

THE RATE OF CHANGE IN NATURE ACROSS THE GLOBE OVER THE PAST 50 YEARS IS UNPRECEDENTED AND CLIMATE CHANGE IS ONLY ONE DRIVER: A DISCLOSURE FRAMEWORK HAS BEEN PROPOSED TO ADDRESS NATURE-RELATED RISKS AND OPPORTUNITIES

Over half the world's economic output – \$44 trillion of economic value generation – is moderately or highly dependent on nature, and yet most companies, lenders and investors are failing, in the course of making business or financial decisions, to adequately take account of nature-related risks and opportunities. The statistic and related warning were the headline items in a [press release](#) issued earlier this month by the Taskforce on Nature-related Financial Disclosures (TNFD). The press release announced the publication of the [beta version](#) (v0.1) of the TNFD's risk management and disclosure framework to report and act upon nature-related risks. The TNFD framework is intended to assist businesses in addressing nature-related risks as part of setting corporate strategy, exercising risk management and making decisions on resource allocation, and to assist financial institutions in their assessments of nature-related risks and opportunities of their clients and portfolio companies.

The taskforce at the center of the TNFD has 34 members, supported by the TNFD Forum, a global and multi-disciplinary consultative [network](#) of over 350 institutional supporters. The TNFD was launched in June 2021. The beta version of the TNFD framework is intended to start a dialogue among market participants, including investors, analysts, regulators, stock exchanges, accounting firms and, most importantly, corporate executives and boards of directors, about how best to assess and respond to nature-related risks and opportunities. Subsequent releases are expected through 2022 and 2023, with the final recommendations expected in September 2023.

Background – Natural Capital

The [WEF Global Risks Report \(2022\)](#) lists the impacts of extreme weather events and biodiversity loss as the second and the third most severe risks on a global scale over the next ten years (behind climate change).

The 2019 [report](#) of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) posits that, in spite of the greater understanding about which policies, practices, technologies and behaviors best support sustainable biodiversity and acceptance that humanity fundamentally depends on nature, biodiversity, which is the infrastructure that supports all forms of life on the planet, is still being lost, ecosystems are still being degraded and many contributions of nature to people are being compromised.

These risks all are inter-connected – the planet cannot mitigate, and adapt to, adverse effects of climate change unless we invest in nature's capacity to store carbon and support resilience. The IPBES concludes that “[g]oals for conserving and sustainably using nature and achieving sustainability cannot be met by current trajectories, and goals for 2030 and beyond may only be achieved through transformative changes across economic, social, political and technological factors.” These declines in biodiversity, ecosystem functions and many of nature's contributions to people will also undermine the ability to achieve the net zero Paris Agreement targets.

This is by no means a new area. Experts have for some time focused on natural capital assets and the pressure that these assets are under globally, triggering changes in the function of

ecosystems and their services. We are depleting natural resource faster than we can replenish them, and are doing so at an increasingly faster pace. While we have increased financial wealth through the use of natural capital, that use has led to exploitation and degradation.

While connections have been made between natural capital and ecosystem services, the risks are less well-known, largely due to the absence of a classification system for natural capital assets. For businesses generally, today, the correlation between operations and nature does not have a financial impact, whether on cash flows, the balance sheet or share price, although that is changing. In turn, both the risks to business and the role business can play in conserving and enhancing natural capital have been underreported. As noted by the Natural Capital Coalition in its 2016 [Natural Capital Protocol](#) (an effort to assist business in measuring and valuing natural capital, so as to improve internal decision making), “Compared to other business interactions with natural capital (*e.g.*, emissions to air and use of fresh water), business impacts and dependencies on biodiversity are often difficult to measure and value systematically with no single measurement or indicator to capture all the dimensions of biodiversity.”

The assessment of the effects of climate change has prompted a paradigm shift in how capital is allocated, with the goal of better deploying capital to achieve the Paris Agreement targets. The TNFD has a similar goal of shifting global flows of capital away from nature-negative outcomes and towards nature-positive outcomes. According to the TNFD, the global biodiversity funding gap is equivalent to the GDP of Switzerland. In effect, the hope is to find a price for nature just as we are creating prices for carbon, and create the scale of support in the financial system.

