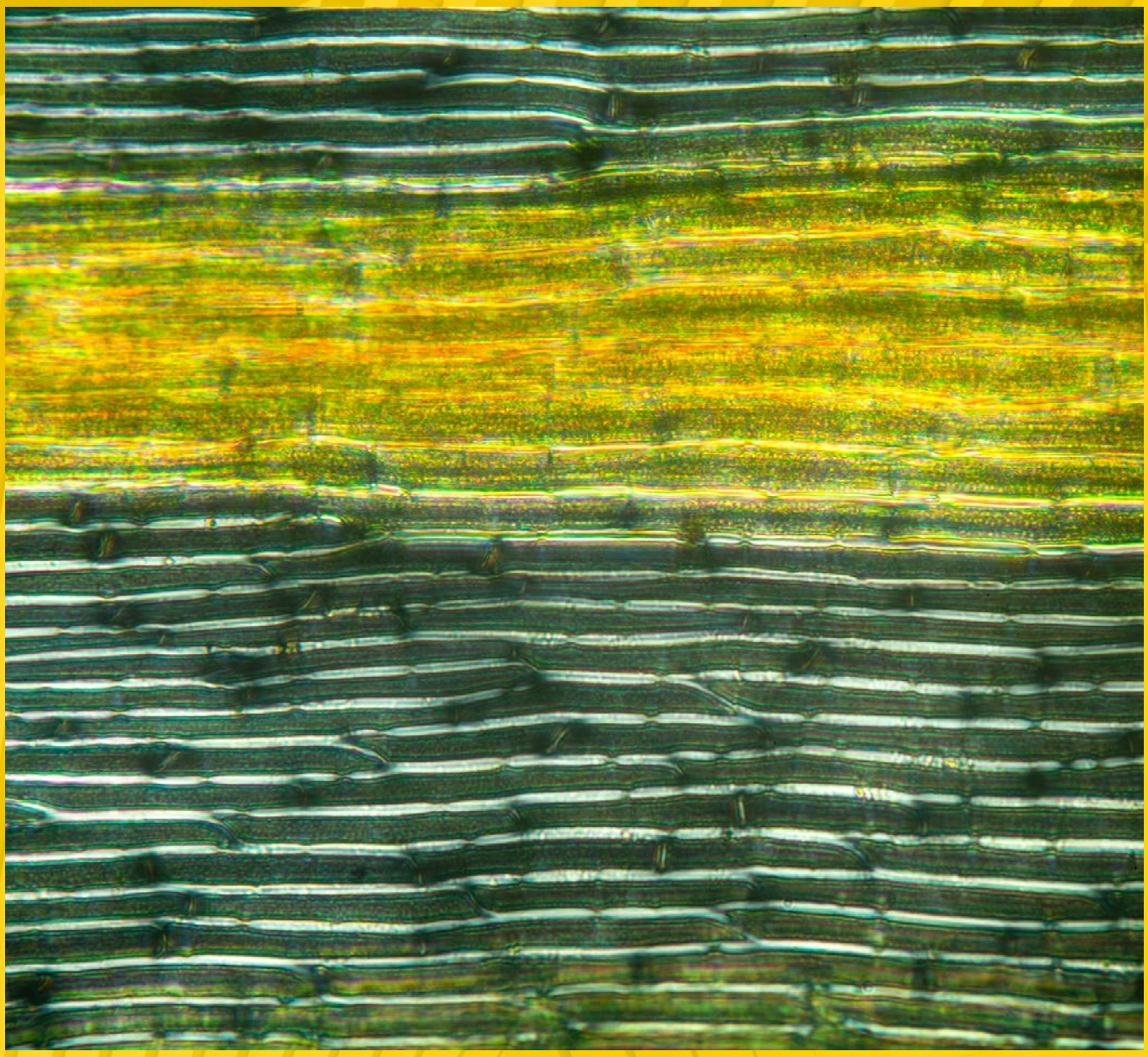

A roadmap for upgrading market access to decision-useful nature-related data

October 2024
For consultation and feedback

tnfd.global

Taskforce on Nature-related Financial Disclosures

Contents

Foreword

Enabling nature intelligence

The resilience of every business depends on the resilience of nature.

More specifically, the current and future cashflows of a business depend on the flow of nature's inputs – known as ecosystem services – into the processes of the business and its value chain. These ecosystem services range from the soil nutrients critical to the productivity of agricultural-based businesses, to the provision of water essential to the manufacturing of semiconductor chips. Every business in every sector has dependencies on nature, either directly or through its value chains.

The accelerating loss of nature and biodiversity, compounded by the intensifying impacts of climate change, is eroding nature's capacity to continue to provide this flow of ecosystem services at the quantity and quality needed by business. As nature's resilience declines, the physical, transition and systemic risks to business and finance increase. This underscores the urgent need for timely, comprehensive, accessible and decision-useful, nature-related data for corporate decision makers and capital providers. That data needs to illuminate the dependencies and impacts of business on nature as well as the corresponding risks and opportunities to organisations and those providing capital to them.

In the three years since the launch of the Taskforce on Nature-related Financial Disclosures (TNFD), appreciation within the business and finance communities of the need to act on nature-related dependencies, impacts, risks and opportunities has grown quickly.

- The Kunming-Montreal Global Biodiversity Framework (GBF), agreed by nearly 200 governments in 2022, has been reinforced by new market-based initiatives such as Business for Nature, the TNFD and the Science Based Targets Network (SBTN);
- Global investor awareness and capacity has been enhanced through stewardship initiatives such as those of the Principles for Responsible Investment's (PRI) and Nature Action 100; and
- Building on the TNFD recommendations, the corporate reporting architecture is also now emerging quickly with the release of the International Sustainability Standards Board (ISSB), IFRS Standards (IFRS S1 and S2), the updating of Global Reporting Initiative (GRI) Standards related to nature and biodiversity, and the introduction of mandatory climate- and nature-related reporting standards in Europe, China and elsewhere.

In response to these policy and regulatory developments and the growing focus of investors on nature-related risk management, corporates and financial institutions are now actively looking to contribute to nature-positive outcomes and boost the resilience of their business by investing in the resilience of nature. Consequently, demand for decision-grade, nature-related data is set to grow exponentially in the coming years.

Responding to this challenge will require moving with purpose, urgency and a collaborative spirit across the nature data value chain to mobilise transformational investments that fund upgrades to nature data coverage and quality that meet the specific and demanding needs of market participants at this critical inflection point. Doing so will create positive externalities for all other nature data users, including governments and civil society organisations. Failure to do so will not only compromise the ability to deliver on the goals and targets of the GBF but leave nature risk dangerously unattended on corporate balance sheets and in investor portfolios, amplifying the systemic risks to our financial systems, economies and societies. A step change in funding for nature data is now an urgent global priority.

As outlined in this report, market participants have particular needs and concerns about the current state-of-nature data. These include concerns about the accessibility, quality, comparability, verifiability and assurability of the data they need for corporate reporting, target setting and transition planning. These concerns are shared, not only among the largest corporates and financial institutions with complex global value chains, but also by the small and medium-sized enterprises (SMEs) around the world that make up the majority of our economies, employ the majority of people and face their own nature-related risks if the resilience of nature continues to decline.

Contributing to the shared task of addressing these challenges and opportunities to upgrade the nature data value chain is a key priority for the Taskforce, not least to minimise concerns about data use, access and assurability as a barrier to future nature-related corporate reporting, target setting and concrete private sector action to help halt and reverse global nature loss. Leveraging the market momentum created by the publication of the TNFD's disclosure recommendations in September 2023 and its open innovation and rapid prototyping approach, I am delighted that the Taskforce has assembled a global coalition of leading organisations and experts to outline how to address these challenges. I'd like to thank all of the contributing organisations and experts for their insights and time.

The approach outlined in this document takes an integrated view of the nature data value chain and brings a principles-based approach to the identification and scoping of priority future initiatives. First, nature-data providers upstream in the nature data value chain need orders of magnitude greater funding and a strategic and coordinated programme of investment to upgrade the quality of nature-related data that is relevant to market participants. Second, downstream market users need easier, faster and open access to nature-related data and the confidence that it meets their internal decision making and external corporate reporting requirements. Informed by a programme of pilot testing throughout 2025, our intention is to explore and scope these potential initiatives further with partner organisations before designing and presenting more concrete proposal to funders in late 2025 or early 2026.

We look forward to your feedback and ideas to help shape our ongoing efforts with partner organisations and market participants to enhance market access to decision-useful, nature-related data.

David Craig
Co-Chair of the TNFD and Chair of the Nature Data Public Facility initiative

Executive summary

As nature's resilience declines, the case for action grows ever more urgent and important, both to halt and reverse nature loss for people and the planet and to address the growing physical, transition and systemic risks to business and finance across economies and sectors.

Nature intelligence – the capacity to identify, assess and respond to an organisation's nature-related issues – is a new organisational and risk management imperative for corporates and financial institutions. This underscores the urgent need to improve access to timely, comprehensive and decision-useful, nature-related data for corporate decision makers and capital providers.

This new imperative is being driven principally by two forces. First, the growing appreciation among capital providers that because the resilience of business depends on the resilience of nature, they have nature-related risk in their capital portfolios that needs to be proactively managed. Second, the emergence of new nature-related policy goals, such as the Global Biodiversity Framework (GBF), voluntary reporting standards, and market regulations across jurisdictions from the European Union to China and Botswana.

Contributing to a global imperative to upgrade the world's nature-related data

In this document, the Taskforce on Nature-related Financial Disclosures (TNFD) outlines a set of initiatives with a medium- to long-term horizon to help address issues throughout the nature data value chain today and to enhance market access to decision-useful, nature-related data. These initiatives are by no means everything that will be required to upgrade the world's nature-related data and the Taskforce is very clear that its focus and contribution is on addressing use cases specific to corporates and financial institutions. These are:

- Corporate reporting – aligned to the recommendations of the TNFD and new reporting standards, such as those of the ISSB, GRI and Europe's CSRD;
- Target setting – with reference to the methods recommended by the Science Based Targets Network (SBTN); and
- Nature transition planning – aligned to the draft guidance developed by the TNFD in consultation with GFANZ, the UK Transition Plan Taskforce and WWF.

There are many other corporate use cases for nature-related data, such as project-level environmental impact assessments and approval processes or product certification requirements, which are

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outside the scope of this initiative, but would likely benefit from the improvements in nature-related data that it might generate. Use cases for non-private sector users, including policy analysis and NBSAP preparation by governments and research by scientific organisations and civil society organisations, are also outside the scope of this initiative, but no less important and urgent to address. Many other actors across the nature data value chain will need to be mobilised and financially supported to address the broader nature data challenges beyond the scope of this initiative.

The Taskforce believes that the initiatives outlined in this document can mobilise faster and better-quality private sector engagement in the shared global task of halting and reversing nature loss. These initiatives will also enable voluntary market adoption of reporting and target setting practices, providing the conditions for governments to introduce the reporting requirements called for in Target 15 of the GBF. Their implementation will also have positive spillover effects for the availability of nature data to other stakeholders in society.

Challenges to address; opportunities for improvement

The roadmap of activities and initiatives proposed in this document leverages over two years of collaborative research and investigation by the TNFD and a network of partners and technical experts across the full breadth of the nature data value chain, from data providers to end users. It draws on:

- Initial insights from the TNFD's nature data landscape assessment completed in 2022;
- Feedback and learnings from engagement with over 130 data providers through the TNFD Nature Data Catalyst community over the past two years;
- A scoping study for a possible global nature data facility released in 2023; and
- The TNFD's extensive market research and testing during the development of its recommendations and guidance, including over 240 pilot tests of the TNFD's LEAP assessment approach.

At this nascent stage in market experience with nature-related corporate reporting, target setting and transition planning, the most pressing priority and most significant pain point for market participants concerns the state-of-nature data required to locate and assess their potential nature related issues, as outlined in the TNFD's LEAP assessment approach. Among the 240 organisations that pilot tested the LEAP approach during its design and development phase, many market participants were unable to complete the Locate and Evaluate phases of their LEAP assessment because of the challenges noted above.

As a result, the proposed approach outlined in this document focuses on pilot testing around these 'input' data requirements, not the 'output' data produced by companies about their impacts on nature (i.e. the equivalent of their reported Scope 1, Scope 2 and Scope 3 emissions data, which is the focus of the Net Zero Data Public Utility).

