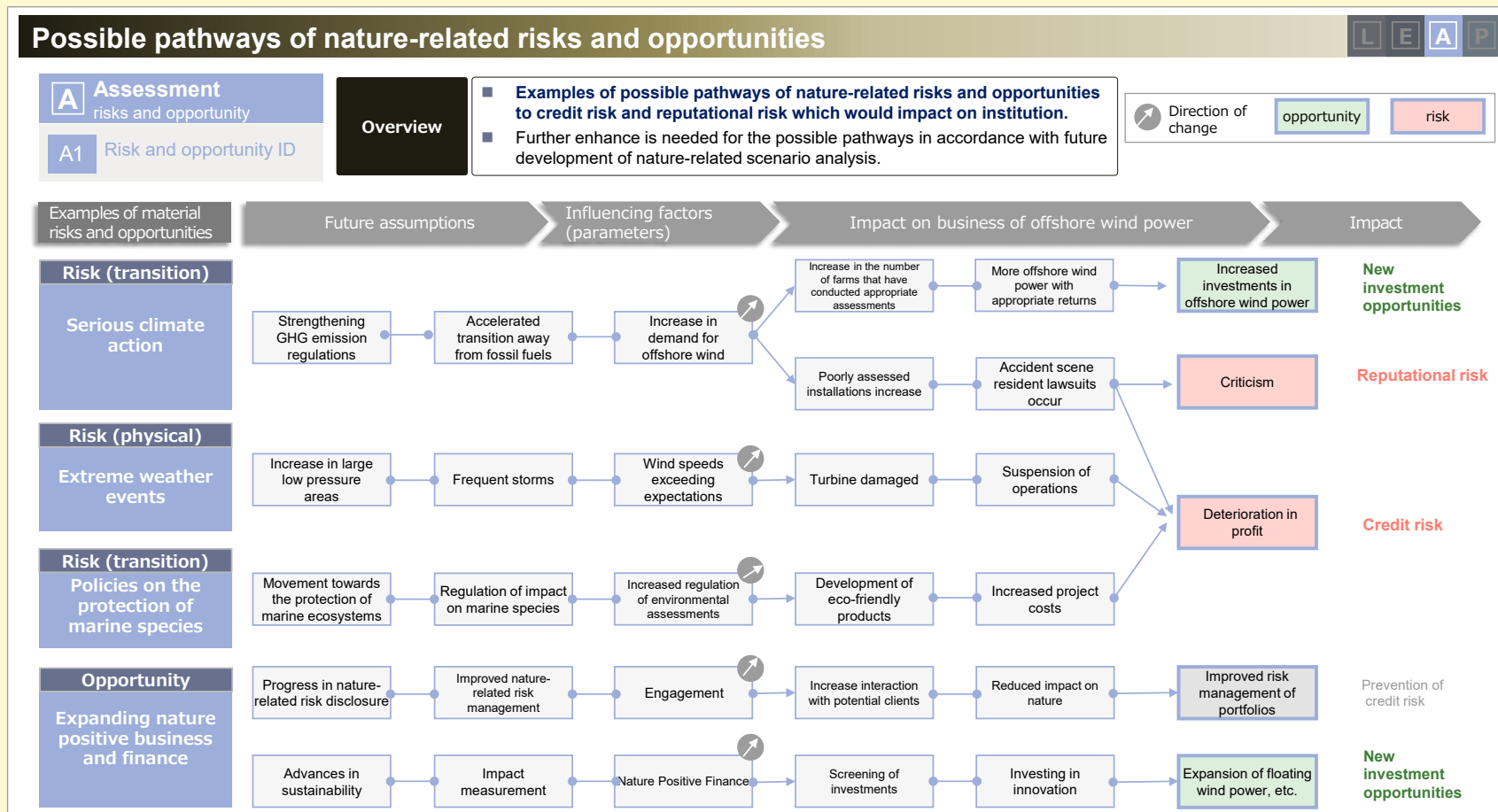
As many institutions are still new to this topic, guidance from the piloting team on relevant materials with use cases already developed was appreciated and helped drive internal action to take the first steps for scenario development. Robust scenario analysis—defined as science-based by some piloting institutions—is considered key to support risk assessment or defining metrics.

In order to understand the materiality of risk and opportunity, most financial institutions highlighted during this phase currently missing information about the tipping points for each biome and ecosystem service. Information on biodiversity tipping points will be essential in determining the timeframe and likelihood of risks to perform stress tests. It is important to highlight that developments to better understand tipping points involve advancements to be taken by global high-level scientific bodies—and UNEP FI along with the TNFD are following closely these developments. Concrete recommendations from institutions include the development of a common climate-nature ‘outlook’. For instance, for risks that have a direct relationship with climate change (e.g. drought, flood, heat), these scenarios can be derived from existing climate models, where these exist at an appropriate scale. However, there are other risks (e.g. biosecurity, soil fertility, air quality, pollution events) that are not directly related to climate, for which commonly agreed

scenarios would be helpful. This has added complexity given that location-specific scenarios are required.

Case study 7: Building potential pathways to assess nature-related risks and opportunities for credit and reputational risk

The following extract comes from an Asian financial institution which assessed potential transition and physical risks and opportunities building on future assumptions, influencing factors and related impacts on the analyzed sector.



Case study 8: Stakeholder engagement in the African context—understanding the climate-nature risk analysis

One institution conducting its assessment for the agriculture sector in Africa has partnered with the Council of Scientific and Industrial Research (CSIR) and the South African National Biodiversity Institute to have access to more robust data and expertise. This partnership has allowed the institution to develop an internal tool which is already used to assess physical risk exposure per clients and geographies. Going a step further, the tool will now be overlaid with transition risks and biodiversity data (e.g. including information on water use, biodiversity hotspots, and ecological support areas). The goal is to understand nature-related risks and opportunities per area and per agricultural portfolio. Seven other sectors are also prioritized and are in the pipeline to be included in the assessment tool.