As the goals are similar, so too are the proposed vehicles, namely the development of comparable, consistent, reliable and decision-useful information on risks and opportunities.

Alignment of the TNFD Framework

The TNFD framework is closely aligned with the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD) and follows the TCFD’s four pillars of disclosure: governance, strategy, risk management, and metrics and targets. The TNFD framework is also intended to align with the emerging global baseline for sustainability standards being considered by the International Sustainability Standards Board (ISSB). The TNFD effort flows from the absence of any terminology or metrics for nature and nature-related risks that are equivalent to the terminology and metrics that have evolved in recent years in response to climate change. (See my prior briefing note: [Climate Lexicon](#).)

Core Components

The TNFD framework has three components:

- concepts and definitions;
- draft disclosure recommendations; and
- guidance for businesses and financial institutions to undertake nature-related risk and opportunity assessments and incorporate the results into enterprise strategy and risk management processes to inform a range of corporate and capital allocation decisions, including those relating to reporting and disclosure.

Definitions and Concepts

Understanding the TNFD framework requires an understanding of definitions and concepts broadly grouped around the natural capital regime:

- **Biodiversity** refers to the variability among living organisms from all sources, including terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part. Biodiversity provides resilience and supports fundamental processes such as soil formation, and carbon and water cycles. Essentially it is both a component of natural capital and underpins ecosystem services.
- **Dependencies** are the ecosystem services that businesses rely upon for their business processes to function. Dependencies include ecosystems' ability to regulate water flow, water quality, and hazards like fires and floods; to provide a suitable habitat for pollinators, such as bees (that in turn provide a service directly to economies); and to sequester carbon (in terrestrial, freshwater and marine realms). Dependency on nature for operations and business continuity may be direct or through supply chains.
- **Ecosystem assets** are the environmental assets that relate to diverse ecosystems. These are contiguous spaces of a specific ecosystem type characterised by a distinct set of biotic (derived from living organisms, such as plants, bacteria and animals) and abiotic (derived from non-living things, such as sunlight, water, air, temperature, soil type, wind and minerals) components and their interactions. Examples of these assets are forests, wetlands, rivers and coral reefs. In short, numerous factors are contributing to the depletion of these assets, including unsustainable use of resources, changes in land use, pollution and habitat fragmentation (such as deforestation).
- **Ecosystem services** are the services from ecosystems that deliver benefits (the goods and services that are used by people and society). By way of example, a forest is an ecosystem asset that supports ecosystem services such as climate regulation and timber. Other services could include fiber, pollination, recreation, water regulation and mental health.
- **Environmental assets** are the naturally occurring living and non-living components of the Earth (e.g., forests, wetlands, coral reefs and agricultural areas, as well as ecosystems, which are defined as a dynamic complex of plants, animals and microorganisms). These interact as a functional unit.
- **Impacts** are the positive or negative impact a business has on environmental assets and ecosystem services (e.g., change indirectly caused by climate change, to which a business' GHG emission contributed).
- **Natural capital** refers to the natural resources (renewable and non-renewable resources, such as plants, animals, air, water, soil and minerals) that combine to yield a flow of benefits to people and economies. Natural capital is not limited to nature as a source of raw materials, but rather extends more broadly to cover the role of the environment and ecosystems that support human wellbeing through goods and services such as clean water and fertile soil.
- **Nature** is a construct of four realms.

- land - terrestrial and subterranean-terrestrial ecosystems, cultivated biological resources, renewable energy resources, mineral and energy resources, and land resources;
- ocean – marine and subterranean marine ecosystems, cultivated biological resources, renewable energy resources, water resources, and underwater mineral and energy resources;
- freshwater – freshwater and freshwater marine ecosystems, cultivated biological resources, mineral and energy resources, and water resources; and
- the atmosphere.