Five key insights have emerged through feedback from market participants that are using the nature data sets available today to attempt to meet the new assessment, disclosure and target setting practices:

- **Time** – Consideration of nature-related issues beyond climate change is new to business and finance. Market participants are unfamiliar with, and lack confidence engaging with, nature-related data sources, which are highly fragmented and have typically been constructed with other use cases in mind. Consequently, the search for, and selection of, decision-useful, nature-related data for the purposes of corporate reporting, target setting and transition planning is a time consuming and uncertain process.
- **Cost** – The time required to make sense of a complex and fragmented nature data landscape creates costs, beyond payments for access to data behind paywalls and subscription services and/or the recruitment of specialist consultants help to navigate the nature data landscape. This is particularly problematic for small and medium-sized enterprises (SMEs) and those in biodiverse rich areas of emerging and developing economies. While these organisations may not have corporate reporting or disclosure requirements, they should be encouraged to assess their own nature-related issues to underpin the resilience of their business and will increasingly need access to nature-related data to support data requests from their downstream customers.
- **Quality** – Market participants have consistently expressed concerns about the quality of the data available today, including its timeliness and its availability across biomes and geographies.
- **Comparability** – While corporates and financial institutions rely on the ability to compare companies within sectors and investment products across asset classes, and within different time periods or peer groups, much of today's nature-related data does not support this type of analysis.
- **Assurability** – The availability of independent third-party assurance for the data an organisation uses for its decision making and public reporting is an essential requirement in the emerging landscape for corporate reporting and accountability. Today, little of the available nature-related data has been tested for its assurability, not least because audit and assurance standards for sustainability topics beyond climate change have only emerged in the last six months.

These challenges in today's nature data landscape show the opportunity for future improvement – to save time and cost and to enhance the accessibility, comparability and assurability of the nature-related data needed by market participants for corporate reporting, target setting and transition planning activities.

A number of recent developments make this the right time to test the suitability of existing nature data sets and sources against the requirements of market participants and to identify priority areas

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for improvement along the nature data value chain. First, the TNFD's corporate reporting and metrics recommendations and the SBTN's target setting methods are now in use by the market. Over 500 organisations are now voluntarily committed to public reporting against the TNFD disclosure recommendations, and at least as many again are testing and piloting them. Second, in September 2024, the International Audit and Assurance Standard Board (IAASB) published a set of data principles to meet sustainability assurance requirements. Third, a set of state-of-nature assessment metrics were released in draft by the Nature Positive Initiative (NPI) in October 2024 for pilot testing.

Open innovation to pinpoint high-impact interventions across the nature data value chain

As outlined in this document, the TNFD proposes to advance this initiative further in 2025 through a phase of pilot testing with partners and markets participants along the nature data value chain. This will help to define more precisely the long-term enhancements to the nature data value chain that are the highest priority and have biggest potential impact. Three key areas of focus have emerged for market consultation and feedback over the next six to 12 months:

- First, to further define and clarify a set of composite data principles, drawing from existing scientific, open data and corporate reporting data standards and principles.
- Second, to specify the enhancements and quality improvements to the nature data value chain that need to be prioritised and funded in the medium term.
- Third, to further explore end user requirements through a beta version of an open access nature data public facility (NDPF), as first proposed by the TNFD and its partner organisations in its scoping study published in August 2023.

To help catalyse collaborative efforts upstream along the nature data value chain and respond to the access, comparability and assurability needs of market intermediaries and end users downstream, the Taskforce proposes using a principles-based approach to test the fitness of current nature data sets and sources to meet the corporate reporting, target setting and transition planning metrics now needed by market participants. These metrics have already been defined by the TNFD, SBTN and NPI, providing a clear and relatively small set of recommended metrics, and the basis for an objective set of data principles, against which the global availability and quality of data can be tested. These principles, drawing from existing best-in-class scientific, open source and corporate reporting data standards, are outlined in Section 3.

While data principles can help to define the market's requirements and identify the gap in today's nature data landscape, far greater funding from public, philanthropic and private sources will be required to finance the necessary coverage and quality upgrades, led by nature data collectors and aggregators such as IUCN, UNEP-WCMC, GBIF, GEO BON and others. Leveraging the findings of its proposed pilot testing in 2025, the TNFD will continue to evaluate the optimal design of funding and governance approaches and will continue to work

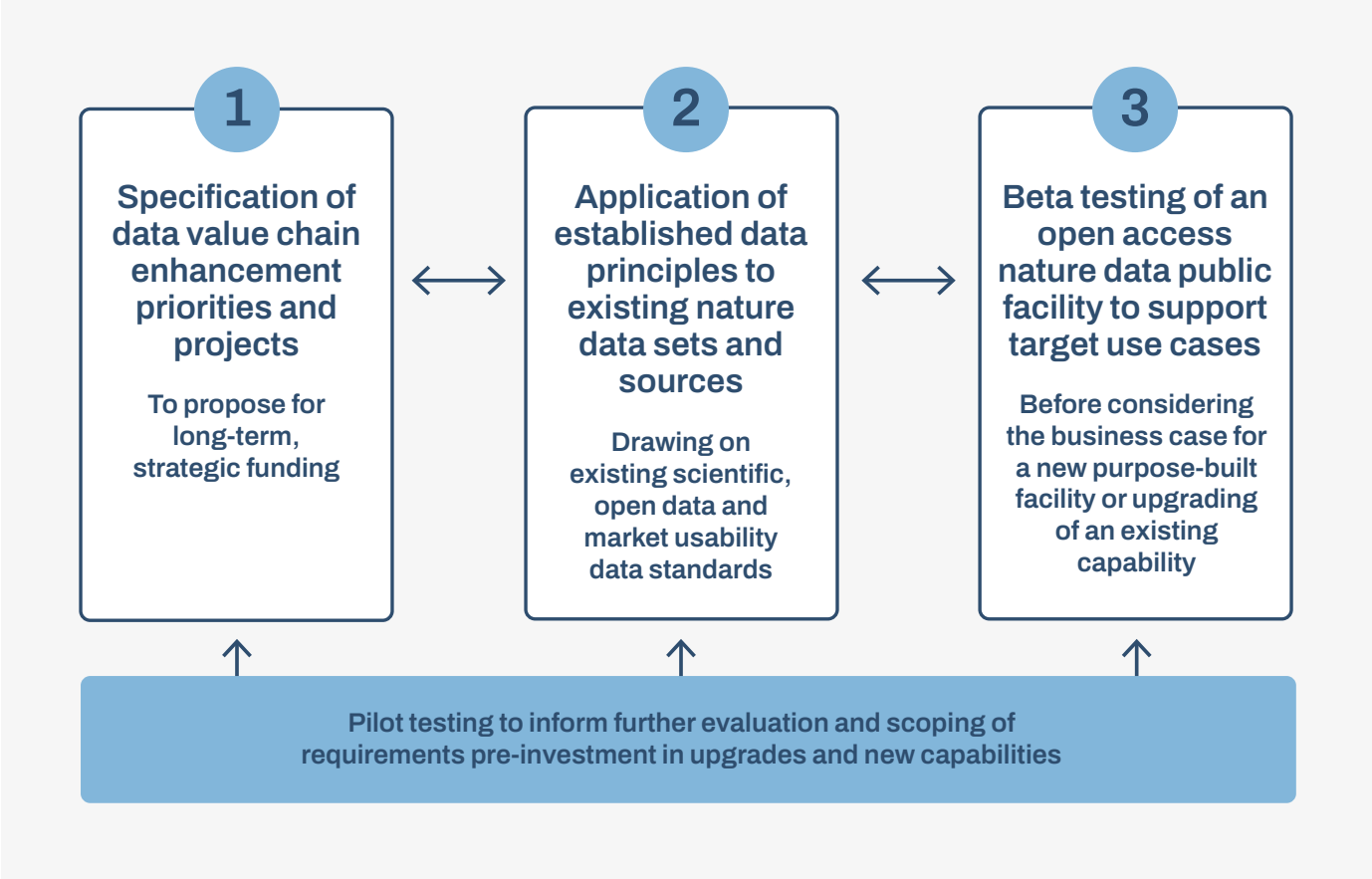
with nature data value chain participants to make the case for the step change in strategic, long-term funding that is required.

To specify and scope the investments in the global nature data value chain that are required and to explore how best to provide decision-grade data to market participants, the Taskforce intends to create a demonstrator model of a Nature Data Public Facility (NDPF) for the three use cases of interest to market participants. The demonstrator Nature Data Public Facility will enable upstream pilot testing of the fitness of data sets and sources for organisations that provide that data, but also enable downstream pilot testing of how best to make that data available to a wide range of market participants. Those include market intermediaries such as data and analytics service providers, SMEs, multinationals, insurance companies and globally significant universal asset owners with portfolios comprised of thousands of discreet equity holdings, each with a geographically dispersed set of operating footprints across geographies and biomes.

The proposed approach to the demonstrator NDPF is outlined in Section 4. Should it prove effective and additive to the global landscape of existing data interfaces available to market participants, in late 2025 the TNFD will consider whether there is a case for commissioning a permanent new open source Nature Data Public Facility to ensure the long term delivery of open access to nature-related data, or whether to invest instead in the upgrade of an existing data platform to a set of specific requirements to achieve this goal.

Alongside cost, quality and open access considerations, the TNFD will also consider whether this nature-related data ecosystem can evolve into a circular, nature data economy. This could enable the exchange of nature data between traditional and new data providers upstream in the data value chain, potentially including land stewards such as farmers and Indigenous Communities, with organisational data users downstream, enhancing value for all.

Figure 1: Key elements of this initiative



Preparation of this roadmap

The preparation of this roadmap has been developed over two phases of work since the beginning of 2023 in collaboration with the following organisations. The Taskforce is grateful for the generosity with which they each contributed their time and expertise.

The Taskforce would also like to thank the many individuals and organisations from across the nature-data value chain who provided feedback on the scoping study released at the Amazon Summit in August 2023 and contributed to focus groups and surveys throughout 2024 to support the development of this roadmap.

Phase 1 – Scoping study January – August 2023	Phase 2 – Roadmap development March – October 2024
Co sponsors of the scoping study • CDP • Climate Collective • Global Biodiversity Information Facility (GBIF) • Global Commons Alliance (GCA) • Global Reporting Initiative (GRI) • Open Earth Foundation (OEF) • MRV Collective • NatureFinance • Science Based Targets Network (SBTN) • Systemiq • United Nations Environment Programme World Conservation Monitoring Centre (UNEP-WCMC)	**Technical expert group** • Capitals Coalition • Environmental Systems Research Institute (Esri) • EU-Knowledge Centre for Biodiversity (KCBD) • Global Biodiversity Information Facility (GBIF) • Global Canopy • Group of Earth Observations, Biodiversity Observation Network (GEO BON) • Institute of Public and Environmental Affairs (IPE), China • International Union for Conservation of Nature (IUCN) • Nature Finance • Net Zero Data Public Utility (NZDPU) • OS-Climate (OS-C) • Regen Network (RN) Institute for the Development of Environmental-Economic Accounting • REV Ocean/HUB Ocean • Science Based Targets Network (SBTN) • The South African National Biodiversity Institute (SANBI) • Research Institute for Humanity and Nature, **Tokyo** University, Japan • UNEP-WCMC

Request for feedback on this roadmap

Consistent with the TNFD's open innovation approach to the development of its guidance, the Taskforce is releasing this roadmap as a draft for consultation with a 90-day public consultation period, running until 17 January 2025.

The TNFD welcomes feedback from participants across the nature-related data value chain and other stakeholders on the proposed approach, initiatives and considerations outlined in this discussion paper. The Taskforce and its partners are particularly interested in feedback on the set of questions outlined in Section 9 below.

Please provide feedback through the TNFD website.

The Taskforce intends to hold a series of webinars and focus groups between January and March 2025 to discuss the feedback it has received and will continue to solicit input from interested stakeholders.

Organisations interested in undertaking pilot testing and sharing their findings with the Taskforce through 2025 are encouraged to contact the TNFD at feedback@tnfd.global

Phase 3 of the NDPF development process will take place in 2025 and identify a configuration for the optimum mechanism to improve use of nature data for corporate decision-making. This process will take account of the results of the consultation described above as well as concerted engagement with existing nature data providers.

1. Context for this roadmap

Established in 2021, the Taskforce on Nature-related Financial Disclosures (TNFD) aims to support a shift in global financial flows away from nature-negative outcomes and toward nature-positive outcomes, aligned with the Kunming-Montreal Global Biodiversity Framework (GBF) agreed to by over 190 governments in December 2022. Its specific contribution to this global goal is by encouraging and enabling better quality organisational governance, strategy, risk management and corporate disclosure. Metrics and data are critical enablers.

