MARKET EFFICIENCY AND INNOVATION

Open-source Biodiversity Data Platform Initiative

Technical scoping paper

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Green Digital Finance Alliance

FINANCE FOR BIODIVERSITY Initiative

Open-source Biodiversity Data Platform Initiative

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Contents

Executive Summary

Seventy per cent of investors believe a lack of available data is a key barrier to making investments that support biodiversity[1]. The main data challenge is to a lesser extent a lack of biodiversity data, but rather that asset location and ownership data is not structured in ways that allow it to be combined with biodiversity data and to enter the risk, valuation, disclosure and impact alignment models of financial service institutions without high transaction costs. It emerged from the stakeholder consultations that information revealing asset geolocation holds the key to unlock the ability of ESG data providers and financial service institutions to deploy the vast amounts of biodiversity data available in financial decision making. Overlaying asset geolocation information with biodiversity data can reveal which assets underlying specific financing instruments are exposed to biodiversity material risks, biodiversity impacts and alignment, and transition valuation risks. In short, it will allow biodiversity risks and impacts to be transmitted to capital markets and to be disclosed. It can also unleash a wave of biodiversity target setting by the financial industry, akin to the net-zero movement on climate, as it will bring FIs data-driven approaches to credibly track progress towards biodiversity targets. Ultimately that will drive the transition towards nature positive capital and financial flows.

It is unlikely that the current gap in asset geolocation data for biodiversity material sectors will be solved by current available data models, as it is sensitive information, which is not explicitly required by disclosure regulation. Hence, without new types of innovative data sharing models the data will remain costly to find and, in most cases, impossible to come by. A platform design sprint engaging 44 institutions from the asset management, asset owners and ESG data provider communities arrived at a first high-level design of a data platform and assessed the readiness of the community to further engage in the platform development process. The reason for implementing a collaborative design sprint was to ensure that the platform design is informed by and supports all other data and metrics initiatives as mapped by UNPRI, United Nations Environment Programme (UNEP) and the Finance for Biodiversity Pledge[2]. The sprint process was also designed to assess the interest of the community participants to continue to engage in the platform development process beyond the sprint period. The community remained engaged throughout the sprint period and confirmed its interest to continue the collaborative platform development efforts into a proof of concept and if successful into a launch and a scaling phase.

A decentralised data exchange mixing open-source features and privacy enhancing technology. The data platform architecture most suited to the current regulatory and market conditions uses a mix of open-source features and privacy enhancing technology. It was found that a requirement for asset geolocation data to be uploaded onto a fully open-source platform would discourage most corporates from participating as data providers. It would inhibit scaling. Therefore, the platform will be designed as a decentralized data sharing network or exchange. An investor or ESG data provider will be able, on the platform, to make a request to a corporate to access asset geolocation data and the corporate data provider can share the data on the platform using privacy enhancing technology to ensure that only the authorized data requester can see the data. It thereby enables the corporate data providers to share data without having to disclose it to competitors. It allows asset geolocation data to stay on the servers of the corporate data providers and thereby comply with data localization regulation. Platform source code, platform data standards, data taxonomy, and a technical governance charter will all be made available open source for full auditability and scrutiny. It is a design most likely to encourage adoption, as corporates can improve transparency without jeopardising market position and compliance with data localisation requirements.

User data needs. The engagement process uncovered the specific asset geolocation data needs of each segment of the financial system. For mid-size to smaller asset managers, asset geolocation data is needed as an input into engagement processes with investee companies, and, over time, to enable the development of biodiversity-positive investment options. Large financial institutions need geolocation of asset data to enable the formulation of biodiversity-related institutional commitments, such as a net zero deforestation target. Asset owners need it for portfolio biodiversity footprint analysis, based on metrics rooted in geolocation-specific biodiversity material risks, dependencies and impacts. ESG analytics and research providers need it to increase the accuracy of biodiversity footprint scores of portfolios or securities.

Towards a Taxonomy. The platform will focus on asset geolocation data of the most biodiversity material sectors, starting with agriculture. Assets, geolocation and ownership are the three data sets to be included on the data platform, for which a detailed data taxonomy will be developed as part of the platform's technical charter. ISIN codes will be used to link geolocation data with financial instruments.

Incentive structures. Regulatory incentives for corporates to disclose asset geolocation are currently weak, as requirements to disclose the geolocation of corporate physical assets are only present in a few jurisdictions; however, it is an issue gaining increasing attention. Two main types of incentive have been identified during the design sprint. Firstly, incentives that are built into the platform design, allowing corporate data contributors to strike a balance between disclosure and privacy. Secondly, incentives from external demand, including investor and regulatory demand such as the emerging Sustainable Finance Disclosures Regulation (SFDR). A future platform host organisation will play an important role as a catalyst to strengthen both categories of incentives.

Governance stack. A series of governance mechanisms will guide the interaction of data users and data contributors with the platform. It is a membership governance model, whereby the community of users and contributors are part of the governance architecture. The platform governance mechanisms are organised into a stack of procedures and codes shaping the platform mode of operation. The three main layers in the governance stack are: data vision and mission; data technical charter; and, platform membership agreements.

A sustainable scaling model. A revenue model will cover the fixed costs of the standard platform infrastructure to ensure it is constantly responding to market demand and is not overly dependent on grant funding long-term. A tiered membership fee model has emerged as a preferred option by the community, with a fee structure based on size of assets under management for financial institutions.

Proof of Concept as next step of platform development. The sprint confirmed a willingness and interest by the community to continue to further specify the functionalities, data supply side, and the commercial model to take the infrastructure to the next level in its development. A four phase, step-by-step iterative approach to building the platform was defined. The most important short-term elements include the identification of a host organisation, and a platform Proof of Concept (PoC) development. During the PoC stage an experimental community of data users and contributors from the participants of the design sprint will test the platform features for adjustment prior to the larger platform build and scaling phases.

1

Introduction

Seventy per cent of investors believe a lack of available data is a key barrier to making investments that support biodiversity[3]. This seems like a paradox in a world defined by explosive growth in data supply. In the last decade, the amount of data created, captured, copied, and consumed increased to 59 trillion gigabytes, which is an almost 5,000% growth[4]. Earth observation satellites are orbiting the planet in ever increasing numbers, registering real-time changes related to crop growth, land use, soil moisture, floods, emissions and much more. In addition, more than 250 biodiversity databases exist, many of which are open source with free access. Still, investor questions, such as whether their portfolios contribute to deforestation of the Amazon or are fueling the rapid disappearance of pollinators or other species, remain unanswered.

Asset geolocation data holds the key to unlocking a wave of biodiversity disclosure and impact target setting across the financial industry, similar to the current net-zero movement on climate. If made available, asset geolocation data can be overlaid with the wealth of existing biodiversity data, to offer monitoring of biodiversity material risks and impacts of portfolios to guide capital reallocation strategies to deliver on biodiversity targets. These data would enable a shift in the entire ESG data market, from its current state of being forced to rely on proxies, sentiment data or sector averages to calculate biodiversity risk metrics to a new state of play, where input data is actual geolocation-specific biodiversity risks, dependencies and impacts. This would reflect actual biodiversity risks rather than modelled numbers from macro statistics.