In essence, the focus is on the diversity of living organisms (including human beings) and their interactions among themselves and with their environment. Atmosphere is included to reflect the close connection between climate- and nature-related risks/opportunities. Admittedly, connections with climate mitigation and adaptation occur across all realms. People, including businesses and financial institutions, sit at the center of the realms, as they both contribute to, and are affected by, the principal drivers of nature change.

- ***Nature-related opportunities*** are activities that create positive outcomes for businesses and nature by avoiding or reducing the impact on nature or contributing to its restoration. Opportunities can arise where a business mitigates risks of loss of natural capital and loss of ecosystem services or where the business undertakes strategic transformation of its business models, products, services and investments that actively contribute to halting or reversing the loss of nature. This might occur, by implementing nature-based solutions (to protect, sustainably manage or restore natural or modified ecosystems) or supporting such solutions by providing financing or insurance.
- ***Nature-related risks*** refers to the potential threats, derived from physical, transition and systemic risks, posed to a business tied to its and other businesses' dependencies on nature and nature impacts.
- ***Priority locations*** are the locations of ecosystems deemed to be low integrity and/or high importance and water-stressed areas with which the organisation's assets and operations interact.

This all ties together in the sense that short-term impact on nature can result in changes in the resilience and quality of environmental assets. This, in turn, can create medium- and longer-term risks for businesses, based on their respective dependencies.

Examples of Risks and Opportunities

The IPBES notes that the “direct” drivers of change in nature having the largest global impacts (in order of impact) are: changes in land and sea use, direct exploitation of organisms, climate change, pollution and invasion of alien species. The five direct drivers result from a variety of underlying causes – the “indirect” drivers of change – which, in turn, are impacted by values and behaviours in society, such as patterns of production and consumption, human population dynamics and trends, trade, technological innovations and

governance, from local levels to a global scale. The rate of change in the direct and indirect drivers differs among regions and countries.

The TNFD framework cites the following as examples of risks:

- **Nature impacts** – weedkiller drifts from the intended target, thereby damaging acres of unprotected crops and decimating critical pollination sources. This, in turn, causes direct losses to farmers.
- **Nature-related dependency** – soil degradation impacts soil quality and soil retention services. Healthy soil provides many services, including a conducive environment for food to grow. Several factors compromise soil health, including the impact drivers of land-use change and resource exploitation. The vulnerability of degraded soil to extreme weather can impact asset values, highlighting the need for investors to incorporate nature-related risks into investment decisions and to actively engage with companies in the agribusiness sector.
- **Nature-related risk**: salmon treated with antibiotics escape from a coastal fish farm following a climate-change induced event. The invasion of the escaped salmon, which in this case are a non-native species, adversely affects the health and integrity of the local aquatic system by introducing a new predator. This highlights the importance of making the necessary connection between climate change risks and impacts on nature.
- **Nature-related risk**: chip manufacturing requires high-quality water to cool systems and rinse away industrial chemicals. Taiwan typically relies on monsoons for water, but lack of rainfall leads to droughts. In addition to impacts of having to deliver water by truck for some, the water shortage exacerbates the supply chain issues affecting deliveries of chips.
- **Nature-related dependency**: almond production in California. Almond production requires bee pollination. Loss of bees has an adverse impact on almond production.

The Disclosure Exercise

As noted above, the TNFD framework borrows the four pillars of governance, strategy, risk management, and metrics and targets from the TCFD framework. The beta version provides for the following recommendations (links are to the TNFD online platform):

- **Governance**: set out the board's oversight of nature-related risks and opportunities (see [platform explanation](#)) and describe management's role in assessing and managing nature-related risks and opportunities (see [platform explanation](#));
- **Strategy**: describe the nature-related risks and opportunities identified over the short, medium and long term ([platform explanation](#)); describe the impact of the nature-related risks and opportunities on the business, strategy and financial planning ([platform explanation](#)); describe the resilience of the strategy, based on different climate and nature-related scenarios ([platform explanation](#)); and describe the business' interactions with low integrity ecosystems, high importance ecosystems and areas of water stress ([platform explanation](#));