After two years of consultation and pilot testing with scientific and standards partners, as well as 1,600 market participants from over 60 countries and territories around the world, the TNFD published its disclosure recommendations in September 2023. These built on the climate-related disclosure recommendations of its predecessor initiative, the Task Force on Climate-related Financial Disclosures (TCFD). Where the TCFD focused on issues related to atmospheric greenhouse gas emissions (GHG), the TNFD covers all other drivers of nature change across nature's four realms of land, freshwater, ocean and atmosphere.

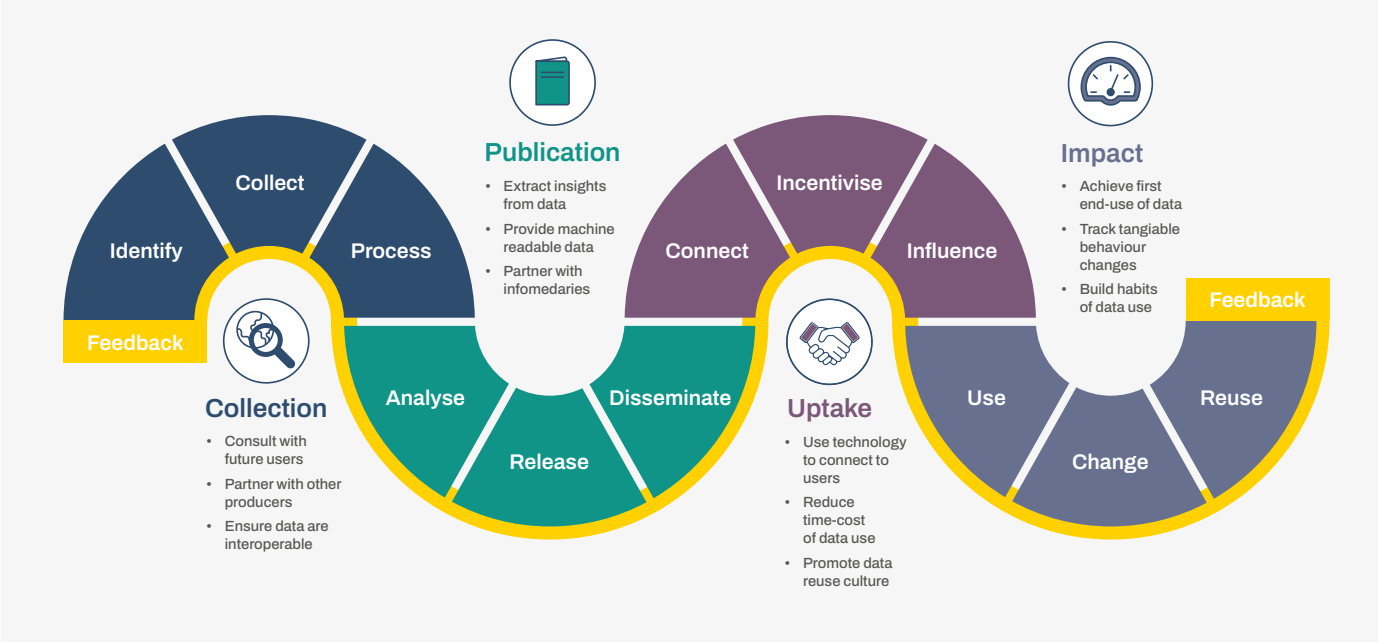
The TNFD's 14 recommended disclosures and accompanying implementation guidance build directly on that produced by the TCFD. They have also been designed to be consistent with, and support the implementation of, new voluntary sustainability reporting standards published by the ISSB and GRI; as well as mandatory reporting requirements such as the European Sustainability Reporting Standards (ESRS).

In the first year since the release of its recommendations, over 500 companies and financial institutions from more than 54 countries and territories, representing over USD 6.5 trillion in market capitalisation among publicly listed entities and USD 17.5 trillion in assets under management from asset owners and asset managers, have begun assessing and reporting their nature-related issues aligned to the TNFD recommendations. This voluntary adoption of the TNFD recommendations is one of many indicators of a step change in the level of engagement from the private sector with the global agenda to halt and reverse nature loss by 2030, as outlined in the goals and targets of the GBF. Target 15 of the GBF calls for governments to introduce nature-related corporate reporting requirements covering impacts, dependencies and risks by 2030, which is now operationalised by the TNFD recommendations.

As corporates and financial institutions continue to align their business activities to global policy goals and the rapidly shifting expectations of investors, consumers and other stakeholders, access to high-quality, timely and assurable decision-useful, nature-related data is one of the most important enablers. The TNFD's Working Group of Taskforce members has been investigating data-related challenges and opportunities to contribute to

the global task of enhancing the nature data value chain since the inception of the TNFD in late 2021.

Figure 2: The nature data value chain



1.1. Insights from the TNFD's data landscape research

The TNFD published A Landscape Assessment of Nature-related Data and Analytics Availability in March 2022. This included a survey of the landscape of nature data and analytics platforms and sources to identify where these can support an organisation's assessment of its nature-related issues that follows the TNFD's LEAP assessment approach. It included two hypothetical examples for forests and water to show how existing data and analytics can be used.

"Access to high-quality, timely and decision-useful, nature-related data is one of the most essential enablers to align and transition business practices and capital allocation decisions with global policy goals."

The paper outlined four key insights: data coverage differs across nature categories; there is variance in measurement approaches; there are spatial and temporal biases in data; and access and relevance for decisions is limited. It also outlined areas requiring further exploration on nature data, including the potential need to:

- Consolidate nature-related data platforms;
- Move beyond a framing of environmental, social and governance (ESG) data;
- Stimulate and harness more innovation across the nature data value chain;
- Address technical challenges with data access and use;

- Build technical expertise, resource and capacity on nature-related data among end user corporates and financial institutions;
- Encourage and incorporate new sources for primary data collection; and
- Integrate across data platforms and tools.

Following the publication of this data landscape assessment, the Taskforce developed a TNFD Tools Catalogue to provide market participants with an overview of nature-related data tools that are currently available, searchable by phases of LEAP, TNFD-recommended disclosures, nature realm, biome and sector. This catalogue is now widely used and includes over 180 tools.

1.2. Scoping a possible global Nature Data Public Facility for market participants

Building on the 2022 gap analysis and inspired by the announcement of plans for a Net Zero Data Public Utility (NZDPU), the TNFD brought together a consortium of 13 organisations in early 2023 to examine the case for a possible open access global nature data facility. The findings of the scoping study were shared with the G20 Sustainable Finance Working Group (SFWG) in June 2023 in India, and publicly released in August 2023 at the Amazon Summit held in Brazil. The scoping study attracted considerable positive interest from governments, media and market participants alike.

The key conclusion of the scoping study was that there is a market failure in the provision of nature-related data and that some form of open access public data facility has significant merit. The scoping study made the following recommendations for a global Nature Data Public Facility (NDPF):

- Focus initially on better state-of-nature data. Market participants have the least technical familiarity with this area compared to impact driver data, which is more likely to be collected by organisations directly. State-of-nature data was also identified as the most pressing need for market participants, given the location specificity of nature-related dependency and impact analysis (i.e. the input data required for an organisation's nature-related issue assessment like the LEAP approach, particularly the Locate and Evaluate phases).
- Nature-related impact and transition data (i.e. output data reported by a company similar to reported greenhouse gas (GHG) emissions data) is dependent upon, and constrained by, the availability of better state-of-nature reference (input) data.
- Focus initially on facilitating the access of market participants to data and basic levels of assessment for a small number of specific corporate use cases, namely corporate assessment, management and reporting (aligned with the TNFD LEAP approach and disclosure recommendations) and target setting (aligned with the methods recommended by SBTN and IUCN); and

- Improve and upgrade over time the quality, timeliness and consistency of data available through the facility and across the upstream nature data value chain through the application of existing science, open source and corporate reporting data principles and by supporting the creation of a set of common global state-of-nature indicators and metrics.

The scoping study concluded that the optimal configuration would be a facility focused on connecting corporates and financial institutions to existing data sets and sources collected by other data providers and aggregators. It also acknowledged the importance of addressing the underlying constraints to the coverage and quality of nature-related data: most notably, a lack of long-term strategic funding for upstream data collection and aggregation efforts. It therefore proposed a parallel initiative encouraging long-term funding for collaborative initiatives across the nature data value chain to upgrade nature-related data collection and connectivity globally.

The scoping study was also clear about what would not be useful or add value to the nature data value chain, as all the actors in the value chain evolve and innovate to meet growing market needs:

- First, there is no need to replicate or duplicate the data collection and aggregation services of the many upstream government, intergovernmental, conservation and scientific organisations that have been collecting nature-related data for decades. Hence the description as a facility, not a data utility or warehouse.
- Second, the facility should not compete with or displace downstream providers of value-adding data product and services Instead it should seek to enable the further development and innovation of nature data technology and services downstream from the data facility. This can be achieved by providing a foundation of high-quality nature data and developing further value-adding solutions for market participants.

After considering three potential models for a NDPF, the scoping study concluded that the preferred archetype was a distributed-access public data facility. In other words, a global entry point to a decentralised data exchange that connects to nature-related data layers provided by contributing organisations, both public and private, whose data sets meet certain methodological and quality standards.

This archetype was defined as providing the following benefits:

- Facilitating open access to high-quality, robust, nature-related data relevant to the target use cases;
- Encouraging the participation of a wide range of public and private data providers as contributors;
- Aligning with the indicators, metrics and data standards of the latest guidance for nature-related assessment and reporting. These include the metrics recommended by

TNFD, SBTN, the Nature Positive Initiative (NPI), ISSB, GRI, the European Union's new CSRD regulations and, over time, similar emerging requirements in other jurisdictions;

- Supporting future upgrades of the quality and timeliness of data across the nature data value chain in collaboration with primary-data providers and data aggregators aligned with an agreed set of common global methodologies for state of nature data collection and data principles;
- Maintaining data sovereignty with data providers, which a centralised database would not, by leaving data ownership and responsibility in the hands of data owners, including national governments and other local stakeholders;
- Providing scalability over time, as it does not rely on a central data model and can grow as data sets are enhanced and operational costs can be spread; and
- Serving the broader market-based nature data value chain downstream from the facility as a foundational data stack upon which market actors – public, not-for-profit and commercial – could develop value-adding data solutions.

After considering three potential models for a NDPF, the scoping study concluded that the preferred archetype was a distributed-access public data facility. In other words, a global entry point to a decentralised data exchange that connects to nature-related data layers provided by contributing organisations, both public and private, whose data sets meet certain methodological and quality standards.

1.3. Phase 2: This design roadmap

Building on positive government and market feedback to the scoping study, the TNFD commenced the next phase of this effort in early 2024 with a focus on identifying specific actions and interventions that might be undertaken with partners across the nature data value chain to address data quality and consistency issues upstream and improve ease and open access for downstream data users. This included beta testing of the proposed Nature Data Public Facility (NDPF).

A project team was assembled in April 2024 and a global network of experts convened for the first time in May, organised into two workstreams:

- A technical working group looking at data principles and connectivity challenges and opportunities; and
- A governance and funding workstream group considering how these initiatives could be appropriately governed and sustainably financed.

Focus groups and consultations with relevant actors and stakeholders across the nature data value chain have continued through the year. This document presents the outcome of that work and proposes a roadmap for further development, focused on a phase of pilot testing with upstream data value chain partners and downstream market participants before any specific interventions are scoped in detail and formally presented for funding support.

1.4. The opportunity to leverage related and supporting initiatives

The proposal in this roadmap to move into a phase of pilot testing of potential interventions across the nature data value chain at this time will enable the pilot testing to build on and reinforce recent outcomes from a number of related and supporting initiatives. These include:

- The recommended cross-sector and sector-specific impact driver metrics published by the TNFD in 2023 and 2024;
- Metrics associated with the target setting methods recommended by the Science Based Targets Network; and
- Metrics for measuring the state of nature released in draft for consultation by the Nature Positive Initiative in October 2024.

2. Market needs for nature-related data

2.1. New demand signals

As highlighted by the significant voluntary adoption of the TNFD's recommendations in the last year since its launch, three key driving forces are providing further impetus for exponential growth in demand from the private sector for nature-related data. They are:

1. Growing awareness and activism among investors and companies that they need to understand and actively manage nature risk in their capital portfolios and cashflows;
2. The evolution of international voluntary corporate reporting standards responding to this awareness; and
3. The growth of mandatory corporate disclosure regulation covering nature-related issues at a jurisdiction level.