The partnership and dedicated funding for this work were made possible due to fruitful results from the previous work on climate risk, which allowed them to develop risk mitigation and adaptation plans. The institution finally highlighted how essential it is to build on the previous work already conducted on climate—and how interconnected climate and nature reporting are.

Case study 9: From the African context—scenario analysis and the development of nature-related opportunities for smallholder farmers

Another bank, working in Africa and in partnership with local scientific bodies is building an internal scenario analysis. The modelling looks at different thresholds, such as temperature changes and crop yield variability—and will soon include the addition of nature-layered information. This analysis helps the bank understand how these scenarios affect price changes, client incomes and their ability to pay, being essential for credit risk modelling.

Given a majority of smallholder farmers are in the banks' lending portfolio, stakeholder engagement and nature-related opportunities are essential. By directly engaging with clients, the bank tries to understand what the main climate and nature are risks they are exposed to—and this information becomes part of the strategy. The Board is now focused on developing innovative energy efficiency financing products and schemes to help clients notably overcome higher energy costs in the region.

3.7 Prepare phase: Preparing to respond to nature-related risks and opportunities and report

Following the completion of the first three phases of the LEAP approach, an integrated assessment of material nature-related risks and opportunities should be ready to be presented to the institution's executives. This includes advice about the market disclosure of nature-related risks in accordance with the TNFD draft disclosure recommendations. The Prepare phase is finally the step in which the organization decides which information it is ready to disclose, helping to close the gap of incomplete or asymmetric nature-related information among market participants.

Key findings

As institutions have only focused on one sector or portfolio for the pilots, they do not have at this stage the information for a reported integrated assessment as proposed in the Prepare phase. Nonetheless, most financial institutions declared a better understanding of what the critical gaps to be addressed are, and the next steps to move forward in their assessments following this piloting exercise.

Main highlighted points of discussion include more guidance on target setting for financial institutions. It is expected that the developments on data availability will help facilitate the performance measurement of initially set nature-related targets. Another expectation comes for further guidance from policy makers in translating on a granular level the outcomes from the approved Global Biodiversity Framework (GBF), as it is essential to understand the overarching landscape in which nature-related disclosures and reporting is inserted.

Parameter	Outcome	Lessons learned
P1: Strategy and resource allocation P2: Performance measurement P3: Reporting P4: Presentation	Consolidating findings from the first three phases, the Prepare phase is set up to guide analysts in drafting an integrated assessment of material nature-related risks and opportunities to management executives in order to inform an enterprise's strategy and and nature-related targets.	Pilot participants only starting out on TCFD disclosures have identified the need for significant material investments to make the required system-wide changes and close institutional gaps to enable nature disclosures. For these institutions, nature-related disclosures will remain qualitative and semi-quantitative in the short-term horizon Despite nature target setting and metric reporting being at a starting stage of development, shifting stakeholder expectations, and looming regulations related to nature disclosures are incentivizing the pilot participants to advance and invest on performance management framework for nature-related risks and opportunities

Feedback provided to the TNFD

The way forward: strong interest in nature-related disclosures among participants

Participants of the pilot project remain highly engaged in the dynamic landscape of nature-related disclosures. Although the development of nature target setting and metric reporting is just beginning, the evolving expectations of stakeholders and upcoming regulations are encouraging piloting institutions to prioritize the advancement and investment in performance management frameworks for nature-related risks and opportunities.

3.8 The TNFD draft disclosure recommendations

The development of a set of disclosure recommendations for nature-related risks and opportunities is built on the premise that transparency of information through disclosures facilitates better risk and capital allocation decisions by corporates, investors, and lenders. As this occurs, understanding of the financial implications of the nature-related dependencies and nature impacts that materially shape enterprise risks and opportunities will grow. This will enable financial markets to channel capital away from nature-negative outcomes and towards nature-positive solutions, opportunities, and business models, ultimately supporting more efficient allocation of both risk and capital, and the functioning of stable markets.

The TNFD draft disclosure recommendations are built on four pillars, following the same structure from the TCFD—Governance, Strategy, Risk & Impact Management, and Metrics & Targets. The disclosure recommendations are designed to:

- help provide better information to support strategy and risk management at the board and management level, and ultimately improve capital allocation and asset valuation decisions by corporates;
- promote more informed investment, credit and insurance underwriting decisions by financial institutions; and
- enable a stronger understanding of the concentrations of nature-related risk and opportunities, based on insights into nature dependencies and impacts.

For the scope of the UNEP FI pilots, institutions provided high-level feedback and recommendations to drive applicability of disclosures, including need for more guidance on specific technical elements.

Key findings

The pilot process helped participants understand the importance of conducting comprehensive analyses that cover all areas of the financial institutions' operations and using qualitative, objective and data-driven approaches when forming disclosures. The institutions mostly conducted analysis for single sectors or financial assets during the piloting process. For this reason, creating firm-wide decisions will require extensive analysis of all the areas the financial institutions operate in, which they do not have at this stage. In addition, the conducted analysis remained mostly qualitative and semi-quantitative, making it challenging to structure comparable disclosures throughout the financial sector. Improving the use of quantitative data and metrics will enable financial institutions to provide more transparent and accurate disclosures on their impact on nature, which will help investors make informed decisions.

Institutions have also highlighted how time will be required to develop capacity internally, and more broadly within the network of other related actors that would be drawn upon to support implementation and preparation of disclosures. This includes time and resources to make the necessary changes to systems and processes that will be required to support the implementation of TNFD.

