



# LEON


LEVERAGING EARTH OBSERVATION  
FOR NATURE FINANCE



## Earth Observation to Scale Nature Finance: Survey 2025

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***As part of the survey, respondents agreed for their responses to be used, stored and shared***

# Earth Observation to Scale Nature Finance: Survey 2025<sup>1</sup>

## Executive Summary

This report presents the results of the LEON User Requirements Survey conducted in summer 2025 to understand how Earth Observation (EO) data can support the mobilisation and scaling of nature finance. The survey targeted financial institutions, data providers, and other stakeholders engaged in nature-related investment, risk management, and policy.

A total of 27 organisations responded to the general survey, representing banks, asset managers, NGOs, advisory firms, international organisations and other actors operating globally. Respondents represent a diverse range of asset sizes and geographic portfolios, with most institutions operating across multiple regions.

Overall, the survey highlights strong and growing demand for geospatial environmental data in financial decision-making, but also identifies persistent barriers related to data availability, standardisation, and integration into financial workflows.

### **1. Financial institutions increasingly recognise nature-related risks and opportunities.**

Most respondents already collect some form of nature-related information, particularly on nature-related risks, dependencies and impacts, as well as biodiversity commitments and investment strategies. However, few institutions currently maintain nature-related transition

plans, suggesting that operational integration of nature considerations remains in an early stage.

### **2. Regulatory drivers and financial innovation are key catalysts for nature finance.**

Respondents highlighted regulatory frameworks, sustainability commitments, blended finance structures, and sustainable debt instruments as the most important drivers of nature finance. Emerging market-based mechanisms such as biodiversity credits were viewed as promising but still immature.

### **3. Lack of granular and standardised data remains the most significant barrier.**

Across respondents, the most frequently cited challenges included:

- Lack of standardised metrics and taxonomies
- Insufficient asset-level geolocation data
- Limited granular environmental datasets, particularly in emerging markets
- Fragmentation across data platforms

These challenges significantly constrain institutions' ability to quantify nature-related risks, evaluate investments, and meet emerging disclosure requirements.

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<sup>1</sup> Deliverable for the ESA LEON study under ESA contract No. 4000146275/24/I-NS.

#### **4. Earth Observation data is widely recognised as a critical enabling technology.**

Most respondents reported at least basic familiarity with EO data, with a smaller group already using EO tools operationally. EO data was considered particularly valuable for:

- Monitoring land use and ecosystem change
- Assessing supply-chain exposure to environmental risks
- Verifying corporate disclosures
- Monitoring environmental performance of projects

Respondents generally prefer processed and accessible datasets (e.g. CSV outputs or dashboards) rather than raw satellite data.

#### **5. Medium spatial resolution and validated datasets are preferred.**

Most respondents identified 10–30 metre spatial resolution and monthly or annual update frequencies as suitable for financial decision-making. Importantly, ground-truth validation and methodological transparency were highlighted as essential for building trust in EO-derived data.

#### **6. Supply chains represent a major frontier for EO-enabled nature finance.**

Respondents highlighted significant challenges in obtaining data on supply-chain exposure, ecosystem service dependencies, and biodiversity impacts, particularly in global supply chains such as agriculture, forestry and mining. Improved integration of EO data with supply-chain and asset-ownership datasets was identified as a priority.

#### **Implications for the LEON Project**

The findings confirm that Earth Observation can play a transformative role in scaling nature finance, but only if data products are aligned with financial decision-making needs. In particular, users emphasised the need for:

- Asset-level environmental risk indicators
- Standardised and interoperable datasets
- Integration with financial datasets and corporate disclosures
- User-friendly platforms and analytical tools

These insights inform the design of the six LEON pilot areas: mining supply chains, agrifood systems, nature-related financial risk, biodiversity credits, natural capital accounting, and sovereign finance.

## **Introduction**

This report presents the findings of a user requirements survey conducted by the LEON consortium in summer 2025. The survey aimed to identify the needs of financial institutions and related stakeholders regarding Earth Observation (EO) data for nature finance applications.

The survey forms part of the initial research phase of the LEON project and contributes

to defining the requirements for EO data and analytical tools across the project's thematic pilots. It complements consultations and workshops held by the LEON consortium and documented in the accompanying report: *Opportunities, Enablers and Requirements in Advancing Earth Observation for Scaling Nature Finance* (Ranger et al. 2026)

Survey questions were developed collaboratively by members of the LEON consortium under the leadership of the Professor Nicola Ranger. The survey included both general questions regarding respondent profiles, perceptions of nature finance, and EO data needs, as well as more detailed questions aligned with the six LEON pilot areas:

- Mining supply chains
- Agri-food and forestry supply chains
- Nature-related financial risks and opportunities
- Biodiversity credits
- Natural capital accounting
- Sovereign finance

The survey was implemented using two online platforms (Google Forms and Microsoft Forms) to maximise accessibility across different organisations. Participation was voluntary and anonymous. The survey remained open for **48 days**, after which responses from both platforms were merged and analysed.