- **Investor-driven demand signal**: To quote one of the TNFD's Taskforce members, "there is nowhere for universal asset owners to hide from nature risk". Asset owners and asset managers are now mobilising quickly to educate themselves on nature-related issues and seek information from those entities to which they provide capital. Many of the world's leading asset owners and managers have signalled that they are now examining potential nature-related risk exposures across their capital portfolios, whether loan or insurance books or investment funds. The emergence of new nature stewardship initiatives, such as the Nature Action 100 coalition, which now comprises more than 200 asset managers, and the Principles for Responsible Investment's (PRI's) Spring initiative, highlight the speed at which companies and investors are refocusing on nature as a strategic risk management issue and not just a corporate social responsibility one.
- **International voluntary reporting demand signal**: Responding to this repositioning of nature as a strategic risk management issue, new international voluntary standards on nature and biodiversity have sent a signal to both regulators and organisations that there is growing expectation that material nature-related dependencies, impacts, risks and opportunities are disclosed. These include updates to the related GRI Standards on corporate impacts and the ISSB decision to commence research into sustainability-related risks and opportunities associated with biodiversity, ecosystems and ecosystem services, building on its S1 and S2 climate standards issued in 2023.
- **Regulatory-driven demand signal**: Global nature-related policy goals have emerged rapidly in the past 18 to 24 months in addition to existing climate-related reporting requirements. These, including Target 15 of the GBF, have stimulated regional and

national regulatory developments, such as the CSRD in Europe, India's Business Responsibility and Sustainability Reporting (BRSR) requirements and new sustainability reporting requirements introduced by China's stock market regulator.

2.2. Feedback from market participants about current experience

Pilot testing of the TNFD's LEAP assessment approach over the course of 2022 and 2023 by more than 240 companies and financial institutions across geographies and sectors has been an invaluable way for the Taskforce and its partner organisations to learn about the nature data challenges faced by market participants. In addition to those insights, the TNFD has convened a series of focus group and surveys of TNFD Forum members over the course of 2024 to further inform this roadmap.

A number of key data-related themes and observations emerge from this feedback about current market practice with existing nature-related data sets and sources.

- Insights from 240+ organisations that pilot tested the LEAP approach
- Interviews with TNFD adopter organisations
- Eight technical expert group discussion sessions
- TNFD forum survey of market participants on current data experience.

2.2.1. Lack of market familiarity with state of nature data

As was the case five to 10 years ago on the issue of climate change, the current lack of knowledge on nature creates a confidence barrier to engagement. The topic of nature is widely perceived to be more complex than climate and misperceptions abound about what is possible. Most notable is the common misperception that there is no data to undertake assessment of issues beyond climate. The more foundational challenge observed by the Taskforce is a lack of familiarity with the nature data sources that are available and the resulting difficulties and time required to find and access data that is specific to the user's requirements.

2.2.2. Poor corporate asset location data

Once engaged on nature-related issues, a critical prerequisite for the assessment for direct operations and upstream and downstream value chain(s) is corporate asset data that identifies the location, type of asset, and ideally, the production processes and/or activities at that location. The work of collecting this data is internal to the organisation itself. Pilot testing and focus group discussions with TNFD Forum members have highlighted the generally poor state of corporate and portfolio asset-location data in most organisations, imposing an early process barrier for undertaking the Locate phase of a LEAP assessment and constraints on later phases of assessment.

2.2.3. Low awareness of existing internal nature data and difficulty reconciling third-party data with user-generated content

Having decided to commence a LEAP assessment, a number of pilot testers reported that they were surprised by the volume and quality of internal environmental data already in the possession of the organisation. This suggests a lack of enterprise-wide data sharing between environmental teams and corporate reporting, risk and finance teams. It also highlights the opportunity for the NDPF to enable the overlay of internal environmental data on top of data from third-party data providers. In many cases, this owned observational data is more current and accurate than equivalent data from external data sources.

"Using international standards gives more credibility, but often these do not represent local data accurately."

Executive, Asia-based property developer

2.2.4. Variance in data quality and resolution

Market participants highlighted significant data gaps and quality variability across the realms of nature, by ecosystem type (biome), environmental asset, ecosystem service and by geographic region, leading to partial, fragmented and inconsistent assessment and reporting. To enable the nature data needs of the market, upstream data providers need to be resourced to invest in critical data gaps and inconsistency against a set of data principles.

It may also be helpful to provide clearer guidance on the desired or expected level of data resolution for the purposes of internal assessment and external reporting to investors, regulators and other stakeholders. This would likely vary by type and size of the organisation. For example, small and medium-sized enterprises (SMEs) assessing nature-related issues to provide data to their downstream customers may be able to utilise lower-resolution data than, say, a global multinational company with formal disclosure requirements.

"Often it is not clear to everyone what 'good enough' looks like, and without that benchmark, it is hard to for organisations to get internal buy in for the amount of time or effort you need to spend on doing something right."

Senior nature consultant, UK based consultancy

2.2.5. Lack of comparability and consistency in data

Corporate and financial institutions report that a lack of comparability, including within sectors, across sectors and over time, is a major drawback in the decision-usefulness of much nature-related data today. For corporates, common and consistent metrics and data collection methods can aid comparison across operational locations and assets and the relative performance of supply-chain partners. For financial institutions, comparability of analysis and a consistency in the presentation of similar data is an essential requirement for capital-allocation decisions, particularly within sectors.

"I can't compare apples with apples."

Nature and biodiversity executive, global mining company

2.2.6. The multiplicity of similar data sources and confusion over provenance and credibility

While most market participants believe that diversification of data sources and providers is a healthy and appropriate aspect of the nature data value chain, concerns remain about how to evaluate the quality of similar data sets and their provenance before they are used as part of an assessment process or for public disclosure in corporate reporting or a transition plan.

To date, the TNFD has sought to address this through the signposting of relevant and respected data sources and providers throughout the TNFD guidance and the TNFD Tools Catalogue. Consensus across the nature data value chain about a composite set of best-in-class data standards could provide a high degree of confidence to data users that the data made available aids comparability because of its consistency.

"Standards are actually more important than the one-portal-search."

Senior executive, Japanese financial institution

2.2.7. Poor timeliness and currency of data

Relevant data sources, including integrated assessment reports by conservation and scientific organisations, are frequently based on underlying data that is sometimes several years old, which is difficult to identify in the absence of easy and transparent access to metadata. A data facility could work with data providers to update relevant data more frequently to make it more decision-useful for market participants. Greater consistency and transparency of associated metadata would build confidence and assurability.

2.2.8. Acquisition costs due to paywalls and licensing arrangements

Paywalls on some recommended data sources can make it expensive to undertake a LEAP assessment that is sufficiently specific and granular to be decision-useful internally and for external reporting purposes. This cost is multiplied when several data sources need to be procured, often through complex licensing arrangements.

"I'm not against paying for licenses, but it becomes a problem when you have to pay for 20 licenses [and they're all different software you have to learn as well]!"

Anonymous

While larger organisations, including multinationals and financial institutions, have the capacity to pay for data services, SMEs also require access to nature-related data for their own purposes, and increasingly, to meet information requests made by their downstream customers. With demand for nature-related data along supply chains set to grow rapidly, there is a strong case for a certain baseline of nature data to be available on a free, open access basis for SME users with other arrangements considered for larger data users. This approach has already been embraced by the proponents of the Net Zero Data Public Utility (NZDPU), which is designed to provide access to reported emissions-related data.

2.3. New and evolving regulatory requirements for nature-related data

In addition to feedback from market users, new and demanding standards for sustainability reporting are emerging that need to be satisfied for nature-related data to be assurable and comparable for corporates and financial institutions.

The *Conceptual Framework for Financial Reporting* published by the IFRS Foundation clearly lays out a set of data principles essential to the satisfaction of financial reporting requirements:

"If financial information is to be useful, it must be relevant and faithfully represent what it purports to represent. The usefulness of financial information is enhanced if it is comparable, verifiable, timely and understandable."[1]

The International Audit and Assurance Standards Board (IAASB) has recently published (in September 2024) its first Sustainability Assurance standard (ISSA 5000)[2] that provides further clarity on the key concept of data that is verifiable. It sets out the following characteristics:

- Relevance;
- Completeness;
- Reliability;
- Neutrality; and
- Understandability.

In short, existing scientific and open source data principles and standards now need to be overlaid with corporate reporting data principles to make data decision-useful in regulated corporate and financial markets contexts. A composite set of nature data principles drawing on these three sources is outlined in more detail in Section 4.

2.4. Key implications

These recent market insights and evolving standards and regulatory developments provide the context for the initiatives outlined in this roadmap. In summary, they confirmed the need to:

1. Address the need of upstream data providers for strategic, long term funding to address coverage and quality gaps in key data sets and sources;
2. Improve **accessibility** of nature-related data for downstream users;

1 ISSB (2018) International Financial Reporting Standards (IFRS) Conceptual Framework for Financial Reporting.

2 IAASB, International Standard on Sustainability Assurance (ISSA) 5000, General Requirements for Sustainability Assurance Engagements, September 2024

3. Address the **cost** to access nature-related data for baseline corporate use cases (and enable third parties to provide value-adding analytics and capabilities beyond those baseline use cases);
4. Address challenges around the **timeliness and frequency** of nature-related data to align with the established cycles of corporate performance and risk-management reporting (typically annually);
5. Strengthen the **comparability** of data;
6. Build upon and contribute to standardisation of the **indicators and metrics** associated with the underlying data;
7. Reinforce the use of **data principles and processes** for selecting and using data by use case, including resolution of data and type of data; and
8. Improve the prospects for **third-party assurance** of nature-related data used by market participants for public disclosure.

3. Responding to market needs – a roadmap for further action

To respond to these rapidly evolving market requirements for decision-useful, nature-related data, the TNFD proposes to advance this initiative further through a phase of pilot testing in 2025 with supply-side and demand-side partners along the nature data value chain. This will help to define more precisely the long-term value chain enhancement projects of the highest priority and with the biggest potential impact that need to be funded.

Three key areas of focus have emerged for further market consultation, testing and feedback over the next six to 12 months in what will be the third phase of this initiative:

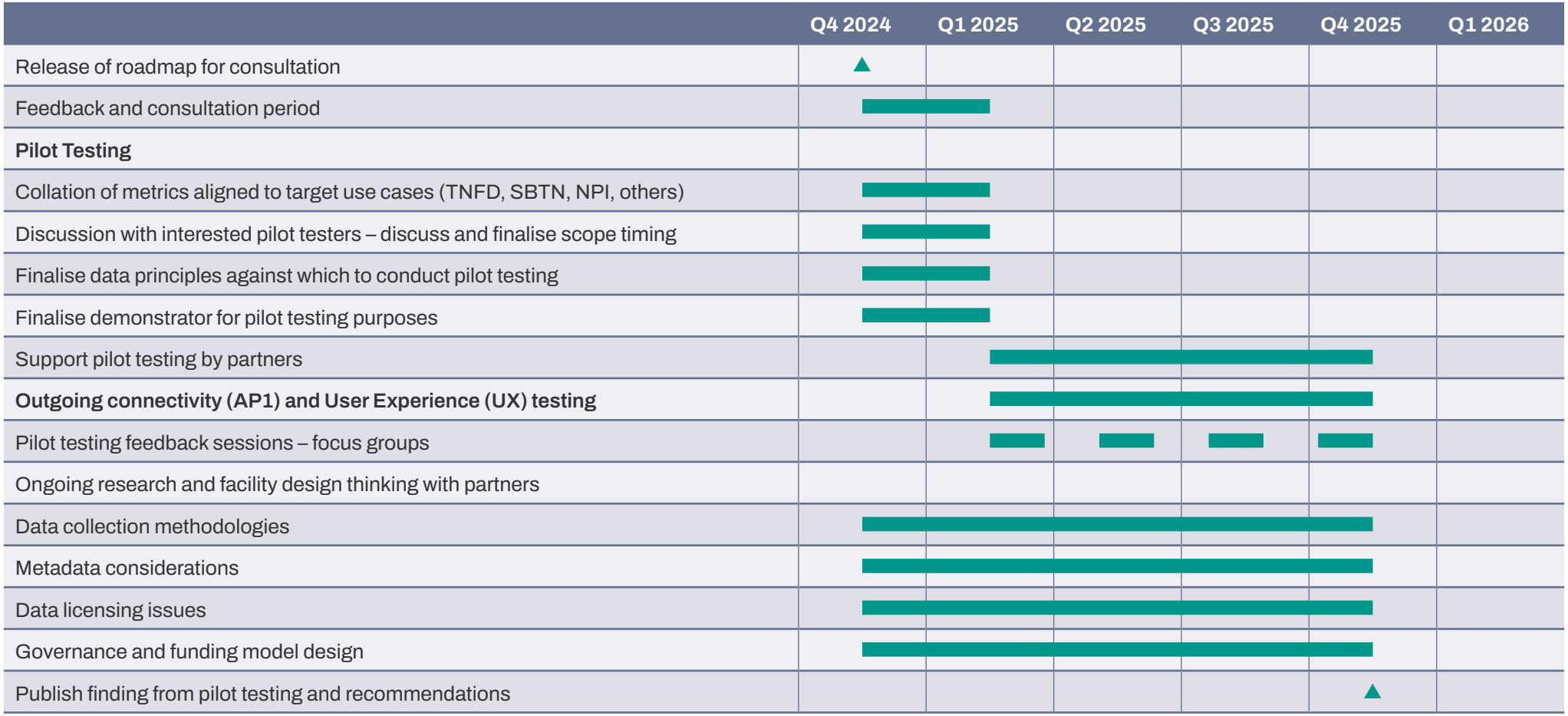
1. Further definition of and clarity around a set of composite **data principles**, drawing from existing scientific, open data and corporate reporting data standards and principles. These are proposed in Section 4 below.
2. Specification of the **nature data value chain enhancements** and quality improvements that need to be prioritised and funded in the medium term. The approach to identifying these upstream data value chain projects is outlined in Section 5.
3. **Further detailing and beta testing of the specifications for a Nature Data Public Facility** (NDPF) for market participants, as first proposed by the TNFD and its partner organisations in its scoping study published in August 2023. The proposed approach to developing and testing a beta version NDPF is outlined in Section 6.