Complexities of engaging with civil society organizations

Civil society organizations are key stakeholders and experts in creating nature disclosures. However, financial institutions did not always know when and how to involve them in the reporting process. Financial institutions are looking for ways to effectively incorporate the inputs from civil society organizations, recognizing their meaningful role in understanding and mitigating nature-related impacts.

Current limitations from financial institutions regard, for instance, the challenge of sharing client data with civil society organizations due to client anonymity rules—which in return affects civil society organizations' ability to provide informed input. Through addressing these complexities, financial institutions can create more meaningful and accurate nature disclosures that reflect their commitment to sustainability and responsible business practices.

Synergies with TCFD

The TNFD has built upon the structure and foundation of the TCFD, with the objective of streamlining reporting and catalyzing market adoption. The TNFD framework uses the same four pillars of Governance, Strategy, Risk Management, and Metrics and Targets to ensure compatibility with the TCFD. At the same time, the two frameworks are complementary, but different, given the inclusion of nature and biodiversity considerations in the TNFD.

During the pilot testing of the TNFD framework with financial institutions, a notable piece of feedback regarded the overlap between climate disclosures (TCFD) and nature disclosures (TNFD) in terms of internal knowledge and processes. Institutions with more experience in TCFD reporting and climate risk assessments felt more confident in their ability to incorporate nature risk assessment in their internal processes. This highlights the interconnectivity between climate and nature—and the need for integrated transition plans and net-zero commitments.



Case study 10: From a Japanese insurer—understanding your institution's readiness for the TNFD disclosures

Following the LEAP approach, this institution conducted an internal analysis building on its current climate-related disclosures for the TCFD reporting. Assessing the level of readiness for each of the TNFD's disclosure pillars, the institution assessed its level of readiness for the TNFD disclosures.

Following this exercise, the institution set a roadmap of next steps to conclude its analysis for the offshore wind sector, including:

- **Stakeholder engagement with operators in the sector**—the engagement is focused in understanding which operators are located near marine protected areas and lagging on their protection policies
- **Setting metrics & targets**—these could include no longer financing operators which have significant impact on biodiversity
- **Disclosure of nature-related impacts, metrics and targets**—based on the TNFD framework; and
- **Monitoring of targets and performance**—including a continuous dialogue and course correction with operators which have significant impact on biodiversity.

Case study 11: Creating risk mitigation plans to support rights-holders—understanding your institution's readiness for the TNFD disclosures

One Asian piloting institution selected the offshore wind farms sub-sector for the analysis. All data collected and collated derived from offshore wind power clients and investees, with their Environmental Impact Assessments (EIAs) being the main data source. The sub-sector was selected due to their relatively abundant natural environment-related documentation, including EIAs. There were two main stages for evaluation identified—construction and operations—with the pilot focusing on the latter; and a lifetime of currently 20 to 25 years. A key insight from the LEAP steps related to the identification of local fishermen as essential rights-holders in the locations assessed, as their activities could be potentially hampered by the operation of offshore wind structures. Now the institution is working to improve its risk mitigation and management strategies, including engaging with clients and investees on their need to support the local development of these communities. As a conclusion to current gaps for the Prepare phase, the institution stated

In our tentative application of the TNFD LEAP approach for this specific sector, we acknowledged the close interaction between nature and human activities but found gaps in quantifiable nature-related data. To address these and keep pace with emerging methodologies, tools, and data, we are partnering with internal and external experts to refine our TNFD LEAP process, complete our TNFD disclosures, and together raise stakeholders' awareness of human activities' impacts on nature.

Case study 12: The European agriculture and food sector

The following case study prepared by a large bank from the United Kingdom.

Context

The institution recognizes the important role of the finance sector in stewarding responsible finance towards a nature-positive future. It continues to work to build an understanding of the ways in which our financing activities impact nature, as well as the ways in which the bank and its clients depend on nature. Identifying and managing nature related impacts, dependencies, risks, and opportunities is a key part of this and the institution welcomes the launch of the TNFD to develop a common approach for business and financial institutions to follow. The institution along with wider industry and FIs, are in a relatively nascent stage in their journey and found this pilot a very useful exercise to start that process. The institution plans to build on this, working across a number of teams internally, to further develop and refine their approach.

The TNFD approach

The bank's pilot group focused on European agriculture and fisheries, which in their context means agriculture and food sectors. As part of the pilot programme, the institution tested the draft TNFD framework, including the proposed risk assessment process (LEAP FI), drawing on selected data and analysis provided by McKinsey Sustainability's NatuRisk solution.