To arrive at this new state of play, innovation in data models is required. This is because incentives for corporates to disclose asset geolocation data are currently low in the absence of regulatory requirements and clear market incentives. Data repositories are starting to develop for asset geolocation of some of the most climate exposed sectors, in order for FIs to properly calculate and price physical climate risks. Work led by the Spatial Finance movement, spearheaded by University of Oxford[5], Smith School, WWF[6], and many others, is based on new types of data model. Similar innovation needs to be introduced, to make asset geolocation data for biodiversity material sectors available to ESG data providers and investors. This would help to significantly accelerate the translation of biodiversity information into decision-ready investor data.

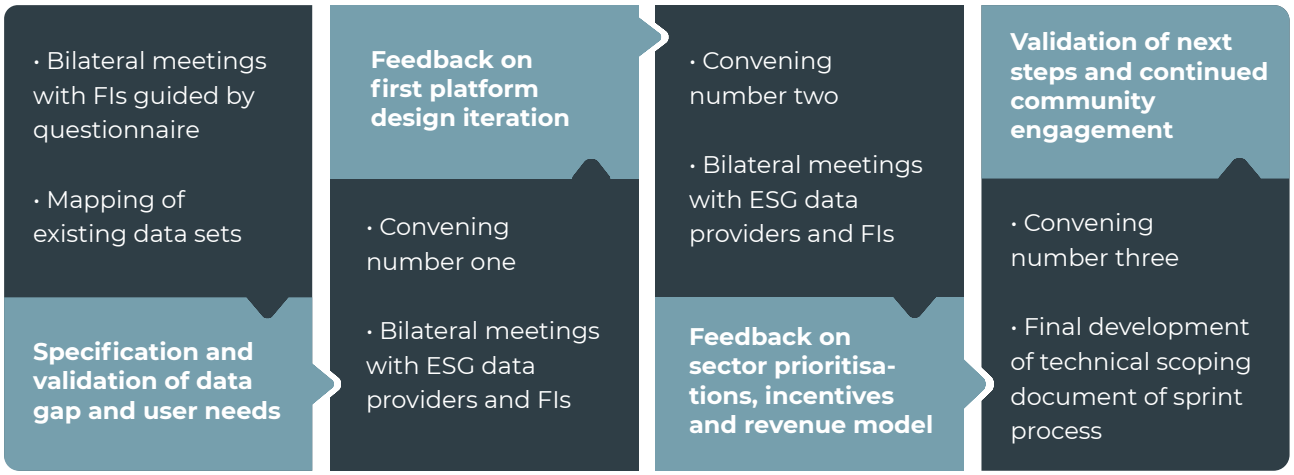
A new type of data infrastructure could enable this to develop alongside regulatory dialogue, to ensure that emerging biodiversity disclosure regulation explicitly calls for geolocation-specific information. This Technical Scoping Document outlines the main design features of such a new digital platform infrastructure, that would enable the financial and corporate communities to start to shape geolocation data sharing standards through new types of collaboration. This would be achieved by designing a pre-competitive data infrastructure, offering maximum utility value to ESG data providers, FIs, and corporates. A design sprint engaged a community of FIs and ESG data providers during the first part of 2021 to shape a high-level platform architecture design. The design was informed by current constraining and enabling market conditions, such as restrictive data regulation and low data sharing incentives but increasing interest in understanding how to account for, and integrate biodiversity risks and impacts into, risk, valuation and impact alignment models. The aim was to arrive at a design that, given current conditions, still holds the potential to enable biodiversity to spread across capital and financial markets.

2

The sprint

A sprint process was initiated by Finance for Biodiversity (F4B) in partnership with the Green Digital Finance Alliance (GDFA) at the onset of 2021. The aim was to scope out the minimum features of a potential data platform solution, designed as a pre-competitive digital infrastructure to accelerate the diffusion of biodiversity risk accounting across financial and capital markets. The sprint process lasted for a period of three months, and engaged 44 institutions in bilateral interviews and/or in community-level discussions through three convenings. The number of participants in each of the convenings ranged between 45 to 50.

Figure 1 | Four phases of the sprint process



The sprint process started the platform's community-building process, and it also started to test whether the FIs and ESG analytics providers were interested in new ways to collaborate around asset geolocation data in biodiversity material sectors. Importantly, the engagement also sought to ensure that any follow-on investments would be responding to market demand, to avoid designing a supply-driven data infrastructure.

Other aims of the engagement process included testing the willingness of the community to contribute to the platform's development process, both in-kind through participation in testing the platform, and by financial contributions, either to the build phase or as members in the platform's scaling and market consolidation phases. Sampling of community members was greatly supported by important actors in biodiversity finance community including the Finance for Biodiversity Pledge Secretariat, UNPRI, and University of Oxford. Geographical diversity was a guiding sampling criteria, even though there was a slight overrepresentation of participants based in the European Union. Each convening was informed by an input paper outlining the main design features which were tested, discussed, and refined during the convenings. The main outcomes in terms of high-level platform design are presented in this technical scoping paper.