Subject to the insights gained from pilot testing, it may be the case that a new greenfield data facility needs to be commissioned, as the Climate Data Steering Committee did with the NZDPU, or that an existing nature data capability can be upgraded to meet the requirements of market participants.

Starting those upstream value-chain enhancement projects, and any decision to pursue the build and launch of an NDPF, would constitute the beginning of Phase 4 and is not currently expected until the last quarter of 2025 or early 2026. The TNFD will also reevaluate its own role in addressing these challenges at the end of the Phase 3 pilot testing. It may be the case that the TNFD can help to secure the financial resources for others along the nature data value chain to drive these upgrade and enhancement projects forward with the TNFD playing a supporting and advisory role.

The following Gantt chart provides an overview of the proposed development plan and timelines.

Proposed development road



	Q4 2024	Q1 2025	Q2 2025	Q3 2025	Q4 2025	Q1 2026
Release of roadmap for consultation	▲					
Feedback and consultation period	▬	▬				
Pilot Testing						
Collation of metrics aligned to target use cases (TNFD, SBTN, NPI, others)	▬	▬				
Discussion with interested pilot testers – discuss and finalise scope timing	▬	▬				
Finalise data principles against which to conduct pilot testing	▬	▬				
Finalise demonstrator for pilot testing purposes	▬	▬				
Support pilot testing by partners		▬	▬	▬	▬	
Outgoing connectivity (AP1) and User Experience (UX) testing		▬	▬	▬	▬	
Pilot testing feedback sessions – focus groups		▬	▬	▬	▬	
Ongoing research and facility design thinking with partners						
Data collection methodologies	▬	▬	▬	▬	▬	
Metadata considerations	▬	▬	▬	▬	▬	
Data licensing issues	▬	▬	▬	▬	▬	
Governance and funding model design	▬	▬	▬	▬	▬	
Publish finding from pilot testing and recommendations					▲	

3.1. Key assumptions

A number of important assumptions underpin the approach and timeline outlined above:

1. The TNFD is not planning to build and operate a nature data facility itself as this is outside the remit and capabilities of the Taskforce. Instead, the Taskforce is advancing this project in the spirit of accelerating further market action aligned with the goals and targets of the Global Biodiversity Framework (GBF).
2. Commensurate with that approach, the long-term governance arrangements and sustainable financing for a NDPF and the programme of upstream nature data value chain upgrades will need to be finalised and agreed by a range of stakeholders. These governance and funding arrangements are under consideration with a range of stakeholders already and will continue throughout Phase 3, based on the learning and insights from pilot testing.
3. An interim phase of pilot testing is also important because of the work in progress on a range of related and supporting initiatives (outlined in Section 2), most notably the work of the Nature Positive Initiative (NPI), of which TNFD is one of 27 member organisations, on metrics for the measurement of the state of nature. These will be critical inputs into the prioritisation of upstream data enhancement projects and the further evaluation of a NDPF for downstream users. As outlined in this roadmap, the newly proposed NPI state-of-nature metrics will also be pilot tested in 2025. This presents a unique and important opportunity for mutual learning between the testing of the NPI metrics and the testing of data sources and principles for a NDPF to enable corporate assessment and reporting against those metrics.
4. Discussions about data standards and data models are ongoing among a wide range of stakeholders across the nature data value chain. More time is also needed to evaluate interesting new governance and collaboration models to incentivise data sharing and pooling by private and public organisations and the potential to overlay user-generated content (for example, from farmers and Indigenous Communities as land stewards). Pilot testing will provide an opportunity for this initiative to assess different approaches and models to be incorporated into the final design specifications of the NDPF and will also provide valuable inputs in the prioritisation of value chain upgrade and enhancement projects.

3.2. The proposed focus for pilot testing

As a result of the wide engagement and consultations leading up to the release of this roadmap, the TNFD has already received significant interest from upstream data providers and downstream data users in pilot testing a set of composite data principles and a beta prototype of a NDPF. This includes national and intergovernmental organisations as data providers as well as market intermediaries, corporates and financial institutions as downstream users.

In collaboration with its partners, the TNFD envisages a number of different types of pilot tests:

- Testing of priority data sources and sets against the composite set of data principles identified in Section 4 below. These tests might be conducted using specific data sources with existing multinational data providers, at a national or landscape scale with national and regional data authorities, and potentially with private sector data providers that are willing to provide data for a future NDPF. Key questions of interest will be:
  - *How much of the existing nature-related data of relevance to the target use cases for a NDPF meet all of the data principles?*
  - *Where are the biggest gaps in need of priority investment through collaborative enhancement projects?*
- Testing the connectivity of upstream data sources with the proposed technical design of a NDPF. These tests might also be conducted with existing multinational data providers, national and regional data authorities and private sector data providers. Key questions of interest will be:
  - *How best can a NDPF connect to relevant data sources from its upstream qualified data providers?*
- Testing of the connectivity of the NDPF to downstream customers, including market data and analytics intermediaries and end users, both corporates and financial institutions. Key questions of interest will be:
  - *What are the specific data needs different customers will have of a NDPF?*
  - *What rules, protocols and tools, such as application programming interfaces (APIs), will need to be developed, given their existing data management infrastructure?*
- User interface and user experience (UI/UX) testing to ensure the proposed NDPF delivers the maximum time and efficiency benefits to users.

These pilot tests will also enable the project team to evaluate and test approaches related to other key design choices for any future NDPF. For example:

- Licensing arrangements that will create the right access arrangements and incentives to meet the overriding objective that a NDPF provide open access to a core set of nature-related data for the use cases of corporate reporting, target setting and transition planning;
- The design of a sustainable financing model for a NDPF, given the insights about the necessary licensing and data acquisition costs to support the target use cases; and
- Provision of consistent, reliable metadata to aid transparency, consistency and assurability.

Organisations interested in nature data pilot testing against the composite data principles outlined in this document and/or testing of a prototype NDPF are encouraged to contact the TNFD Secretariat team with a brief expression of their interest at feedback@tnfd.global.

Depending on interest and demand, the Taskforce may need to select a manageable portfolio of pilot tests to support and learn from over the course of 2025. The TNFD Secretariat might also encourage multiple interested parties to work together to undertake collaborative pilot testing.

3.3. Intended outcomes

The Taskforce currently envisages that Phase 3 will conclude in the fourth quarter of 2025, subject to the insights and learnings from pilot testing and the readiness of partners across the nature data value chain and funding partners to proceed. Phase 3 will likely conclude with:

- Publication of a final development plan for a NDPF; and
- A roadmap of priority value chain upgrade projects with partners, for which the Taskforce and its partner organisations would then seek funding, to commence in Phase 4.

The subsequent sections of this roadmap document provide further details of the proposed approach to each of the three components of the Phase 3 pilot testing.

4. A principles-based approach

As outlined above, the next task of the initiative proposed in this roadmap is to finalise a composite set of data principles as the foundation for upgrading the quality, timeliness and assurability of nature-related data for market participants.

4.1. The central role of data principles

Data principles are foundational to any data management platform or ecosystem. As outlined earlier, new sources of demand for nature-related data, notably from the private sector, and new requirements from standards-setting organisations and market regulators have introduced new requirements for data quality, timeliness and decision usefulness. The fitness for purpose of nature data now needs to meet data standards from three different domains:

- **Scientific data standards** – to ensure the scientific credibility of the data being provided;
- **Open data standards** – to adhere to international best practice for open data sharing; and
- **Corporate reporting data standards** – to ensure that nature data meets the ultimate end-use requirements for corporate reporting and public disclosure.

There are existing data standards for all three types listed above and form the basis of the TNFD's proposed approach to finalise a composite set of data principles meeting scientific, open source and market usability requirements. Some of these data principles and standards are outlined below, but this list is not exhaustive and does not include all data types. Consideration needs to be given to primary, secondary and proxy data and its translation into associated metadata and data models.

Existing data standards and frameworks

Science-based data principles and standards

- Darwin Core standard for biodiversity data
- Biodiversity Information Standards (TDWG) guidelines
- ISO 19115:2003 for Geographic Information Metadata
- Collective benefit, Authority to control, Responsibility and Ethics (CARE) Principles for Indigenous Data Governance

Open-source data principles and standards

- Quality – Findable, Accessible, Interoperable, Reusable (Q-FAIR) including FAIR principles
- Collective benefit, Authority to control, Responsibility and Ethics (CARE) Principles for Indigenous Data Governance
- INSPIRE (EU) and GEMINI (UK) data principles
- Open Knowledge Foundation's (IOKF's) Open Definition
- Creative Commons (CC) licenses
- Open Data Commons (ODC) licenses
- World Wide Web Consortium (W3C) Data on the Web Best Practices
- Project Open Data Metadata Schema
- Open Data Charter (ODC) Principles
- Use of non-proprietary file formats (e.g., CSV, JSON)

Corporate reporting data principles and standards

- Qualitative characteristics of useful information in the IFRS *Conceptual framework for financial reporting* issued by the International Accounting Standards Board (IASB)
- Data principles from the Sustainability Assurance standard (ISSA 5000) published by the International Audit and Assurance Standards Board (IAASB) in September 2024

As noted earlier, corporate audit and assurance data requirements for sustainability reporting have only recently been clarified by the IAASB, building on earlier guidance from the IFRS. These tests on the appropriateness of data used for public disclosure included in the IAASB's sustainability assurance standard, issued in September 2024, are:

- Relevance;
- Completeness;
- Reliability;
- Neutrality; and
- Understandability.

The cross-referencing of these three sets of reference standards and data principles and grouping of similar concepts and terms reveals an aggregate list of required data standards. These should guide future upgrades of nature data upstream in the value chain and serve as the principles for the data entering the proposed NDPF.

Table 1: Cross-referenced standards and data principles

	Science-based data principles	Open-source data principles	Market disclosure data principles	Composite list as a reference set for this initiative
Transparency and verifiability	x	x	x	x
Accuracy and faithful representation	x	x	x	x
Accessibility and usability	x	x		x
Relevance			x	x
Timeliness		x	x	x
Reliability and completeness		x	x	x
Comparability and consistency	x	x	x	x
Interoperability		x	x	x
Clarity and understandability		x	x	x
Responsiveness and inclusivity		x		x
Privacy, ethics and protection		x		x

4.2. Key data principles

1. **Transparency and verifiability**: Provide an accurate summary of the available data in non-technical language. Clearly document the sources, methodologies, underlying assumptions and processes used in data collection and processing. Ensure users understand the context and limitations of the data and that the data faithfully represents the phenomena it purports to represent.
2. **Accuracy and faithful representation**: Provide high-quality, reliable and precise data that is complete, neutral and free from error. Regularly validate and update the data to reflect the most accurate information possible.