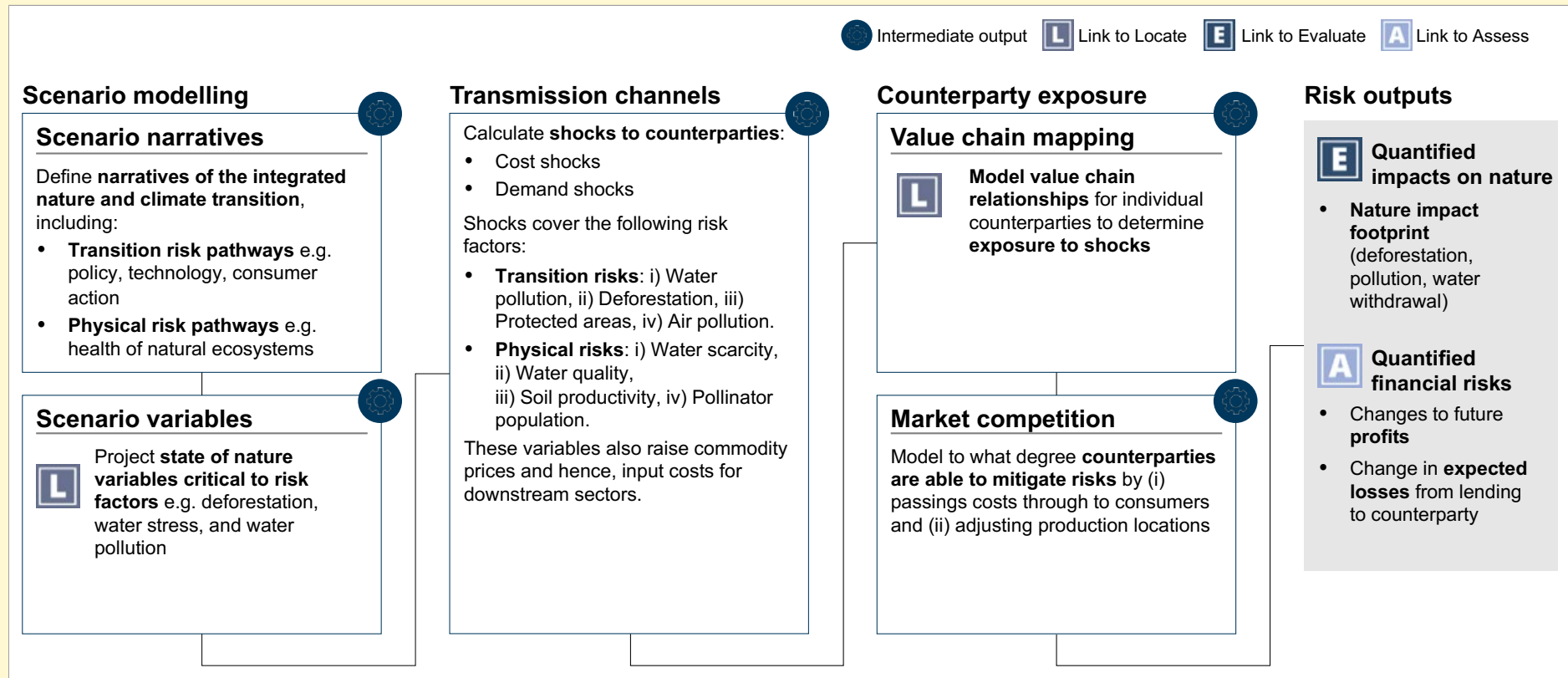
The pilot began with a materiality exercise to produce an initial portfolio heatmap to analyze nature-related risk by sector and exposure across our lending portfolio. This involved a qualitative review of sector impacts and dependencies across a number of key risk drivers representing both physical and transition risks, to determine where in the portfolio were the likely areas of highest risk. The exercise identified mining, agriculture, and water supply as likely to face both high physical risks and high transition risks. Four sectors including real estate and utilities could be exposed to either high physical risks or high transition risks. The remaining ten sectors were likely to be exposed to only medium or low risks (see Exhibit 1 below).

Exhibit 1: Outcomes of materiality heatmap exercise

Sector	Materiality	
	Transition risk	Physical risk
Mining and quarrying	High	High
Agriculture, forestry and fishing	High	High
Water supply	High	High
Transport and storage	High	Med
Construction	High	Med
Real estate activities	Med	High
Electricity, gas, steam and air conditioning supply	Med	High
Manufacturing	Med	Med
Wholesale and retail trade	Med	Med
Accommodation and food service activities	Med	Med
Professional, scientific and technical activities	Med	Med
Public administration and defence, compulsory social security	Low	Low
Information and communication	Low	Low
Administrative and support service activities	Low	Low
Human health services and social work activities	Low	Low
Education	Low	Low
Arts, entertainment and recreation	Low	Low

The pilot then quantified impacts and dependencies on nature and financial risks and opportunities for our agriculture and food portfolio in Europe, with a focus on UK farming. The methodology and its links to the LEAP process are summarized in Exhibit 2 below. This involved assessing our clients' locations in terms of production and sales and applying a number of biodiversity metrics to each location to determine where key impacts and risks may arise. A number of different 2030 and 2050 scenarios were also used to stress test the portfolio and individual counterparties, to see whether material financial impact could arise as a result of nature-related transition and physical risks.

Exhibit 2: Pilot methodology to assess exposure to nature-related risks



The pilot identified that portfolio companies have strong connections through their value chains to agricultural production in the UK, the EU, and Southeast Asia, among other regions. Critical risk factors for the portfolio included regulatory and reputational risk associated with deforestation; increases in the price of agricultural inputs; tightening of water pollution and protected area regulations, as well as the impact of diet shifts on the demand for nature-intensive commodities.

Challenges

The institution identified some challenges during the course of the project, which was feedbacked bilaterally to the TNFD for incorporation into their review process. These include areas such as:

- the lack of biodiversity and location specific data for certain metrics and definitions of thresholds to apply to that data in order to identify material risk;
- the current lack of globally defined scenarios which consider both climate and nature variables and how they interact;
- These two factors mean there is a risk that different organizations will adopt very different approaches to the measurement of nature related impacts, dependencies, risks and opportunities.

Next steps

At the time of writing, the results of the pilot were currently being reviewed internally to assess how they could be used alongside existing climate risk procedures. The institution plans to build on the approach taken, to enhance and refine the assessment process for Agriculture and Food but also expand out to other sectors, in due course.

This has been a very useful starting point to build on and a useful engagement tool to raise awareness internally of how nature risks and opportunities are an important component of the institution's approach to risk management. The bank now looks forward to seeing future iterations of the TNFD framework and guidance documents as well as the outcomes of the future target setting working group, which will also help inform our, and other banks', approach.