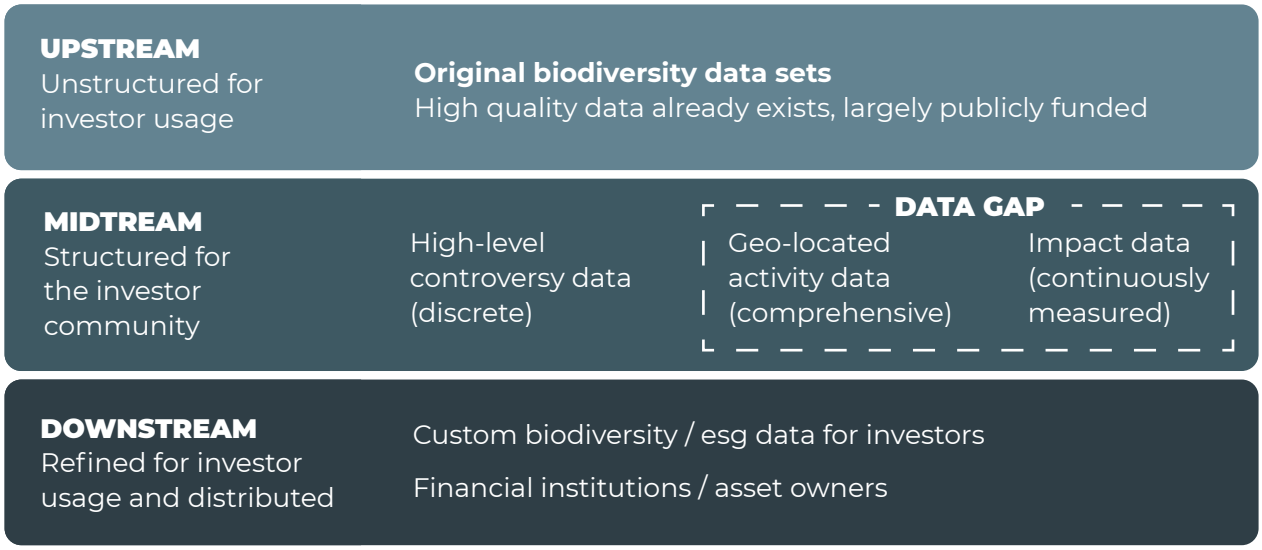
3

The data gap

The main data challenge is not a lack of biodiversity data, but that asset ownership and location data is not structured in ways that allow it to be combined with biodiversity data and to enter the risk, valuation, impact alignment and disclosure models of financial service institutions without high transaction costs. Biodiversity databases and earth observation data sets harvested by satellites and other technologies are location specific. Information about the geolocation of company assets would enable ESG data providers and FIs to translate it into investor-ready data, and thereby start to develop a more robust data chain for the financial services sector to leverage. Today, available biodiversity data that is relevant to finance can be grouped into the three data categories: upstream, mid-stream, and downstream.

Upstream, high quality biodiversity data already exists on the state and trends of habitats, ecosystems, and species. It has largely been publicly funded. Downstream, data solutions to assess the specific biodiversity risks of a given investment decision are available. Project finance investors have precise data on asset and project geolocation, which they can enter into tools such as the IBAT to generate insights on species at risk; or an investor can overlay the project geolocation data with satellite data sets to generate metrics on the ecosystem specific risks of an investment decision, such as deforestation or habitat fragmentation risks.

Figure 2 | Three categories of biodiversity data



Various players have built, and continue to develop, mid-stream offerings, connecting securities to geolocated company-level activities and then to biodiversity impacts using public data, and have generated important successes. However, the data that is available today is incomplete and fails to identify company-level activity and convincingly connect this with material biodiversity risks and impacts.

If asset geolocation data was available, it could be overlaid with key upstream biodiversity datasets by the ESG data provider community to innovate new biodiversity data products and services, allowing FIs to take biodiversity material risks into account in financial decision-making. It could also enable the current six leading biodiversity metrics[7] to increasingly move away from leveraging sector average data on environmental pressures and towards specific geolocated data feeds, to increase the accuracy of the biodiversity risk and impact metrics.

4

Segmentation of data user needs to be addressed by platform

The engagement process identified specific geolocation data user needs that, if met by the platform, would enable biodiversity risk, value and impact alignment accounting to spread across the financial system. User needs are segmented into the four groups listed in the table below.

Table 1 | Segmentation of user needs

User segment	User needs to be addressed by asset geolocation data
Specialists / smaller and mid-sized asset managers	Prefer to use the platform through self-service to request data on geolocation in biodiversity-exposed jurisdictions for risk assessment and engagement
Large financial institutions (banks and asset managers)	Be able to access geolocation specific portfolio tracking tools from ESG data providers as a pre-requisite for defining net deforestation institutional targets and with time expand to define more biodiversity related targets
Asset owners	Leverage the platform directly and through ESG data providers to access more granular data to flow into footprint analysis and engagement processes
ESG analytics and research providers	Enable design of innovation biodiversity data offerings and enable current biodiversity foot-printing metrics to move away from sector averages

Specialised smaller and mid-sized asset managers need asset geolocation data as input into engagement processes with investee companies, and with time, to enable the development of biodiversity-positive investment options. This segment of platform users is most interested in accessing data via self-service options to feed into their internal risk models for asset valuation, to enable more accurate risk pricing, and to compare different investment options from a biodiversity risk perspective.

Large financial institutions need asset geolocation data to enable them to formulate biodiversity-related institutional commitments, such as a net-zero deforestation target. Without asset geolocation data, the large FIs are unable to track progress towards a biodiversity-related institutional target. Without the capability to accurately track a biodiversity target across entire portfolios, target setting will be seen as carrying too high reputational risks.

Asset owners identified a need to access asset geolocation data for portfolio biodiversity footprint analysis, based on metrics rooted in geolocation-specific biodiversity dependencies and impacts. This firstly for hotspot jurisdictions to inform engagement, and with time to include all portfolio jurisdictions.

ESG analytics and research providers highlighted the need to access asset geolocation data to increase the accuracy of biodiversity footprint scores of portfolios or securities. In the immediate term, this would allow them to be able to offer solutions for FIs to respond to new and emerging regulations such as the Sustainable Finance Disclosure Regulation (SFDR). They would also be able to lower the transaction costs of gathering data into current aggregate biodiversity risks metrics, such as the Mass Species Abundance[8] and Potentially Disappeared Fraction of species metrics, used by frontrunner FIs. Today, biodiversity footprint calculations often databases which link environmental pressures to country trade flow data. Many biodiversity hotspot countries, such as those on the African continent, are not covered in these databases. Asset geolocation data can significantly improve these data layers and enable investors to assess biodiversity risks in a greater number of geographies.

5

Towards a platform data taxonomy

The concept of geolocation can be subject to many different definitions. Today if geolocation is part of corporate disclosure, it is seldom using a standardized format but can be disclosed at country, regional and in few cases at address level. To unlock the ability to overlay asset geolocation data with biodiversity data sets to generate investor ready data there is a need for standardised geolocation disclosure on the platform. This will be guided by a platform data taxonomy to ensure that all contributors use a standardised format when sharing geolocation data.

Assets, geolocation and ownership will be included on the data platform, and will need a detailed data taxonomy to be developed as part of the platform's technical charter. A taxonomy will include term definitions, data type and attribute specification. The high-level attributes of these three data types are listed below. The platform will focus on asset geolocation data of the most biodiversity material sectors, starting with agriculture. The attributes of the geolocated asset data indexed to ownership are outlined below.

Table 2 | Data attributes for a data taxonomy

Data set	Data type and attributes
Asset	Physical assets (tangible assets) Physical land-based assets with spatial footprint (immovable asset) Physical ocean-based assets Scope 1 in first iteration Supplier list asset location of scope 2 + 3 in second iteration
Geolocation	Country (ISIN or FIGI codes) Region Longitude and latitude
Ownership	Declared ownership of the asset by the data supplier

The second and third phase of platform development will expand into supplier geolocation of scopes 2 and 3. The ambition is to cover the most relevant regions from a biodiversity standpoint. In addition, the sector coverage will expand over time to cover all biodiversity material sectors and jurisdictions.

On the platform, asset ownership data is self-disclosed by the corporate data suppliers using data formats that enable linking of asset ownership into company ownership trees. Taxonomy of ownership will be developed so that it enables linking to a financing instrument using financial security identifier codes such as ISIN and FIGI. An overarching data taxonomy design principle will be created to enable a data structuring model that offers to aggregate assets and link these assets to ownership and to financial instruments.