3. **Accessibility and usability**: Make data easily accessible to all potential users, ensuring it can be retrieved and used free from unnecessary barriers. Ensure the ease with which users can find, retrieve, understand and use data.
4. **Relevance**: Ensure that the data provided is relevant to the needs of the user community and can support meaningful decision-making and analysis. Ensure data is capable of making a difference in the decisions made by users, showing it has predictive value or confirmatory value.
5. **Timeliness**: Provide data that is up to date and reflects the most recent conditions or trends. Establish regular intervals for data updates to make information available to decision makers in time to influence their decisions.
6. **Reliability and completeness**: The data contains all the necessary elements and observations for the given purpose or analysis. The data can be relied on to be consistent and free from errors across time and sources.
7. **Comparability and consistency**: Maintain consistent data formats, structures and definitions across datasets to facilitate ease of use, comparison and integration. Help users to compare data and choose among alternatives.
8. **Interoperability**: Design data systems to be compatible with other datasets and platforms, enabling users to combine and analyse data from different sources.
9. **Clarity and understandability**: Ensure data is presented in a clear, concise and understandable manner, with appropriate metadata and descriptions to guide users. Classifying, characterising and presenting information clearly and concisely makes it understandable.
10. **Privacy, ethics and protection**: Uphold people-oriented, ethical standards in data collection and sharing, respecting privacy and avoiding harm to biodiversity or communities involved in data collection. Include security to protect data integrity and prevent unauthorised access or tampering, ensuring that sensitive information is adequately safeguarded.

Application of these data principles will play a foundational role in the implementation of both the upstream nature data coverage and quality improvement programs undertaken with data provider partners and the design of the NDPF so that market participants downstream can access nature-related data they can rely on and that meets their requirements.

Additionally, **responsiveness** and **inclusivity** in regard to user feedback and queries, making adjustments or providing support as necessary to enhance the usability of the data, is key to making nature data accessible for decision-making. It is important that the needs of a diverse user community, including non-experts, is considered, for example, by providing educational resources or simplified data products.

5. Investing in upstream data collection and aggregation capabilities

As outlined above, data principles for the assurance of nature-related corporate reporting and recommended metrics for corporate reporting and target setting have been established in the past 12 months. Those two prerequisites make this the right time to proceed with pilot testing to ascertain the extent to which data exists across geographies and biomes that is aligned to the recommended metrics and satisfies the data quality principles for market usability.

5.1. Metrics for pilot testing existing data sets and sources

Aligned to the scope of this initiative, the nature data pilot testing planned in 2025 will reference the metrics recommended by the TNFD, SBTN and the Nature Positive Initiative (NPI). More specifically, the focus will be on relevant state-of-nature metrics and some metrics related to impact drivers/pressures that are interconnected with land-use measurement, such as land-use change:

- The TNFD core global disclosure indicators C1.0, C1.1 and C5.0;
- For SBTN, the Pressure and State-of-Nature metrics (including biodiversity SoN) that relate to the Step 1b Value Chain Assessment will be prioritised together with Ecosystem-level biodiversity metrics; and
- The recently released Nature Positive Initiative (NPI) draft state of nature metrics. The NPI metrics may be subject to change following the closure of the NPI consultation period on 8 November 2024.

These indicators are shown in the table below.

Table 2 : A summary of the metrics aligned to the target use cases for this initiative

	Metric Reference	Category	Indicator
TNFD	C1.0	Land/Freshwater/Ocean Use change	Spatial Footprint
	C1.1		Extent of Land/Freshwater/Ocean Use Change
	C5.0	State of Nature	Placeholder Indicator: Ecosystem Condition
			Placeholder Indicator: Species Extinction Risk
Nature Positive Initiative	IND 1	Universal: Ecosystem	Ecosystem Extent (Change and Classification)
	IND 2	Universal: Ecosystem	Ecosystem Condition
	IND 3	Universal: Ecosystem	Landscape Intactness
	IND 4	Universal: Species	Species Extinction Risk
	IND 5	Case-specific: Ecosystem	Extent of Highly-Threatened or Local Value Ecosystems (Change and Classification)
	IND 6	Case-specific: Ecosystem	Condition of Highly-Threatened or Local Value Ecosystems
	IND 7	Case-specific: Ecosystem	Proportion of Natural or Semi-Natural Habitat
	IND 8	Case-specific: Ecosystem	Condition of Semi-Natural Habitat
	IND 9	Case-specific: Species	Species Population Abundance

SBTN		**Land Use and Land Use Change**	Ecoregion Intactness Index (Beyer et al, 2019)
			Ecosystem integrity index (Hill et al 2022)
			SBTN Natural Lands Map
		Water Use	Global Water Quantity Model (Hogeboom, 2020)
			SBTN Unified Water Availability Dataset (Camargo et al, 2023)
		Water Pollution	Global Water Quality Model (McDowell, 2020)
			SBTN Unified Water Pollution Dataset (Camargo et al, 2023)
		Soil Pollution	Global Soil Information System (FAO)
			Soil Organic Carbon Stock (Soilgrids)
		Species-Level Biodiversity	Species Threat Abatement and Restoration Metric (STAR) (Mair et al, 2021)
			Freshwater fish rarity-weighted richness (IUCN)
			Amphibian rarity-weighted richness (IUCN)
			Freshwater endemism (WWF – Risk Filter Suite)
			Freshwater biodiversity richness (WWF – Risk Filter Suite)
			Global hotspot for soil nature conservation
		Ecosystem-Level Biodiversity	Fragmentation status of Rivers (WWF – Risk Filter Suite)
			Ecosystem services degradation level (WWF – Risk Filter Suite)
		NCP	Critical Natural Assets

Nature Positive Metrics for the pilot phase will be derived from the list that can be found here.

5.2. Gap analysis and intervention prioritisation

Through pilot testing of the coverage and quality of existing nature data sets and sources for each of these target metrics, the intention is to identify critical gaps and priority initiatives in need of future investment. These gaps and priorities might be by biome, geography or data set. The pilot tests will also help to identify the consistency and comparability of key attributes of existing nature-related data that market participants would expect to see in the metadata made available to them, such as the timeliness/currency of the data, resolution and collection methodology.

With the benefits of working with data provider partners to generate specific, granular insights from pilot testing, the intention will be to describe and prioritise a set of priority nature data value chain enhancements to present to funders at the end of 2025.

6. Improving downstream accessibility to decision-useful nature data

As first proposed in its scoping study published in August 2023, the TNFD and its partners believe there is a case for establishing a Nature Data Public Facility (NDPF) to provide open access to a baseline amount of nature data relevant to corporates and financial institutions for their corporate reporting, target setting and transition planning activities. Such a facility could:

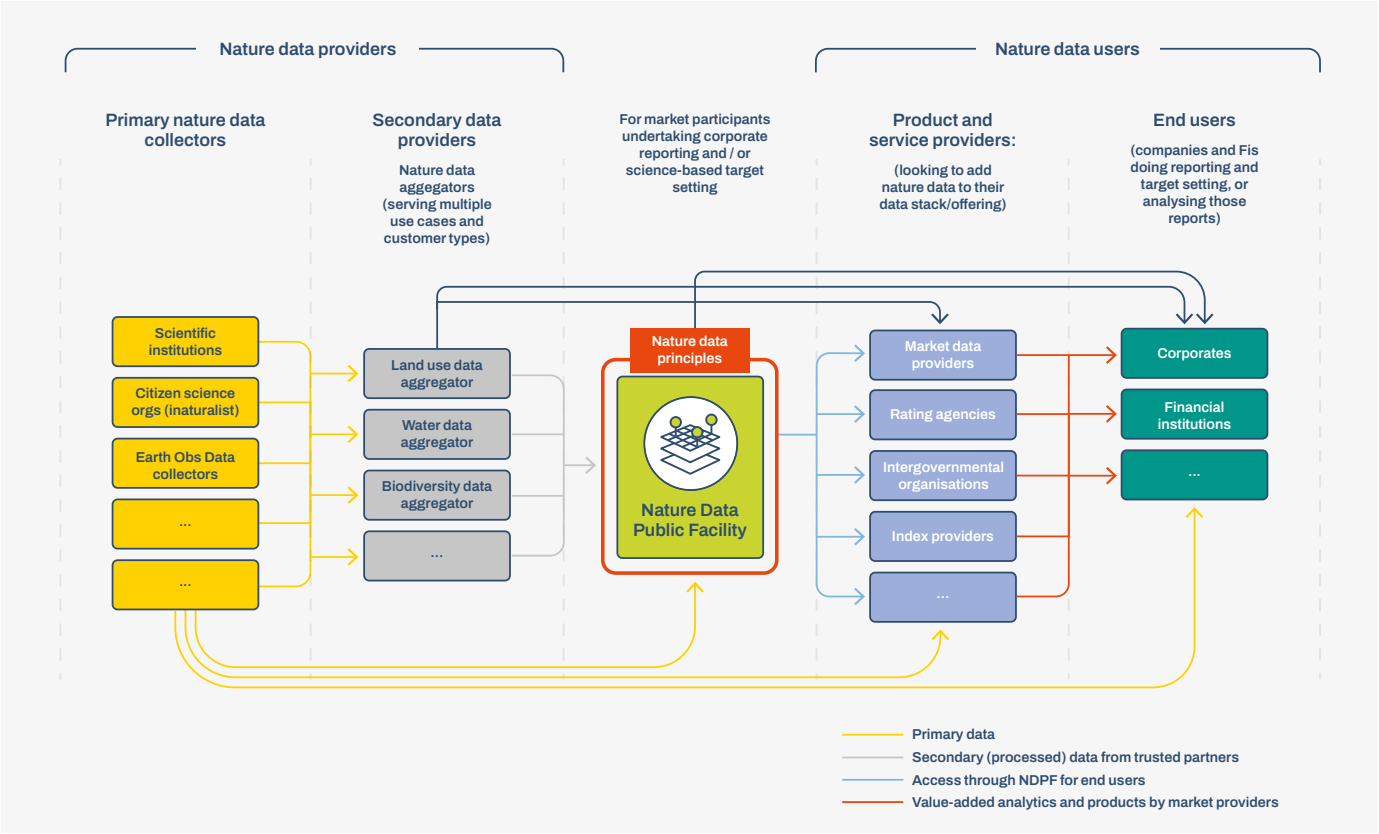
- Lower cost and confidence barriers to further voluntary market adoption of the recommendations of the TNFD and use of SBTN target setting methods;
- Reduce compliance costs associated with regulatory requirements, such as CSRD and other requirements in Europe and in other jurisdictions;
- Support and accelerate future adoption of voluntary reporting standards, such as those of the GRI and the International Sustainability Standards Board (ISSB); and
- Enable, at minimal or no cost, small and medium-sized enterprises (SMEs) across geographies and value chains to assess their own dependencies and impacts or nature and meet new data requests from their downstream customers.

The TNFD will work with a range of nature data value chain partners to pilot test a beta version of a Nature Data Public Facility (NDPF) in 2025.

Over the past six months, an international panel of experts assembled by the TNFD has continued to evaluate the best way for the NDPF to be configured to connect to the upstream data already collected by many data providers and aggregators and to provide open access to downstream data users.

6.1. How might a Nature Data Public Facility be configured?

Figure 3: Concept model for a Nature Data Public Facility



Goals and ambitions

- To deliver the following benefits to corporate and financial institution nature data users across geographies and sectors, ranging from small and medium-sized enterprises (SMEs) to multinational organisations:
  - Accessibility: Improve access to nature data for market participants;
  - Cost: To reduce the cost to end users to access nature data;
  - Timeliness: Improve the timeliness and frequency of nature-related data available to market participants;
  - Comparability: Provide a high level of comparability within and across sectors, geographies and biomes of nature; and
  - Assurability: Improve the quality of nature-related data available to market participants by providing access to data that satisfies a set of established principles and by increasing the prospects of its assurance by third-party assurance providers to enable public reporting.

- Enable, and participate in, collaborative partnerships and initiatives across the nature data value chain, particularly with sustainable funding for. upstream nature data providers as strategic partners.
- Contribute to the delivery of the goals and targets of the GBF by enabling and accelerating private sector action, particularly in the implementation of Targets 15 and 19 of the GBF.