Case study 13: From an European insurer on the European agriculture and food sector

A step-by-step case study by an European insurer on the European agriculture and food sector

What are the nature-related risks & opportunities for European vineyards?

This case study focuses on how to apply the TNFD beta framework in the wine sector. The case study demonstrates the process, data and enabling data tools used to implement the TNFD's approach for nature-related risk and opportunity assessment (LEAP). The specific subsidiary from the insurance group which worked on this case study provides parametric weather insurance for vineyards in Europe, having a good level of in-house knowledge and support.

Context

- Vine growing is linked to many ecosystem services such as provisioning services (clean water, energy), regulating services (climate, soils, organisms) and cultural services (supporting identities, goodwill). As any monoculture systems, it is particularly vulnerable to invasions of vine diseases and pests, loss of biodiversity and wildlife habitats, degraded soil (non-exhaustive).
- Practices might be very impactful to nature: polluting freshwater, degrading soil, using intensively pesticides.
- The wine production value chain requires upstream materials (glass bottles, oak barrels, etc.), this case study focuses mainly on direct operations and some selected upstream operations.

The TNFD Approach

Locate phase

For European vineyards, the direct activities in the value chain range from the cultivation of the grapes to the production of the wines and their commercialisation. To draw a representative mapping of European vineyards, a portfolio of fictive wine estates was produced from wine protected designations of origin in Europe, reflecting the geographical diversity of European vineyards of interest for insurance purposes.

For this case study, upstream operations have been limited to 4 sectorial analysis of key materials—oak barrels, paper and cardboard for packaging, cork and glass bottles—and a focus on raw materials, for which location productions were identified. A compilation of datasets, tools (eg ‘Nature Needs Half’, internal geospatial datasets and an internal water stress index) and TNFD concepts were used to generate a comprehensive ecosystem profile for each asset in the portfolio; the use of RCP scenarios (and projections by 2030 and 2050) were also relevant for the risk approach. Through the compounded indicators and an aggregated scoring, each asset was measured in terms of its ecosystem importance, integrity and water stress; being ranked and placed for geospatial visualization. The final outcome was location prioritization and the understanding of the business implications for this first step (analysed through internal additional criteria). Finally, the sector identification was established following the Nomenclature of Economic Activities (NACE), which is the European statistical classification of economic activities.

It was noted that although qualitatively relevant to understand each of the asset’s interface with nature—activities’ interaction with biomes and ecosystems—it would be best to input this raw data into an indicator which could be used for business decision-making (risk analysis or opportunity assessment).

Evaluate phase

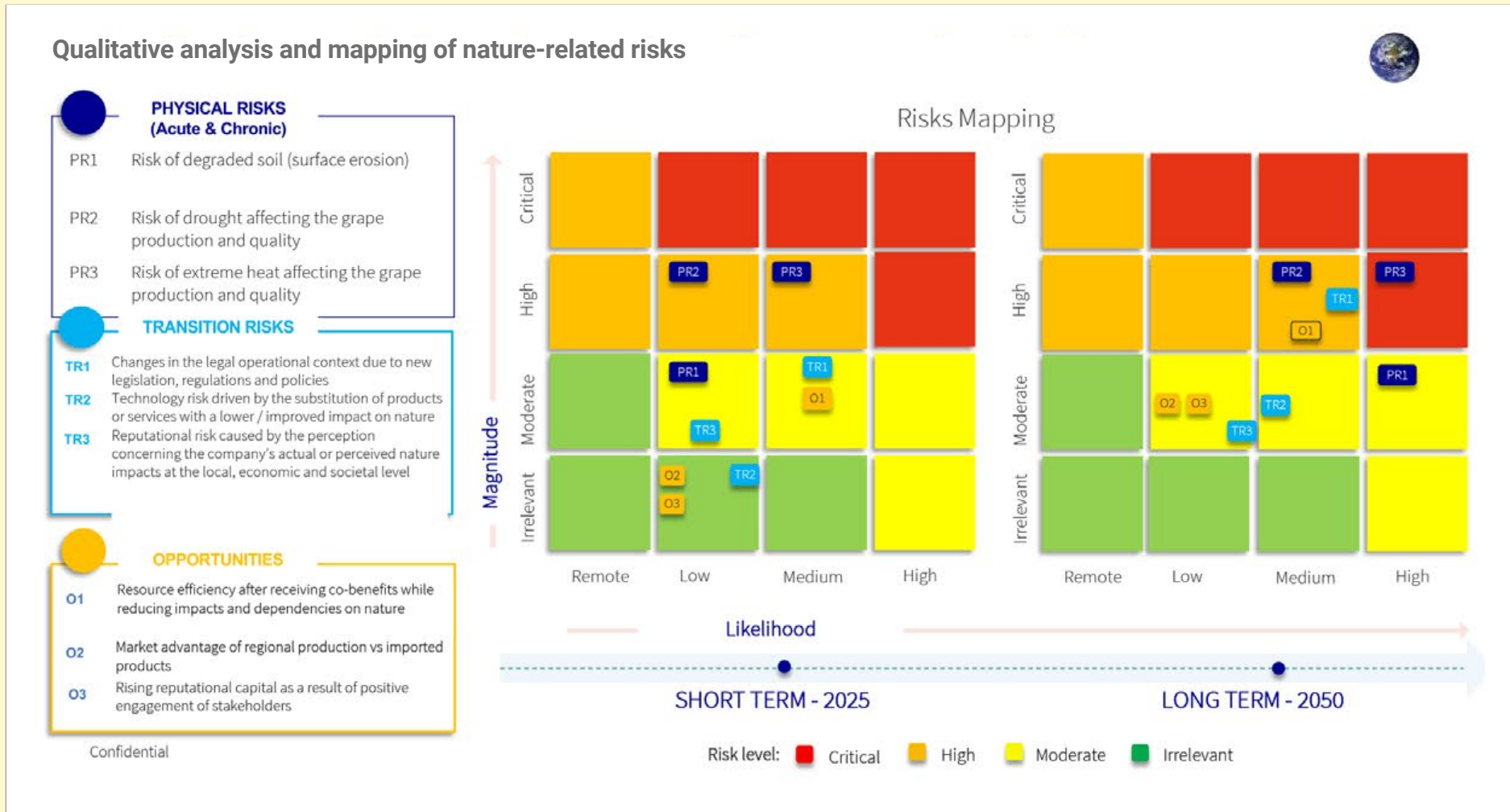
Through the use of a tool developed internally and with the use of the ENCORE tool, it was possible to perform the screening of nature-related dependencies and impacts; with the sectorial materiality screening allowing to identify main ecosystem services and environmental assets related to the direct operations’ priority locations. Finally, each dependency was systematically analysed to better understand the level of impacts in case the ecosystem service was heavily degraded. One outcome was the realization that dependency to the ecosystem service “climate regulation” was highly critical for the sub-sector analysed, being further developed for the following step in LEAP.