6

Data sources and incentives

Incentives for corporates to disclose geolocation of their physical assets are weak, as such disclosures are currently not linked to lower costs of capital or easier access to capital. Disclosure is linked to new types of risks, including new liabilities linked to sharing sensitive data, and new market risks associated with disclosing information to competitors about strategy and market position. Regulatory incentives are currently weak, as requirements to disclose geolocation of corporate physical assets is only present in a few jurisdictions. In 2017, the Ministry of Corporate Affairs[9] in India announced a change to disclosure standards, making supplying the latitude and longitude of firms' tangible assets mandatory.

Still, in this constraining environment, corporates are identified as the main data contributors, although they will need strong incentives to share data. Two main types of incentives have been identified. Firstly, there are incentives that are built into the platform design, allowing corporate data contributors to strike a balance between disclosure and privacy (see platform architecture section for more on this). Secondly, there are incentives from external demand, which are listed in the table below. The outlined incentive structures will increase the probability of large quantities of asset geolocation data getting shared via the platform.

Table 3 | Incentive classification per platform participant

Data contributor segment	Incentive (s)	Pathways to strengthen data sharing incentives
Corporates	Regulation TNFD Peer pressure Investor pressure Reputation	Asset geolocation requirements become integrated into nature risk disclosure regulation Integration into TNFD framework Group of Fortune 500 corporations join as first data contributors Stock exchanges deploy platform as quality stamp/listing requirement
NGOs & specialised geolocation data companies	Data monetisation Impact	Global NGOs take up asset identification as job following CBD
Public sector (registries)	Improve transparency rating	Part of CBD national plans become platform participation
Data user segment		
ESG data providers	Market expansion Lower data transaction costs	More geolocation granular data to flow into footprint analysis Innovate new offering responding to TNFD and emerging regulatory requirements
FIs	Track FI nature targets Data for engagement Compliance Reputation	FIs set specific and timebound nature targets FIs find platform data relevant for 'self-service' data on geolocation to feed into internal risk and impact models Investors undertake collaborative engagement demanding corporates to share geolocation data on platform

In the short-term, engaging a group of the world's leading agribusiness companies as first platform data contributors will incentivize other corporates to follow. In parallel, the platform will need to work with the investor community, through entities such as the Finance for Biodiversity Pledge, UNEP FI and UNPRI, to increase investor demand for corporate disclosure of geolocation of assets. This work will build on existing investor demand to regulators to disclose asset geolocation for the assessment of physical climate risks[10].

7

Platform Architecture Options

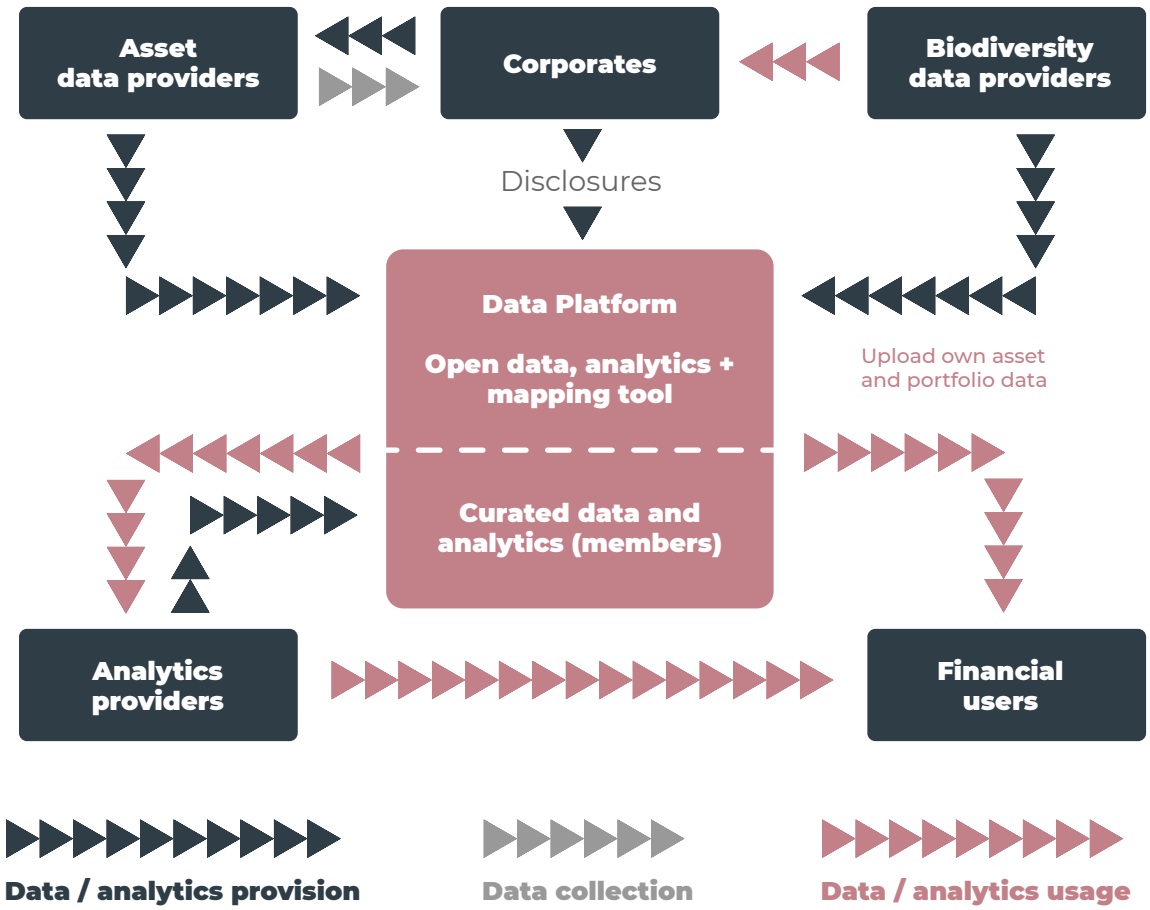
There are several platform architecture options to choose from, and the sprint process engaged the community to identify the architecture best suited to the use case of asset geolocation data in biodiversity material sectors. The main architecture options include a choice between a centralised versus a decentralised platform. Other design choices relate to whether to apply a fully open-source framework or whether to design for degrees of openness. The platform architecture design that was perceived as most suited in the current regulatory and market environment is a decentralised data exchange platform, with degrees of openness, to strike a balance between transparency and confidentiality.