Focus and priorities

- Use case focus: Initially, the existing use cases of nature-related assessment and nature-related reporting (TNFD), nature-related target setting (SBTN) and nature transition planning (TNFD, Glasgow Financial Alliance for Net Zero (GFANZ));
- Target user profiles: Individual nature data users from companies and financial institutions, from small SMEs to global multinationals, involved in internal activities related to these three use cases;
- Types of data focus: Improving access to state-of-nature (input) data needed by market participants for the purposes of the use cases above; not initially on reported impact, dependency or risk (output) data from the organisation;
- Position along the global nature data value chain: Focus on connecting downstream market-data providers and end users,through APIs, to nature-related data collected and assembled by upstream qualified data providers.
- Geographic coverage: Provide benefits to market users and collaborate with value-chain partners across all geographies;
- Realm/biome coverage: Improve market access to data related to all four realms of nature, excluding GHG-related data; and
- Sector coverage: Improve market access to data for companies across all sectors and all types of financial institutions, including sector prioritisation.

6.2. How to add value to users and the nature data value chain as a whole

- Focus on data, not data products and analytics: Focus on providing access to quality data layers relevant to the use cases above and capable of being displayed geospatially. Avoid the provision of value-adding analytics or tools, but instead seek to help improve their quality;
- Curating not collecting data: Use data exchange technologies and methods to connect to and present data provided by existing qualified data providers;
- Value-chain partnerships: Form strategic collaborative partnerships with upstream qualified data providers (both primary and aggregators) and with downstream market-data intermediaries as wholesale users of the facility. Data provider partners may be government, civil society or commercial organisations;

- Best-in-class data standards: Uphold a set of data standards governing all data in the facility (as outlined above) to ensure consistency with scientific data standards, open data standards and market usability data standards; and
- Value-chain funding: Use the facility to help finance upgrades of nature data with upstream non-commercial qualified data partners over the long term that are aligned with the data principles promoted by the facility.

6.3. Required capabilities

- An independent, globally representative governance model suitable for a public good service provider;
- A small core management and operations team with skills and capabilities in partnership design and management, data standards development, legal and licensing expertise and administration, and market engagement;
- Funding support and relationships capable of funding the core operations of the facility, but also financing investments in collaborative initiatives to upgrade the nature data value chain as a whole, particularly with upstream non-commercial data providers and aggregators;
- A technical team with resource management and programme support capacity; and
- A technology architecture that leverages open source principles and existing architectures.

6.4. Connection to relevant data layers from diverse data sources

One of the key findings from the scoping study was that a large amount of nature-related data is already collected and aggregated by a significant number of specialist nature data organisations. These include national statistical agencies and environment ministries, scientific and conservation and international organisations, and multi-party consortia such as the United Nations' Environment Programme World Conservation Monitoring Centre (UNEP-WCMC), member agencies of the Committee on Earth Observation Satellites (CEOS), the Group on Earth Observations, Biodiversity Observation Network (GEO BON), the Global Biodiversity Information Facility (GBIF), the International Union for Conservation of Nature (IUCN) and others.

The value proposition of the proposed data facility is not to duplicate the skills and capabilities of these organisations in defining, collecting, cleaning and aggregating nature-related public data. Instead, a NDPF would connect to the data layers that are owned and managed by these data providers that are relevant to the use cases for which the data facility is being created and that meet its data standards.

For those data layers that meet its data principles, a NDPF will seek to negotiate data access and use agreements with data providers.

6.5. Potential features and functionality

Based on feedback from market participants, including the insights gained from pilot testing of the TNFD's LEAP assessment approach over an 18-month period in 2022 and 2023, the following features and functionality are likely to be required to meet the needs of market participants.

Open access data

The central feature of the proposed NDPF is that it would provide transparent and open access to a foundation set of nature-related data to support corporate reporting, target setting and transition planning. The driving ethos of a NDPF is that the planet is the client. This approach also recognises that small and medium-sized enterprises (SMEs) that typically have no capacity to pay for essential data will also need access to relevant nature-related data. This will improve their own business strategy and resilience and help them to meet the anticipated nature-related data needs of their downstream customers, in line with value chain reporting requirements, such as those recommended by the TNFD, ISSB, GRI, and now in regulation, including CSRD.

"On average, it takes half a day per source just to figure out if it's worth using."

"I'm not against paying for licenses, but it becomes a problem when you have to pay for 20 licenses and they're all different software you have to learn and pay for as well!"

An intuitive experience for non-experts

It is envisaged that the user experience of the proposed NDPF would be to guide users towards available nature data of interest, which could be overlaid on corporate asset location data.

"I want to get to what I need quickly and I don't want to have to plough through lots of mismatches. I want to tell you what I'm looking for and you give it to me."

Customisable user journey

The data layers available to users through the NDPF should be curated, based on the user profile of each user. This recognises that the data needs of an analyst in the corporate reporting or sustainability team at a large national forestry company will be different from those of a small business farmer and different again for a portfolio manager at a global financial institution.

Clear linkage to the target use cases

The NDPF should be clearly linked to the user's workflow, in this case to the LEAP approach, as the underlying internal assessment activity that informs corporate reporting, target setting

and transition planning. The NDPF can highlight which data is relevant for different stages of a LEAP assessment or is linked to a specific disclosure requirement. It might also enable sorting of metrics and data layers by sector.

"It's so easy to bundle data into one platform but the important thing is to help us prioritise. Otherwise, we still end up in the maze of data."

"Only show me datasets that are relevant to my sector."

Easy interface with corporate asset location data

Given the location-specific context of nature-related issues, the foundational element of the user experience would need to be a geospatial user interface with the ability to draw polygons to demarcate locations (asset or value chain operations) of interest. Users will then be able to overlay relevant state-of-nature data layers provided by qualified data providers that meet the NDPF's data principles.

Pilot testing of the TNFD's LEAP assessment approach emphasised the confidentiality of corporate and value chain asset location data and highlighted the requirement not to upload or store sensitive corporate data on third-party servers. It also revealed that many organisations have poorly organised asset location data, a critical prerequisite for LEAP analysis. As such, pilot testing of a beta version of the NDPF will provide an opportunity to test the best way to manage highly fragmented corporate asset location data.

Connectivity into enterprise management platforms

The NDPF will also require an application programming interface (API). For market service providers and advanced users, APIs and data export functionalities will facilitate the integration of available data into external applications and analytical models. This may include functionality to enable batch processing across multiple locations to meet the needs of multinationals with complex supply chains and portfolio fund analysts with large, diversified holdings across sectors and geographies.

Signposting to other data sets and sources

Users of existing nature data sets and sources report significant frustration and wasted time when specific data they are looking for is not available due to lack of coverage, quality or timeliness concerns. The NDPF should be configured to signpost to further options when no data is available and/or enable users to register their need for data specific to a location.

"After checking the global datasets, I need more detail but I have nowhere to go other than trawling through different providers' websites, not to mention each provider's methodology and small print on licenses."

Easy access to resolution and data quality

Existing nature data users report difficulty in quickly ascertaining the resolution of the data they are interested in. The NDPF will need to clearly identify data resolution and could provide a filter for users to select from different resolutions if/when available.

"Before I spend any time on a dataset, I want to know if it's at the right resolution for me or if I will need to work on it to get it to the right resolution."

6.6. Metadata transparency

The NDPF will also need to make it quick and easy to compare metadata, including methodologies and licensing arrangements in a similar format, associated with data they wish to use. This can be achieved through standardised formats such as a data factsheet, agreed guidelines on data models, common formats to document data collection methodology and common licensing arrangements.

The metadata standards proposed for the NDPF are those from ISO 19115 (Geographic Information – Metadata), which is widely used for geospatial data. This standard provides a comprehensive framework for describing geographic information and services. This would provide a common reference point for the metadata provided by data providers and available to NDPF users.

Table 3: Metadata table

Category	Guideline	Description
Spatial information	Coordinate reference system (CRS)	Specifies the geographic coordinate system used, ensuring accurate spatial representation and analysis.
Spatial information	Spatial resolution or scale	Indicates the level of detail in the data, such as pixel size for raster data or minimum mapping unit for vector data.
Spatial information	Spatial extent (bounding box co-ordinates)	Defines the geographic area covered by the dataset, typically using minimum and maximum latitude and longitude.
Spatial information	Data format (eg raster, vector)	Describes how the spatial data is structured (e.g., grid-based raster or point/line/polygon vector).
Temporal information	Date of data collection	Specifies when the data was gathered, crucial for understanding its relevance and currency.
Temporal information	Temporal resolution (if time series)	Indicates the frequency of data points in time-based datasets (e.g. daily, monthly, annually).
Temporal information	Update frequency	Describes how often the dataset is refreshed or revised, helping users assess its ongoing reliability.

Category	Guideline	Description
Data provenance	Data source(s)	Lists the origin(s) of the data, including organisations, surveys or instruments used in collection.
Data provenance	Collection methodology	Explains the techniques and procedures used to gather the data, ensuring transparency and reproducibility.
Data provenance	Processing steps	Outlines any transformations or analyses performed on the raw data before publication.
Attribute information	Description of each attribute/ variable	Provides clear explanations of what each data field represents.
Attribute information	Units of measurement	Specifies the units used for quantitative data, ensuring correct interpretation and use.
Attribute information	Classification schemes (if applicable)	Describes any categorisation systems used for qualitative data.
Quality assurance	Accuracy assessment methods	Explains how the data's precision and reliability were evaluated.
Quality assurance	Known limitations or biases	Discloses any recognised shortcomings or systematic errors in the data.
Quality assurance	Confidence levels (if applicable)	Indicates the degree of certainty associated with the data, often expressed statistically.
Access and usage	Licensing information	Specifies the terms under which the data can be used, shared or modified.
Access and usage	Use restrictions	Outlines any limitations on how the data can be applied or distributed.
Access and usage	Citation requirements	Provides the correct format for acknowledging the data source in publications or products.
Technical specifications	File format(s)	Lists the digital format(s) in which the data is available (e.g., GeoTIFF, Shapefile).
Technical specifications	File size	Indicates the storage space required, helping users plan for data transfer and storage.
Technical specifications	Software requirements	Specifies any particular programmes or tools needed to access or analyse the data.
Thematic categories	Primary risk type (e.g. habitat loss, water threats)	Categorises the main environmental issue addressed by the dataset.

Category	Guideline	Description
Thematic categories	Related ecosystems or species	Identifies the specific natural systems or organisms relevant to the data.
Contact information	Data provider/owner	Lists the organisation or individual responsible for the dataset.
Contact information	Technical support contact	Provides details for obtaining help with data usage or interpretation.
Versioning	Version number	Identifies the specific iteration of the dataset, allowing users to track updates.
Versioning	Date of last update	Indicates when the data was most recently revised or added to.
Versioning	Change log	Summarises modifications made in each version, helping users understand data evolution.
Interoperability	Compliance with relevant standards (e.g., ISO, OGC)	Indicates adherence to recognised industry standards, facilitating data integration and exchange.
Interoperability	Metadata schema used	Specifies the structural framework used to organise the metadata, ensuring consistency and searchability.

6.7. Incorporating relevant private-sector data

One of the key insights from the TNFD's data-gap analysis in 2022, and again in focus group discussions to inform this roadmap, is that the highly fragmented and partial coverage of global state-of-nature data today has led some corporates and financial institutions to invest millions of dollars annually in their own primary data collection efforts and data management systems. For example, for some complex mining projects, the collection and analysis of nature and biodiversity-related data for project development approval and ongoing operational compliance can run into tens of millions of dollars over the life of the project. Furthermore, much of this valuable site-level, state-of-nature data often resides in closed-access corporate data management platforms.

This is a missed opportunity for all stakeholders. First, companies are incurring significant costs to acquire data that might reasonably be available from public sources if better collected and curated. Second, the primary data collected by private sector actors about a particular location is not available to other key stakeholders in the same location, including governments, local communities and other commercial operations with shared dependencies on the same localised ecosystem services.

The NDPF could change the value equation for nature-related data – reducing costs to private sector actors and connecting to private sector sources of data that meet the facility's data

principles for the benefit of a wider group of stakeholders. The prospect of reducing direct data collection, quality assurance and management costs offers a significant commercial incentive. Companies could provide data that they are uniquely placed to continue to collect into a shared platform and do so in a way that supports international best practice.

The potential of these co-opetition approaches (a strategy combining cooperation and competition) for data collection and sharing will be explored through pilot testing.