It was noted during this step that the task of evaluating the size and scale of dependencies required specific expertise provided by in-house agronomists as the screening was not sufficient for a robust analysis. It is also essential distinguishing dependencies to ecosystem services which could radically challenge the business model—in case failures from those could be mitigated (eg through market mechanisms).

Assess phase

A review of all risks and opportunities was performed (when possible, quantitatively, and elsewhere, qualitatively), following the TNFD Risk & Opportunity Register. Climate Change was identified as a main driver of change, affecting the flow of ecosystem services—and potentially resulting in several physical risks. Therefore, to explore this nature/climate nexus and further assess the risks deriving from the dependency of the portfolio to the ecosystem service “climate regulation”, a specific analysis of the future climatic conditions was carried out, and several nature-related physical risks were identified and quantitatively assessed. It should be noted that risk opportunity and opportunity management were only explored for priority locations. Finally, for the risk and opportunity assessment, the likelihood and magnitude were measure quantitatively if possible (eg for climate-related risks), or qualitatively (notably for long-term scenarios, such as 2050).

The following mapping was the main outcome from this step.



Case study 14: Producing an environmental risk heatmap: building on the TNFD framework and on the UNEP FI pilots

One European bank was producing the following robust environmental risk heatmap at the same time it was participating in the UNEP FI pilots (the heatmap was still being produced at the time the report was being drafted). The methodology developed was based on the TNFD beta framework along with other relevant publications; and participation in the UNEP FI pilot provided the institution with guidance and reassurance along the process—which was a novel step. Further, the methodology used included the Global Impact Database and the use of the ENCORE tool, while qualitative datasets were used based on in-house sector expertise.

The environmental risk heatmap focuses on sector sensitivity and vulnerability to physical environmental risk (i.e. dependencies on nature, arising when natural systems are compromised due to the impact of climate events, geological events or changes in ecosystem equilibria) and transition environmental risks (i.e. resulting from misalignment with the transition towards maintaining, enhancing and restoring natural ecosystems).

For environmental transition risk, the institution explored whether sensitivities in terms of current policies and scandals, future prospects for reducing biodiversity impacts and market availability of alternative products were concentrated in particular drivers of biodiversity loss. Policies, controversies and management actions and technologies linked to air pollution, land use and overextraction were the most common bank-wide drivers for transition risk. For physical risk, the ecosystem services water and flood protection were found most relevant for, respectively, the own operation and supply chains of the analysed sub-sectors.

Environmental Risk Heatmap

Sub-sector (incl NACE sector letter) EUR million

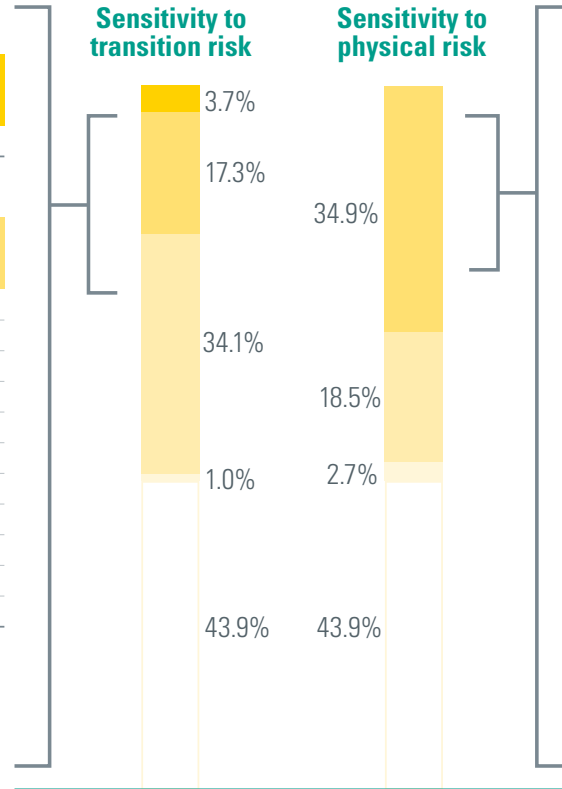
Moderately high sensitivity to environmental transition risk

Raising of cattle (A)	3,203
3,203	

Moderate sensitivity to environmental transition risk

Sea and coastal freight water transport (H)	5,854
Manufacture of food products and beverages (C)	2,142
Arable farming (A)	1,878
Indoor growing of crops (A)	1,183
Freight transport by road (H)	958
Manufacture of chemicals and chemical products (C)	928
Raising of poultry and swine/pigs (A)	772
Extraction of crude petroleum and natural gas (B)	567
Inland freight water transport (H)	466
Manufacture of basic metals (C)	240
Air transport (H)	45
15,032	