- **Risk management:** describe the processes for identifying and assessing nature-related risks ([platform explanation](#)); describe the processes for managing nature-related risks ([platform explanation](#)); and describe how processes for identifying, assessing and managing nature-related risks are integrated into overall risk management ([platform explanation](#)); and
- **Metrics and targets:** disclose the metrics used to assess nature-related risks and opportunities in line with strategy and risk management processes ([platform explanation](#)); disclose Scope 1, Scope 2 and Scope 3 GHG emissions and related risks ([platform explanation](#)); and describe the targets used to manage nature-related risks and opportunities, and performance against targets ([platform explanation](#)).

Assessments of Risks and Opportunities

In addition to borrowing from the TCFD framework, the draft TNFD recommendations also include four general requirements that disclosure should be based on:

- assessment of nature-related dependencies and nature impacts;
- consideration of location;
- consideration of capabilities for nature-related risk and opportunity assessment and management; and
- a statement of the scope of disclosures and what will be covered in future disclosures.

The TNFD framework introduces a nature-related risk and opportunity assessment approach known as LEAP. LEAP has four core phases of analytic activity. The TNFD notes that LEAP is not, in itself, a disclosure recommendation or a mandated process to adhere to the TNFD disclosure recommendations. As such, not everything that is identified, assessed and evaluated using the LEAP approach needs to be disclosed. The following is the [approach](#) for businesses (there is a separate [LEAP approach](#) for financial institutions). The TNFD has also set out suggested [scoping exercises](#) that can be undertaken before a LEAP assessment.

- **Locate interface with nature**
 - Where are the direct assets and operations, and related value chain activities?
 - Which biomes and ecosystems do these activities interface with?
 - What is the current integrity and importance of the ecosystems at each location?
 - At which locations is the business interfacing with ecosystem assets assessed as being low integrity/high biodiversity importance/areas of water stress – these being the priority locations?
 - What sectors, business units, value chains or asset classes are interfacing with nature in the priority locations?
- **Evaluate dependencies and impacts**
 - What are the business processes and activities at each priority location?
 - What environmental assets and ecosystem services is the business dependent on or have an impact on each priority location?
 - What are the nature-related dependencies and impacts across the business at each priority location?

- What is the size and scale of the dependencies on nature in each priority location?
- What is the size and scale of the business' nature impacts in each priority location?
- ***Assess risks and opportunities***
 - What are the corresponding risks?
 - What existing risk mitigation and management approaches is the business relying on?
 - What additional risk mitigation and management actions should the business consider?
 - Which risks are material and should be disclosed in line with the TNFD disclosure recommendations?
 - What nature-related opportunities does the assessment identify?
- ***Prepare responses to the risks and opportunities, and report to investors***
 - What strategy and resource allocations should be made?
 - How will the business set targets and define/measure progress?
 - What disclosures will be made in line with the TNFD disclosure recommendations?
 - Where and how are the disclosures presented?

Note that the sources of risks to business continuity, earnings and ultimately enterprise value – the nature-related dependencies and nature impacts – are location-specific. This should come as no surprise as dependencies and impacts are by definition local. Location therefore is critical for the identification, assessment, mitigation and management of nature-related risks facing businesses, creditors and investors. The TNFD recognises that this specific attention to location can be a new way of thinking for many businesses and that obtaining information about locations can be a challenge – in particular, for complex value chains and/or businesses operating with a large geographical footprint.

Areas for Further Consideration

Climate Change

The TNFD notes that climate change and nature loss are mutually reinforcing in countless ways. As noted above, climate change is one of the five direct drivers of nature loss. Nature loss, in turn, reduces the ability of ecosystems to store carbon and releases carbon emissions, thus exacerbating climate change. Natural ecosystems can mitigate effects of climate change.