6.8. Catalysing downstream, value-added product and service innovation

In addition to benefits for corporate and financial institution end users, the design of the NDPF explicitly seeks to enable commercial, not-for-profit and other market intermediaries to provide value-adding data and analytic, products and services downstream from the facility. By providing the foundational data layers of central interest to the corporate reporting, target setting and transition planning needs of market participants, the NDPF can enable data product and analytics providers to focus resources on product and service innovation – as opposed to data sourcing, aggregation, cleaning and harmonisation.

6.9. Data sovereignty for data owners and licensing consideration

There is wide consensus that current data licensing models, terms and conditions must evolve to recognise the critical role and value of data, specifically climate, biodiversity and nature-related data. Consideration must be given to data-use terms, recognising data ownership, the role and value of data stewards (including landowners and stewards such as farmers and Indigenous Peoples) and the creation of intellectual rights, including citations about whether data is public or private.

Agreement on, and adoption of, common nature-related data licensing terms that recognise the use of non-commercial, nature-related data as a public good for the specific use cases of corporate reporting (i.e. against TNFD recommendations) and target setting (i.e. following SBTN guidance) is key to facilitating data access and use. The use of a tiered licensing structure is required that is harmonised with open data terms and conditions, but also recognises the need to extend nature data licensing beyond open use. This approach would ensure the consistency of data used on a commercial and non-commercial basis.

6.10. Intellectual property and value creation considerations

The approach for the NDPF proposed above will provide access to data that is not its own. As a federated data model the NDPF will not have data sovereignty issues to address. The IP rights over the data utilised by the NDPF will reside with the owners of the data or with data aggregators who have secured appropriate data access and licensing arrangements. It will provide data that may reside under several different and varied licensing formats, terms and conditions.

To facilitate ease of access and use, endeavours need to be made to harmonise data licensing, across data providers, for use under similar terms and conditions. Where data is

not able to be provided open and free, consideration must be given to the role of the NDPF in facilitating commercial access, supply and use, including fees associated with license payments. Licensing types the NDPF may need to consider further, including through pilot testing in 2025, include:

- Academic licences;
- Commercial reuse licences;
- Internal (or limited) use licences;
- Data exploration/innovation licences; and
- Licensing for charities/NGOs.

6.11. Governance and sustainable funding considerations for a NDPF

As outlined in this roadmap, the proposed NDPF – whether ultimately pursued as a new greenfield initiative or through the upgrading of an existing nature data capability – is envisaged as a systems-level public use capability. As such, it would not be an originator or aggregator of nature-related data upstream, would not provide analytic value-adding services downstream, and would not be an investor in nature-related data. Moreover, it is not a market actor, standards setter or an assurance provider. It is not intended to handle data, but to curate and facilitate better, faster, cheaper access to decision-useful, nature-related data.

Given its role facilitating market access to high quality nature-related data, how a NDPF might be organised and governed is important. For example, a commercial body would not have the perceived independence to contribute to, and uphold adherence to, nature data standards. Similarly, a platform that is governed in the interests of a subset of market actors – maybe certain users, a few incumbent providers or a group of governments – may not have the legitimacy or support to be able to function effectively. Given that the data IP rights reside with data originators, the final formulation of the NDPF governance framework will be negotiated during Phase 3 and will include representatives of the key nature data providers.

The same is true of financial resources. The proposed facility will fail in its envisaged role if, for example, it was to be subscription funded by a group of large users or commercial intermediary data providers. Similarly, if the facility itself were to charge user fees for helping users find the right providers, or charge providers a fee for being profiled, it may no longer be seen as a neutral provider operating in the public interest.

In envisioning the potential governance and funding arrangements for the proposed NDPF and the value-chain data improvement initiatives it seeks to catalyse and support, a number of reference models and approaches have been considered. These include existing platforms in the nature data space, in the related climate data space, and as relevant, in other domains. This outreach and learning has provided a wealth of insights that have informed the TNFD's initial thinking about the system components and options outlined below. This will be further considered during Phase 3 of this initiative.

Key considerations include:

- **Governance-critical functions**, notably the integrity and application of a set of data principles (outlined in Section 3 above) that will govern what data is considered fit for purpose to enter the data facility and be made available to downstream users;
- **Institutional components**, e.g. legal form, jurisdictional location(s), board function, representation, composition and responsibilities;
- **Linkages with existing relevant initiatives and organisations**, including existing global nature data providers and similar climate-related data access and facilitation initiatives, such as the NZDPU;
- **Governance implications of the anticipated long-term financing model**, including consideration of the likely sources of long-term funding (e.g. government, philanthropic and/or private sector fee contributions) and their requirements for governance participation, if any; and
- **Short, medium and long-term institutional trajectory**, including the short-term role of the TNFD as a catalyst and incubator during pilot testing and the need to find or create an independent, longer-term governance arrangement independent of the TNFD.

6.12. Functions

Based on the aspirations of this initiative to catalyse collaborative partnerships across the value chain around a set of common data principles, and to provide a technical roadmap for the NDPF specifically, the governance functions required will include oversight of:

- **Data principles**: The negotiation and administration of a set of nature data principles and standards governing the core operations and integrity of the facility and guiding collaborative partnerships across the nature data value chain to enhance the quality, timeliness and assurability of nature-related data;
- **Data access**: The negotiation of access to data from third party data providers whether public, private or civil society organisations, in line with the mission of the facility;
- **Data curation**: Ensuring the capacity of the facility to curate better, faster, cheaper and smarter access for market participants to nature-related data associated with the agreed use cases at the core of the data facility's strategy;
- **Quality assurance**: Upholding the reputation and integrity of the data facility and its programmatic interventions with partners along the nature data value chain consistent with the declared data standards and appropriate internal process and risk management controls;
- **Value chain enabling services**: Ensuring the data facility plays an enabling role with both upstream data providers and downstream market intermediaries providing value-adding analytics services on top of the data provided by the facility; and
- **Funding**: Acquisition and channeling of funds along the data value chain to catalyse upgrades in nature-related data quality.

6.13. Features

Complementing a design linked to specific functions is a set of broader governance options including the following institutional features:

1. **Federated**: A common architecture with sovereign and other decentralised approaches that recognises and supports data custodianship and necessary jurisdictional requirements;
2. **Complementary**: Ensuring close, high-quality functional relationships with existing platforms and providers;
3. **Long-term financial model**: Beginning with philanthropic/public funds and leaving open the option of developing pay-for-offtake arrangements with commercial users over the longer term; and
4. **Institutional trajectory**: Building out from a top-down general approach combined with bottom-up pilots.

6.14. Organisational configuration

As a third level of design consideration, a number of different institutional configurations have been explored, including:

- **Public interest entity**: A classic private, not-for-profit entity, perhaps over time an international organisation;
- **Association (entity or jurisdictional)**: A private, not-for-profit entity with a membership of individuals or organisations;
- **Inter-governmental organisation**: A public, not-for-profit entity with a membership specifically of governments;
- **Franchise (core plus self-organised units)**: A not-for-profit or for-profit platform with a franchised approach enabling jurisdictional or other forms of specialised units to co-exist while taking a common approach;
- **Collective (initiative of existing organisations)**: A not-for-profit or for-profit platform comprising a coalition of existing organisations and initiatives;
- **Extension initiative (not a new entity)**: A platform built on to an existing entity or collaborative platform; and
- **Social enterprise**: A purpose-driven, for-profit enterprise with some element of user charging to deliver activity and impact-enabling revenues.

The final decision on the best organisational option will be determined at the end of the pilot testing phase (Phase 3) and in light of further discussions with potential value chain and funding partners.

In short, once established, the NDPF would provide a distributed, open access global entry point to a decentralised data exchange that connects to nature-related data provided by

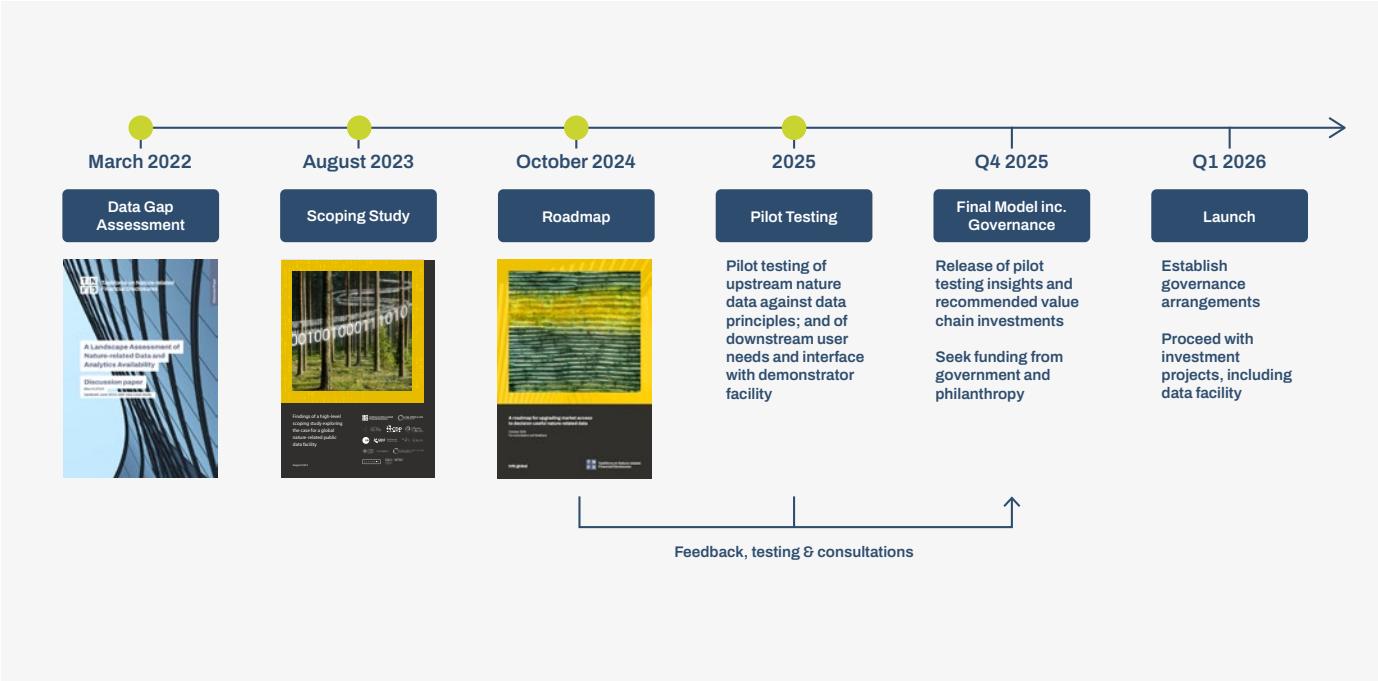
contributing organisations, both public and private, where data meets certain, agreed, methodological and quality standards.

6.15. Next steps

As outlined in Section 3 above, the immediate focus of the TNFD is to pilot test this proposed model for the NDPF using a demonstrator or beta version data facility. This will enable it to determine what is feasible with the stock of nature data available today from a range of data sets and sources and given the user interface/experience needs of market participants.

Whether, when and how best to proceed with the establishment of a permanent open access nature data facility will be determined at the end of the pilot testing period and subject to the availability of long-term funding for such an initiative. The TNFD would not seek to build such a data facility itself, as this is outside its mandate, and remains open as to whether it may be better to commission a new greenfield capability or invest in and upgrade an existing data capability to a new set of specifications, including the data principles that reflect the requirements of the market.

Figure 4: Proposed NDPF programme timeline



7. Request for feedback on this roadmap

Consistent with the TNFD's open innovation approach to the development of its guidance, the Taskforce is releasing this roadmap as a draft for consultation with a 90-day public consultation period, running until 17 January 2025.

The TNFD welcomes feedback from participants across the nature-related data value chain and other stakeholders on the proposed approach, initiatives and considerations outlined in this discussion paper.

Please provide feedback through the TNFD website.

The Taskforce intends to hold a series of webinars and focus groups between January and March 2025 to discuss the feedback it has received and continue to solicit input from interested stakeholders.

8. Expressions of interest – pilot testing

Organisations interested in undertaking pilot testing and sharing their findings with the Taskforce through 2025 are encouraged to contact the TNFD at: feedback@tnfd.global.

Depending on the level of interest, the TNFD will consider encouraging interested and complementary pilot testers across the nature data value chain to collaborate and also share their insights and learnings through a community of practice managed by the TNFD Secretariat.

Appendix:

Glossary of key terms link below

1. Glossary of terms

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