Sensitivity to transition risk



Sub-sector (incl. NACE sector letter) EUR million


Moderate sensitivity to environmental physical risk

Real estate activities (L)	12,755
Raising of cattle (A)	3,203
Manufacture of food products and beverages (C)	2,142
Arable farming (A)	1,878
Construction (F)	1,826
Freight transport by road (H)	958
Manufacture of chemicals and chemical products (C)	928
Non-fossil electricity production (D)	816
Manufacture of machinery and equipment (C)	795
Raising of poultry and swine/pigs (A)	772
Support activities for transportation (H)	763
Water supply; sewerage, waste management and remediation activities (E)	649
Wholesale of construction materials (G)	563
Wholesale of food, beverages and tobacco (G)	506
Inland freight water transport (H)	466
Manufacture of rubber and plastic products (C)	387
Manufacture of construction materials (C)	204
Wholesale of agricultural raw materials and live animals (G)	177
Fossil electricity production (D)	162
Air transport (H)	45

29,995

High sensitivity (H) Moderately high (MH) Moderate (M) Moderately low (ML) Low sensitivity (L) Not specified

¹ Some sub-sectors deviate from NACE. This is due to the fact that for some sub-sectors NACE classification was not useful for sector experts to provide relevant input about the sub-sector characteristics.



SECTION 4:
**Concluding
remarks**



An important number of financial institutions that participated in the UNEP FI-led pilot program are front-running organizations that are official members of nature stewardship initiatives such as Principles for Responsible Investment (PRI), Principles for Responsible Banking (PRB), and World Business Council for Sustainable Development (WBCSD). These financial institutions are therefore expected to be a few steps ahead in integrating nature-related risks into their investment decisions. However, many companies which may not necessarily be official members of nature stewardship initiatives still have a considerable way to go on their journey towards nature-related disclosures.

In this sense, the TNFD should continue following its mandate to be applicable to organizations of all sizes and in all jurisdictions, also allowing for a flexible approach accommodating organizations with different levels of maturity in their nature-related assessments to progress on their reporting ambition over time. In addition, sector-specific guidance would facilitate faster uptake by a wide variety of market participants. It is also important to recognize that smaller clients may not have the ability to report and that data considerations need to be managed for them.

The pilots have indicated that reporting should be a collaborative process that builds a large network and knowledge bank. The time needed for system changes on the financial institution front and framing the sector guidance should be parallel to what financial institutions and corporations understand as of now.

In summary, the TNFD should strive to create a disclosure framework that is inclusive and practical for all sectors and companies, recognizing the diversity of experiences and levels of engagement with nature-related risks. The development process should continue to be iterative, incorporating lessons learned from previous and ongoing pilot efforts, and should prioritize collaboration and knowledge-sharing among stakeholders.



ANNEX 1

Piloting format & report methodology



Explain the format the pilots in terms of call schedule, discussions, feedback, and ‘home-work’ for participants

Data collection in several ways:

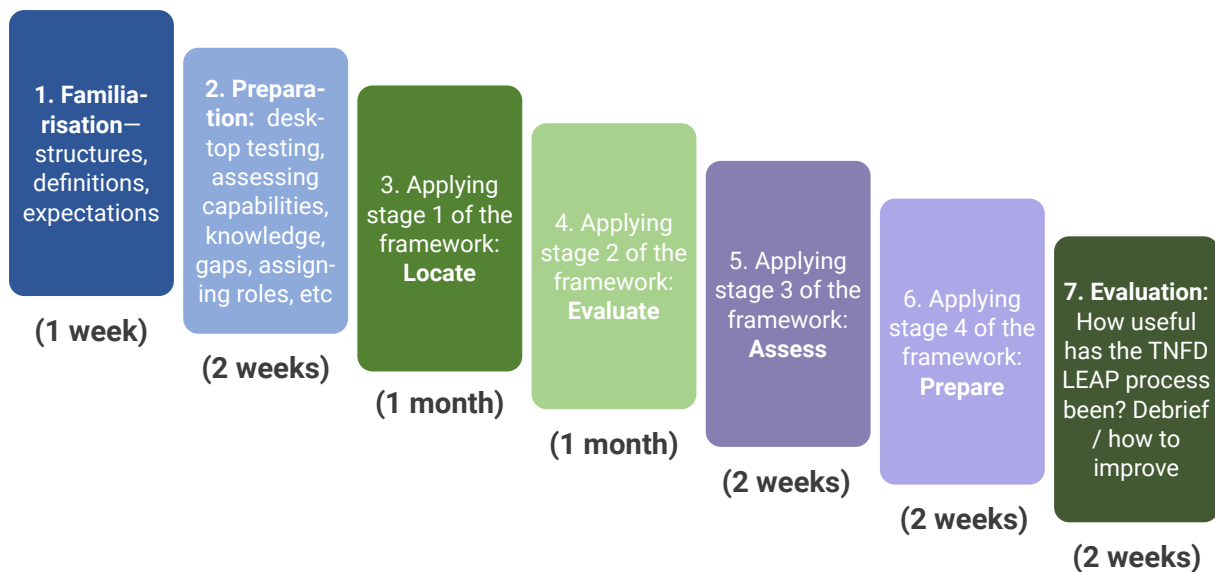
- Received direct feedback in 1-1 calls with participating institutions throughout
- Analysis of the work produced by institutions when implementing the framework as part of the pilot
- Analysis of key themes/challenges that arose in group discussions
- TNFD official feedback forms/analysis of key issues/patterns/themes

This will analyze and collate findings from each of the sub-reports (for every subsector) as they relate to each part of the three components of the TNFD beta-framework

Each sector-specific sub-pilot utilized a similar structure and took place over the same time period (with the exception of pilot 7 Real Estate, which started later). The structure broadly followed that of the TNFD Beta-Framework—or more specifically, the LEAP approach. Calls were also included to help participants familiarize themselves with the structures, definitions, and expectations; to prepare and organize their teams for conducting their own analyses; and to evaluate key learnings and challenges after the analysis has been done. The time between calls varied depending on the amount of work required of participants for a particular topic; generally, calls were spaced between 2–6 weeks apart. The pilot structure has been illustrated in the exhibit below, and beneath this, further details have been provided on the activities associated with each stage.