7.1 A decentralised data exchange

The primary difference between a centralised and a decentralised platform architecture is the question of who has control over the data. In a centralised system, a singular authority or administrator retains total control over all aspects, and this authority is typically exerted through a central server that manages all data and permissions. A centralised platform locates all major processing power in this primary server. It is a new centralised data repository to collect, host, process and provide access to the data via a centralised server option. The basic functionalities of a centralised data platform are to ensure **1)** data flow processing **2)** data management, quality, and maintenance **3)** data/ contributors' oversight and **4)** database administration including data access, security, and scalability. While a centralised architecture can lead to a better user experience, it is not the preferred option because: it will require corporates to share sensitive data with the centralised platform's host organisation; it will be more difficult to ensure regulatory compliance with data localisation regulation; and it will be a slower model to scale, as trust first needs to be built between the host organisation and the data suppliers. In addition, centralised networks are not very fault tolerant, as all data must pass through a single location. So, if that central server goes down for any reason, it will likely take the entire system down with it, making centralised systems more vulnerable to cyber-attacks. In a centralised system, users are not able to make data requests tailored to their specific needs but will instead need to subscribe to standard data packages. In the mapping of the different segmented user needs, it became clear that different parts of the financial system will want to access different quantities of geolocation data, and with different frequency.

In contrast to a centralised architecture, decentralised platforms are organised in a distributed fashion. Each participant functions as a separate authority with certain decision-making powers concerning what data to grant access to, and which specific participants to grant that access. Decentralised platforms also distribute workload functions among participants. The sprint engagement process pointed to a decentralised platform architecture as the preferred option due to several specific characteristics of the data, and of the corporates as the main data suppliers. Most importantly, a decentralised platform architecture can enable corporates to share geolocation data with specific investors without having to disclose it openly to competitors, and without having to hand over data custody to a third party which could raise regulatory and compliance issues.

Figure 3 | Centralised platform architecture

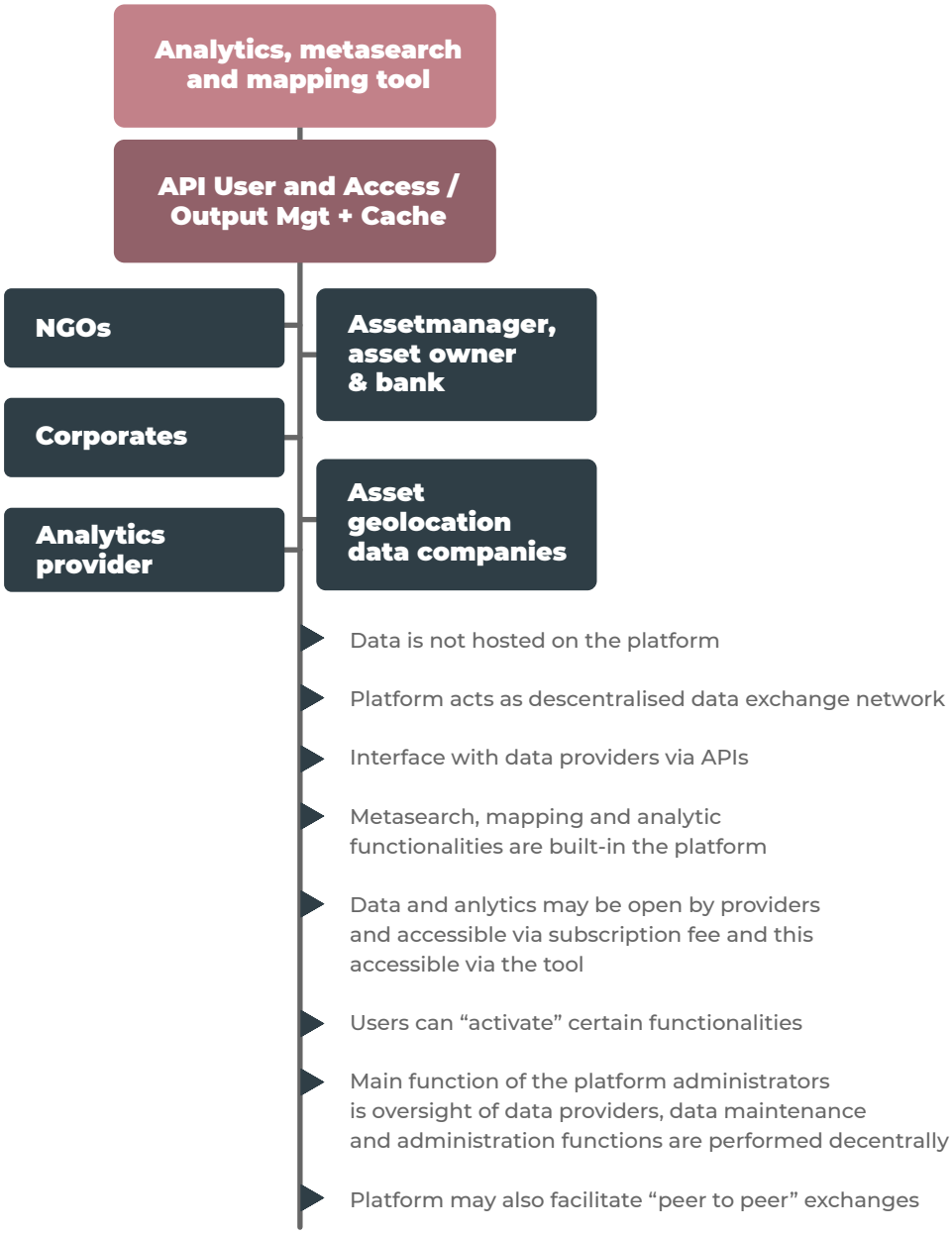


For most companies trusting a third party to store geolocation data is not desirable, and therefore the platform will work with distributed storage across the network of participants. In that way, the corporate data suppliers maintain data custody, which ensures compliance to data localisation regulatory requirements. Data localisation laws essentially require data to be processed within a particular territory or location. There are a growing number of data localisation laws. If a country has implemented strict data localisation laws, multi-national companies must establish local data storage facilities in respect of all data sourced from that country.

A distributed approach makes it possible for companies to grant access to their geolocation data, without moving it to an overseas server to ensure acceptability of the platform in the current regulatory and policy environment. A decentralised data governance model is intended to be able to comply with data localisation by leaving data storage and data residency within the country of data origin. In the decentralised model the data suppliers themselves host, manage, secure, and provide access to their asset geolocation data via APIs (Application Programming Interface) to the data platform. A decentralised platform architecture can thereby strike a balance between new demands for asset geolocation data and a company's needs to share data without losing control.

The decentralised platform functions as a data exchange with a two- sided marketplace where ESG analytics providers and FIs can make data requests specific to their needs. Asset managers and owners can request access to geolocation data for specific engagement purposes. ESG data providers can call on geolocation data when performing biodiversity footprint analysis, to move from aggregate to real biodiversity material risk and impact data. Larger FIs can demand that ESG data providers offer ecosystem-specific risk metrics to monitor an institutional target such as net-zero deforestation. A decentralised platform offers speed of implementation because it provides access to the existing company data storage.

Figure 4 | Decentralised platform architecture



7.2 Mix of open-source and privacy-enhancing technology

Open source features and privacy enhancing technologies will be deployed in a mix in order to strike a balance between openness for auditability and transparency, and the needs of data providers to disclose in ways that do not harm their market position, and which is compliant to data regulation and policy.