All to say that climate- and nature-related physical risks, transition risks and opportunities are closely connected. A combination of nature loss and climate change can increase physical risk, and these risks can have a compounding effect. Similarly, transition risks are interconnected as commitments are made to achieve both net zero and nature-positive outcomes. While climate change mitigation/adaptation and nature conservation/restoration can be mutually reinforcing, climate change mitigation and adaptation solutions can lead to nature loss. Poorly designed carbon offsets may help on climate change but adversely affect nature; on the other hand, nature-based carbon offsets may have benefits for both.

As evidence of further alignment, the TNFD notes that:

- atmosphere is included as one of the four realms;
- climate change is one of the direct drivers of nature change, as a result the framework includes GHG emissions as a nature-related impact driver;
- the approach to impact drivers makes the connection between climate mitigation/adaptation and harm to nature;
- the framework includes dependencies on ecosystem services relating to climate change;
- the framework includes nature-based solutions and natural climate change solutions as opportunities; and
- the framework's approach to physical, transition and systemic risks can include feedback loops between climate change and nature loss.

The TNFD believes that, because of the similarity of the draft high-level recommendations of the TNFD and the high-level recommendations of the TCFD, adopters should be able to use an integrated climate-nature approach to risk management and disclosure, from the outset. The TNFD welcomes feedback on how best to approach the climate-nature relationship in subsequent versions of the TNFD framework.

Other Areas

As with the climate-nature nexus, there are other related areas that the TNFD acknowledges warrants further development. These include:

- ***Scenarios analysis and timeframes.*** Forward-looking scenario analysis is necessary for nature-related risk assessment for the same reasons that it is deemed useful for climate-related risks, as nature-related risks are far-reaching in breadth, scope and potential permanence. Risks are simultaneously uncertain and foreseeable, and the size and balance of future risks will be determined by actions taken in the short to medium term. Assessment of nature-related risks will be made in the context of significant or fundamental uncertainty. No single model or scenario can provide a comprehensive view of potential risks. Longer time horizons increase the extent to which impacts affect dependencies and become risks. The TNFD accordingly will consider the case for scenario analysis, which scenarios to use, how to develop and apply scenario analysis and how to address practical application challenges.
- ***Scope.*** The TCFD requires reporting against Scope 1, Scope 2 and Scope 3 (as defined by the GHG Protocol). An equivalent could be defined for nature, but does not yet exist. Adaptation of the scope concept for nature might seek to capture additional dimensions beyond value chain coverage (of a business or of the client of a financial institution), such as sector or business unit (of a business or of the client of a financial institution), geography, asset class (specific to financial institutions) and types of nature-related dependencies and nature impact. The TNFD will continue to explore its approach to scoping for its disclosure recommendations and the LEAP approach for nature-related risk and opportunity assessment.

- **Materiality.** The TNFD recognizes that consideration of both nature-related dependencies and impacts is required for a comprehensive assessment of risks and opportunities, and that impacts on nature become relevant to enterprise value when assessed over a future time horizon (*e.g.*, through scenario analysis). The framework has been developed, on the assumption that reporting companies will make disclosures based on local requirements, to be applicable to meet both the emerging global standards being developed by the ISSB, the regulatory requirements of specific jurisdictions and the ambitions of individual reporting companies, which may go beyond these requirements. This topic is subject to further consideration.

The TNFD will also be assessing social dimensions and the definition of nature-positive, as well as identifying a comprehensive set of essential metrics and indicators for nature-related risk and opportunity management and disclosure.

Concluding Thoughts

The release of the beta version represents the beginning of an 18-month period of consultation with market participants that will culminate in the issuance of final recommendations at the end of 2023. The hope is that the disclosure and risk management framework can take shape in the context of, and its metrics and targets can be informed by, the 21 targets and 10 milestones currently being [negotiated](#) under the UN Convention of Biological Diversity. This is part of the [Post-2020 Global Biodiversity Framework](#) for protecting marine and land habitats, reducing pesticides and plastic waste, and increasing investments in biodiversity (called by some, the Paris Agreement for nature). The two should go hand-in-hand to support the necessary shift in global capital flows away from nature-negative outcomes and toward nature-positive outcomes.

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