Example of proposed program and calendar with the adapted timeline

First meeting: July 2022
Introductory call to present the institutions, calendar, align expectations; and present the TNFD framework and coming steps for the next meeting (what can be done in the scoping assessment)
Second meeting: August 2022
Institutions present their findings, challenges and discussion points for the ‘Scoping the assessment’ phase
Third meeting: October 2022
Institutions present their findings, challenges and discussion points for the ‘Locate’ phase
Fourth meeting: December 2022
Institutions present their findings, challenges and discussion points for the ‘Evaluate’ phase
Fifth meeting: January 2023
Institutions present their findings, challenges and discussion points for the ‘Assess’ phase
Sixth meeting: February 2023
Institutions present their findings, challenges and discussion points for the ‘Prepare’ phase



- 1. Familiarisation:** The first stage of the pilots began with an introductory meeting to align the expectations of participating institutions with the proposed next steps. In this meeting participants were also asked to follow the first steps proposed in the technical guidance document, including identifying internal colleagues to support the exercise or get familiarized with key concepts related to natural capital compiled in the TNFD framework.
- 2. Preparation:** The second stage of the pilots focused on laying the groundwork for the in-depth analyses that will follow as institutions begin to work their way through the LEAP approach. It required that participants assess existing capabilities within their institutions, identify gaps in knowledge and implementation capacity, assign roles, and begin conducting preliminary desktop testing—in the form of a heatmap for nature-related risk associated with their organizations’ activities. For each pilot, feedback and updates were given during both group calls and 1-1s between BwB and/or UNEP FI, and the financial institutions.
- 3. Applying the framework—Locate:** The third stage began the work of implementing the LEAP approach, starting with the ‘Locate’ phase. With the help of the beta-framework and Technical Guidance document, institutions began working their way through the tasks involved with executing this phase. For each pilot, feedback and updates were given during both group calls and 1-1s between BwB and/or UNEP FI, and the financial institutions.
- 4. Applying the framework—Evaluate:** The fourth stage focused on implementing the second phase of the LEAP approach—‘Evaluate’. With the help of the beta-framework and Technical Guidance document, institutions worked their way through the tasks involved with executing this phase. For each pilot, feedback and updates were given during both group calls and 1-1s between BwB and/or UNEP FI, and the financial institutions.
- 5. Applying the framework—Assess:** The fifth stage focused on implementing the ‘Assess’ phase of the LEAP approach. With the help of the beta-framework and Technical Guidance document, institutions worked their way through the tasks involved with executing this phase. For each pilot, feedback and updates were given during both group calls and 1-1s between BwB and/or UNEP FI, and the financial institutions.

6. **Applying the framework—Prepare:** The sixth stage focused on implementing the final part of the LEAP approach, the 'Prepare' phase. With the help of the beta-framework and Technical Guidance document, institutions worked their way through the tasks involved with executing this phase. For each pilot, feedback and updates were given during both group calls and 1-1s between BwB and/or UNEP FI, and the financial institutions.
7. **Evaluation:** The final 'evaluation' phase encouraged participants to look back over the piloting process and reflect on the challenges faced and benefits realized. This phase represented an important part of the data collection process, as participants were for the first time able to reflect on the full LEAP Approach process having gained first-hand experience of using it. Because of its strategic importance, participating institutions were encouraged to schedule 1-1 calls with the piloting team, as this provides a safe platform for more in-depth and honest reflections of their piloting experiences. In addition, groups calls also took place, and written feedback was collected.

Data collection and analysis

In order to maximize the amount of useful feedback gained through the process, data was collected in several different forms. These are detailed below.

- **Direct verbal feedback in 1-1 calls with participating institutions:** These took place across all sub-pilots, with all willing institutions, throughout the whole piloting process. 1-1 calls provided institutions with an opportunity for honest reflections on their experiences interacting with the TNFD framework. The private nature of these calls meant that institutions were more able to express challenges, concerns, and barriers that they may not be willing to disclose in group calls with other financial institutions.
- **Outputs of participating institutions:** As part of their interaction with the TNFD Beta-framework throughout the pilots, each institution produced various kinds of research output. These included sector heatmaps, reports, and slide deck presentations given to the group.
- **Group calls:** Groups calls took place periodically throughout the pilots. Given their regularity this form of data forms a key part of the feedback collected. Whilst participants may have generally been less willing to disclose challenges faced by their institutions in these often-large group calls (relative to 1-1s), these calls nonetheless provided valuable opportunities for structured discussion, updates of progress (and lack thereof), as well as collecting multiple viewpoints on particular issues and questions.
- **Feedback forms:** Feedback forms provided by TNFD and accessible online, allowed for the collection of both qualitative and quantitative data from participants. The scope of these covered all three aspects of the beta-framework, as well as allowing for participants to provide feedback specific to each iteration. In addition to this, BwB extended the scope of the feedback forms, to include some more granular questions relating to various topics.

Analysis

The data collected from the various sources (described above) was then collated and analyzed. Recurring/similar themes and challenges were grouped together and counted to determine which issues were most common.

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