Concerning the question of open source, the platform will be designed for degrees of openness. The platform's source code and documentation will be published under suitable open-source licenses, leading to better long-term trust among participants. Asset geolocation data will not be open source, as that will discourage corporates from participating. A fully open-source data platform will face adoption challenges given the current regulatory environment where disclosure of asset geolocation data is not mandatory; where it is considered sensitive data by many corporates and jurisdictions; and where data localisation laws in some geographies constrain the ability to store data on overseas servers. Faced with these market and regulatory constraints, and to enable scaling, the platform will use privacy-enhancing technologies to ensure that only the data user and contributor has access to view the geolocation datasets specifically requested. This design will make it possible to implement a data taxonomy where geolocation is specific latitude and longitude data, rather than only high level geolocation references such region or country.

An interested data user can privately and securely request asset geolocation data directly from the companies themselves or other nominated third-party data holders. With no centralised database, commercial actors retain control of their sensitive data. A decentralised model also means that data can be shared but without enabling anyone to tamper with the geolocation data of a company. Access to data on the platform is governed via an API, which is a code that governs access point(s) to servers. All large corporates today use APIs for connections between servers internally or to connect to external digital data infrastructure. This will enable greater data accessibility because access to data can happen via a digital request to a company. It opens up the opportunity of the data supplier accessing geolocation data sets on demand, and safely and securely sharing specific geolocation data without it leaking to competitors. These greater data management powers mean that primary database functions such as data management, quality, and assurance, and administrative tasks remain with the participants in the network who host the distributed databases. The main data functions performed by the platform are contributors' oversight and data exchange processing. To that extent, participants will have to abide by certain data standards and APIs to participate.

8

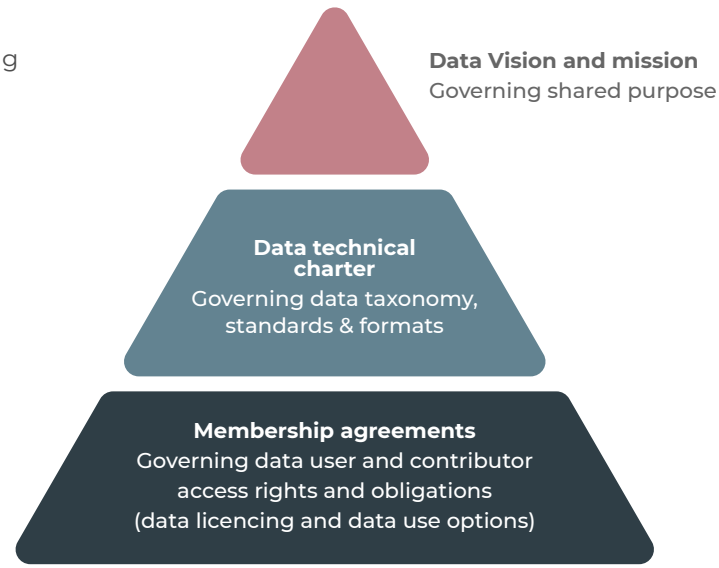
Platform Governance Stack

The platform is built on a decentralised network model with a series of governance mechanisms guiding the interaction of data users and data contributors with the platform. The platform's governance mechanisms are organised into a stack of procedures and codes shaping the platform's mode of operation. The decentralised governance model does not mean that the platform is a fully autonomous and distributed organisation (as is the case with some digital networks) but rather that several of the platform's governance mechanisms are managed by the participants themselves, such as data storage. A platform host organisation is part of the platform's governance model as the overall community curator and platform enabler. Eligible platform hosts can be both an existing organisation, or a special purpose new legal entity set up to run the platform.

The three main layers in the governance stack are data vision and mission, data technical charter, and platform membership agreements. A platform data vision will spell out the critical problem to be solved by the platform, and will continuously guide the work of all platform participants. The data vision focuses on enabling biodiversity to enter mainstream financial decision-making by making a pre-competitive data layer of asset geolocation data available to asset owners, asset managers, and ESG data providers.

A data technical charter will be developed by the platform host in collaboration with the community. The technical charter will set out the data taxonomy as well as the platform's data format and standards. The rules in the technical charter will be enforced on the platform through the design of the API as the governing interface, which will ensure that data entering the platform live up to the formats and standards that fall within the taxonomy of the technical charter. Membership agreements structure the rights and obligations of platform users and contributors. Each member will be invited to automatically register when signing up to the platform with set-up data fields which will include official entity registration data and country of incorporation. Additional governance layers and further specification of the three core governance layers in the stack will be specified by the host and the community.

Figure 5 | Content of governance stack



9

Potential Revenue Models

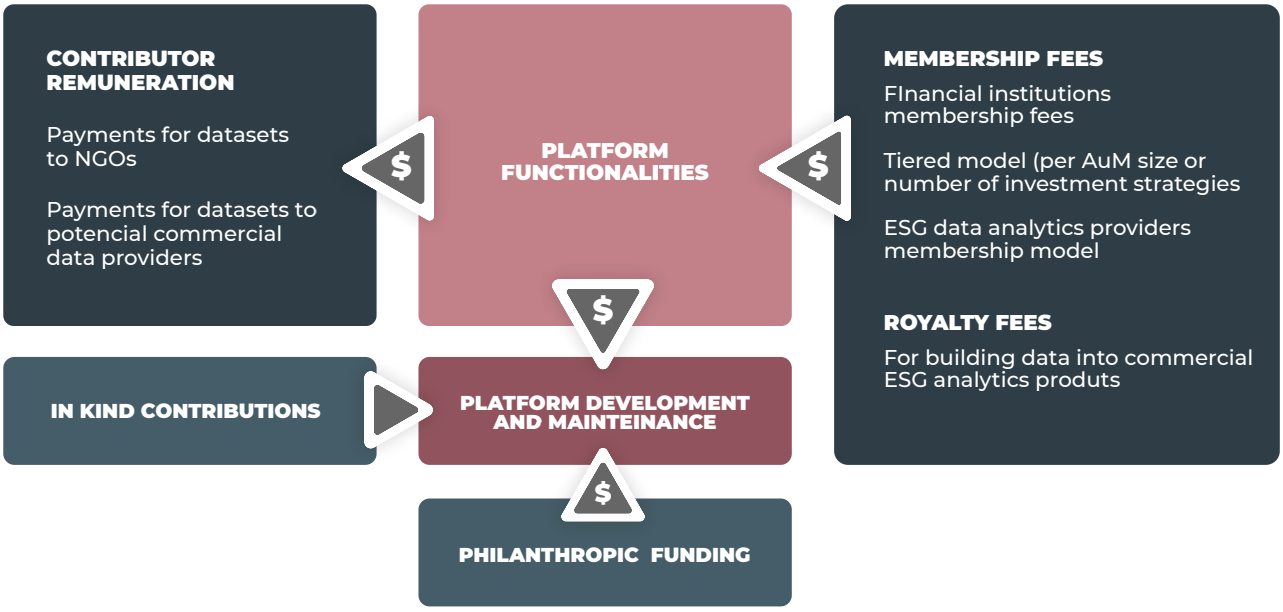
A revenue model is needed to cover the fixed costs, standard platform infrastructure, maintenance of functionalities, and APIs. The Proof-of-Concept phase of building and testing the prototype platform will be financed by philanthropic funding, and the platform's financing model will increasingly shift towards market-based after launch, so that funding will be sourced from the community it serves of asset managers, asset owners and ESG analytics providers.

A tiered membership fee model has emerged as a preferred option by the community, with a fee structure based on size of assets under management for FIs. Members are charged a recurring fee to access the geolocation data of the platform. Members will get a user profile on the platform with the payment of the membership fee. Users on the platform will have access to the data network based on their profile in the data platform.

A specific membership fee model will be structured for ESG data suppliers' engagement with the platform. Discounts may be considered for early members of the platform, which include the data users and contributors that have engaged as the experimental community helping to test the functionalities of the prototype platform in the Proof-of-Concept phase. Philanthropic foundations will continue to be able to make voluntary donations to the platform, and these will be especially important during the build-up of critical mass of data contributors.

Data contributors can receive royalties if their data is used by downstream commercial ESG data providers. NGOs can become data contributors and will be eligible to receive payments for geolocation data shared via the platform as an incentive mechanism.

Figure 6 | Platform revenue model



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10

Key Risks

A set of key platform risks will need to be managed and mitigated during the design, as well as after the launch and into the scaling phase. The most important risks and mitigation strategies are outlined in the table below.

Table 4 | Platform risk classification

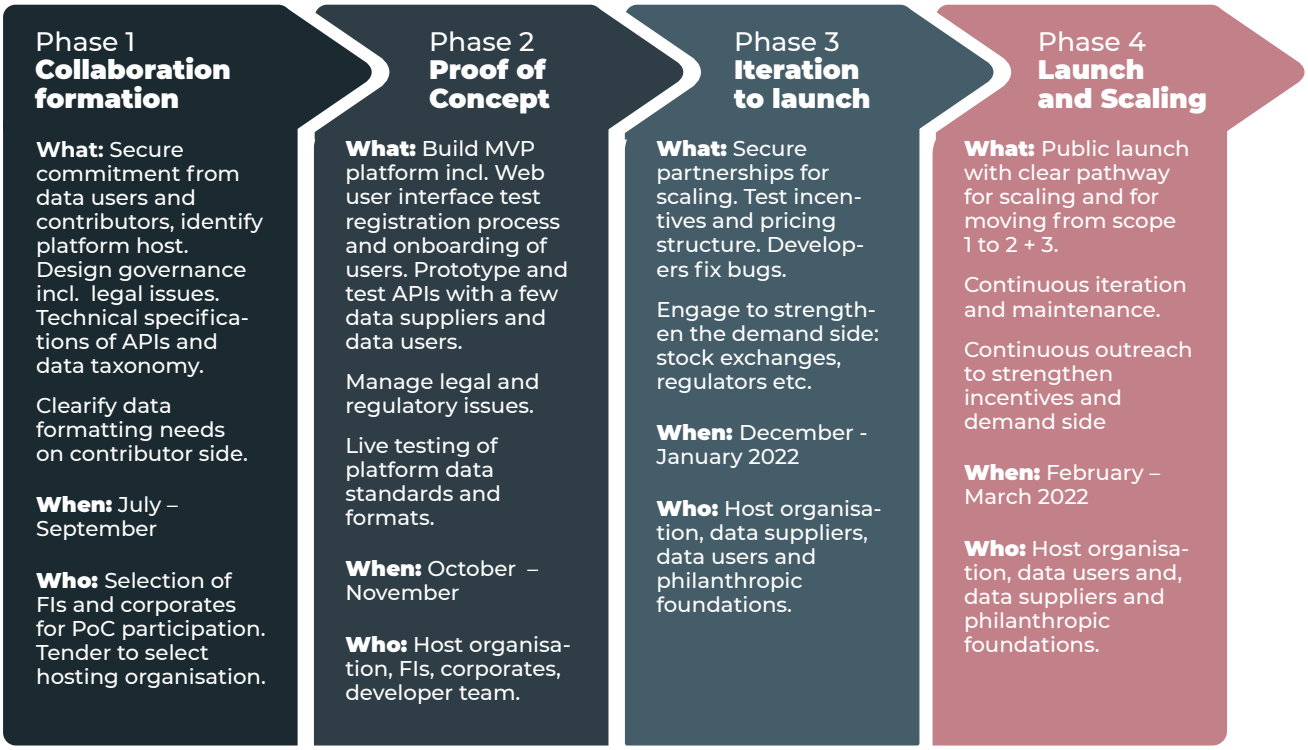
Risk type	Risk description	Potential mitigation / opportunity
Data availability of supplier data	Data suppliers must be able to deliver data in a timely manner to the platform i.e. to the users.	Data suppliers will need to follow specific standards in terms of data delivery as per the platform operating principles.
Quality of APIs	The data platform will evaluate supplier APIs for quality by testing response time, up time, thoroughness of API access to data, subscription management and access control.	Data suppliers will need to follow specific API standards in terms access as per the platform operating principles.
Data quality assurance	Quality/reliability of the data accessible on the platform is not up to standards	Data suppliers will need to follow certain standards in terms of data quality as per the platform operating principles.
Adoption rate by data suppliers / users	On the data supply side, the platform may not reach sufficient scale/critical mass with data providers and corporate asset geolocation disclosures.	A set of incentives will be explored as well as potential complementary partnerships with other platforms.
Access controls and cyber risks	Unwanted access to the platform functionalities and potential disruption of the functionalities; however, data will not be hosted by the platform and actual data and integrity protection will lie with the network participants.	Market standard cyber risk management procedures can be rolled out and implemented in the design (e.g. user authentication and protected access management).

11

Next Steps

A four phase, step-by-step iterative approach to building the platform will ensure the platform constantly respond to market needs and requirements.

Figure 6 | Platform revenue model



After a process of data supplier consultation, a host organisation is to be identified. A process of governance design will then commence to shape the legal and institutional set up, the data vision and mission, the technical data charter, and the data taxonomy. Thereafter, an experimental community will be identified. It will be a selection of data users and data contributors who agree to offer in-kind support to the Proof-of-Concept stage, mainly in terms of time to test APIs with their internal systems. The experimental community will be composed of asset managers, asset owners, and a selected number of corporate data providers in the agri-business sector. Data provided will be free of charge to the platform experimental community during the PoC stage.

The experimental community of users will test signing up and signing on to the data platform via a web browser. This will be the primary user interface for the data user community. The data platform will be tested as the gateway or entry point into the network of supplier data, and the data reformatting needs will be tested on the data supplier side. The experimental community will test use of the basic data fields for search functions including geolocation data or corporate identifiers as primary search functions. Tests will be run for the geolocation data points, longitude and latitude or shapefiles, and ISIN codes to enable the link to financial instruments. Those data points will be the key data points for search and viewing of data in the data network. The PoC will also give feedback on the most suitable ways to communicate search results to users in the browser.

The PoC stage will cover scope 1 of physical geolocation data for a sample of five to ten global corporates in the agri-business sector. Sampling criteria for the selection of the corporate PoC community will be based on the size of operations, with a preference towards the largest companies in the agri-business sector. The PoC will not cover scope 2 and 3, and hence supplier geolocation data.

Basic functions to be tested during the PoC stage include:

- Ability to query data at company or geographical level;
- Mapping tool to be able to visualise geolocated information;
- Data download formats; and
- Ability to link geolocation asset data to financing instrument.

Following the PoC phase, the platform will move from experimentation with free data access into testing and implementation of the commercial model. Users will be able to join through digital sign-up, identification checks, and membership fee payments. During this phase, data frequency requirements will be tested. On the contributor side, data suppliers will need to ensure that data is updated to reflect changes in asset ownership, and to show that they can live up to the data update frequency standard of the platform. Launch of the platform will happen in early 2022 by the host and the community members. There is clear value for data users and data contributors who sign up early or become part of the PoC experimental community.

The advantages are listed in the table below.

Table 5 | Value to available to community members

Options available to you	Associated benefits
Become active partner in phase 1 collaborative formation phase. This means to continue engaging as during the sprint to feed back on specific platform design. Sign Letter of Interest to reassure philanthropic funding that there is demand. Start to engage with identified platform host organisation.	**Users:** Ability to shape the platform and early exposure to a new type of data infrastructure
Become an active test partner in phase 2 Proof of Concept. Open to FIs and corporates. You will test the APIs in a test environment and on real geolocation data.	**Suppliers:** Ability to shape the platform to their needs, investor engagement, reputation, internal risk management
Become an active partner in phase 3 iteration to launch testing with the host organisation and the developer team to make improvements.	
Be part of first frontrunner member group supporting launch of the platform's organisation.	

12

Conclusion

Asset geolocation and ownership data for material biodiversity sectors is a data layer which is well suited for a decentralized, open source, pre-competitive digital infrastructure model supported by an eco-system of data users and data contributors.
The sprint process confirmed a willingness and interest by the community to continue to further specify the functionalities, data supply side, and the commercial model to take the infrastructure to the next level in its design.

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[5] Visit the spatial finance website here: https://spatialfinanceinitiative.com

[6] Read more about WWF's work with spatial finance here: https://www.wwf.org.uk/what-we-do/projects/nature-and-spatial-finance

[7] The six tools include the CBF, BFFI, STAR, GBSFI, BIA and ENCORE. For more insights on each tool please see: "Finance for Biodiversity – Guide on Biodiversity Measurement Approaches" by the Finance for Biodiversty Pledge https://www.financeforbiodiversity.org/wp-content/uploads/Finance-for-Biodiversity_Guide-on-biodiversity-measurement-approaches.pdf

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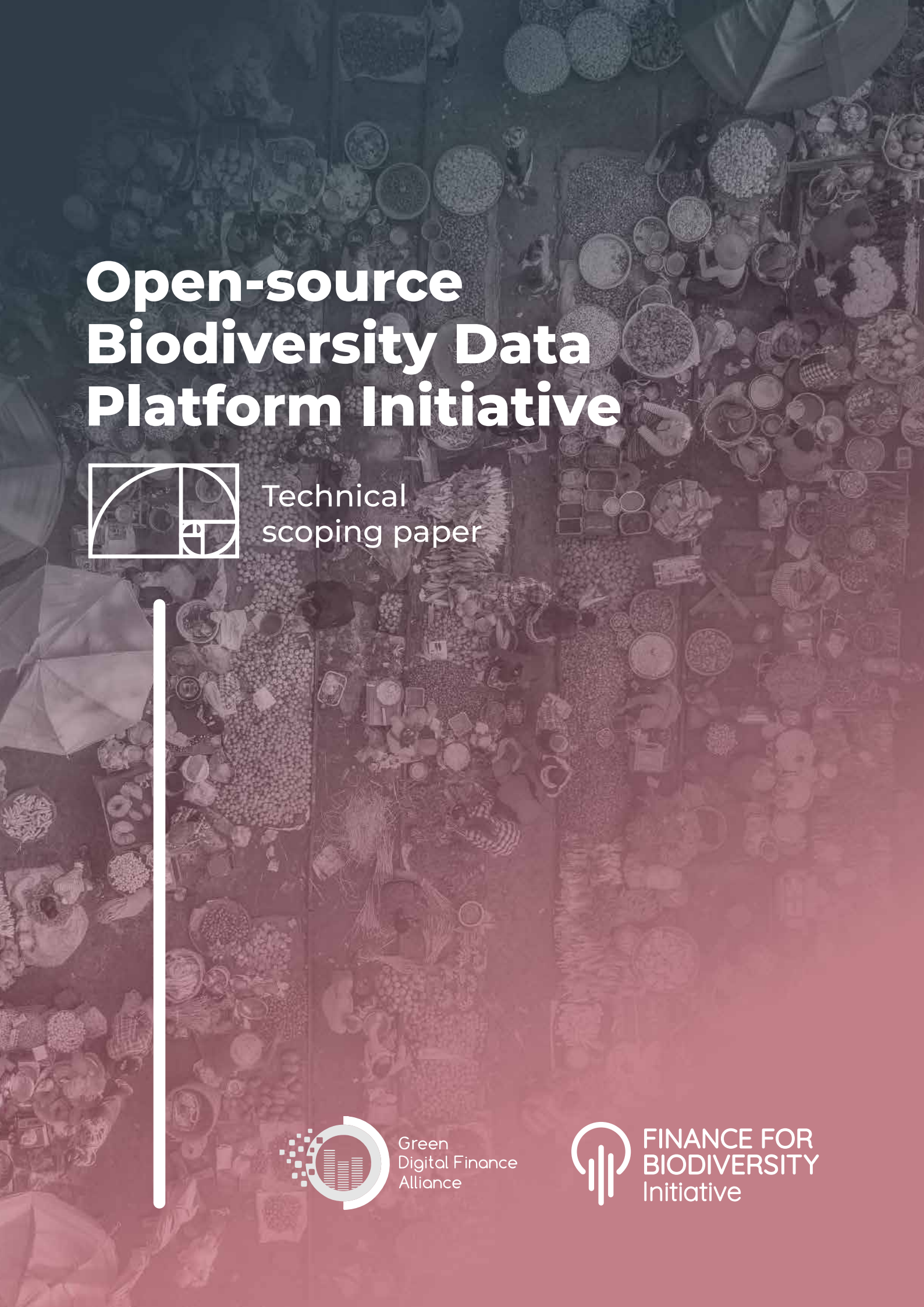

Open-source Biodiversity Data Platform Initiative

Technical scoping paper

Green Digital Finance Alliance

FINANCE FOR BIODIVERSITY Initiative