In total, **27 organisations responded to the general survey**, while participation varied across the thematic sections depending on respondents’ areas of expertise and institutional exposure.

Respondents represented a diverse set of institutions, including banks, asset managers, advisory firms, NGOs,

international organisations and other stakeholders involved in sustainable finance. Banks and asset managers represented the largest group of respondents. Many organisations reported global investment portfolios or operational reach, although respondents also reported activities at regional and national scales.

The number of respondents across the thematic pilots varied, reflecting differences in institutional exposure to specific sectors. This variation reflects the current maturity of nature finance markets across different sectors. In particular, interest in nature-related risk assessment and supply chain issues was relatively high among respondents, while engagement with biodiversity credits and natural capital accounting remains more limited. Results for natural capital accounting are not documented here given only four respondents, however the findings are incorporated alongside bilateral consultations in the accompanying LEON report: *Opportunities, Enablers and Requirements in Advancing Earth Observation for Scaling Nature Finance* (Ranger et al. 2026)

Overall, the survey provides a preliminary but valuable insight into the needs of financial institutions and related stakeholders for EO data, as well as the barriers currently limiting its wider adoption in financial decision-making.

Theme	Number of respondents
Mining	10
Agri-Food and Forestry Sectors	15
Nature Related Financial Risk, Dependencies and Impact	21
Nature & Investment	9
Biodiversity Credits	9
Natural Capital Accounting (NCA)	4
Sovereign Finance	14

Table 1: Number of respondents per pilot

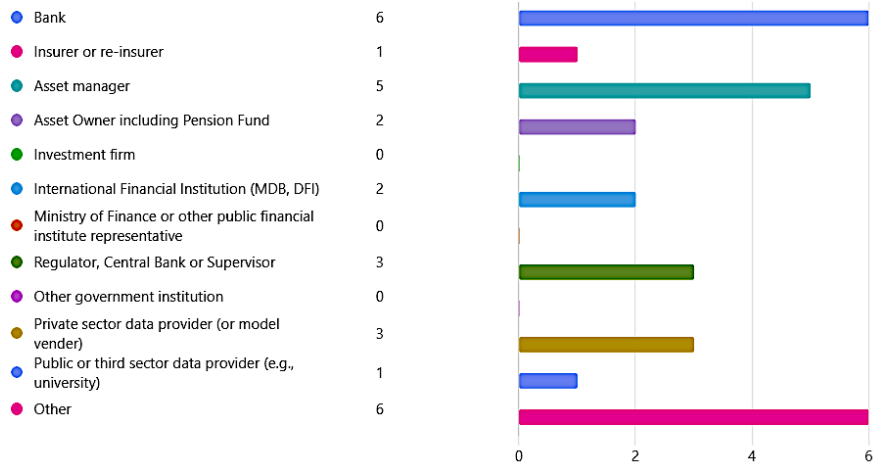


Figure 1: What type of institution do you represent?

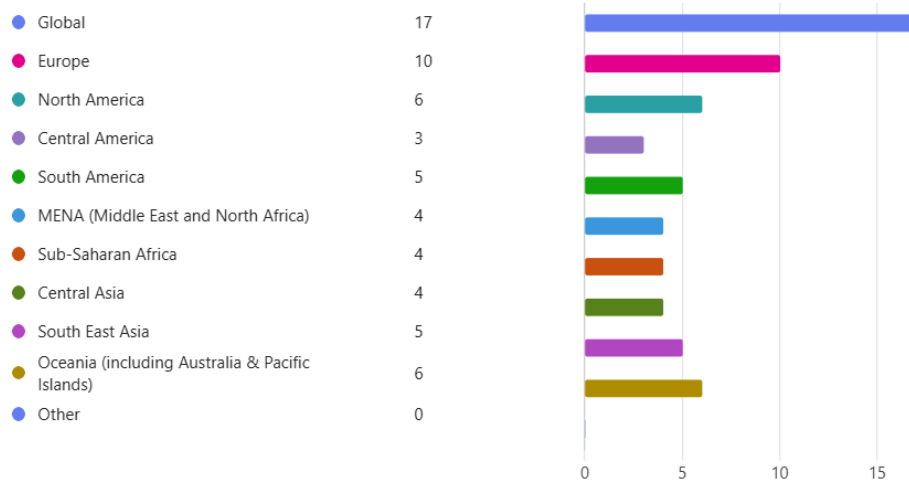


Figure 2: Geographical focus of portfolio/influence.

## Drivers and Barriers to Nature Finance

Survey responses indicate that many organisations have already begun to integrate nature-related considerations into aspects of their activities. The most common areas in which organisations reported holding nature-related information were:

- Nature-related risks, dependencies and impacts (12 out of 27 respondents)
- Biodiversity or nature-related targets and commitments (12 respondents)

- Biodiversity or nature-related investment strategies (11 respondents)

In contrast, **only three respondents reported holding information related to nature-related transition plans**. This suggests that while awareness of nature-related issues is increasing, many institutions have not yet fully integrated nature considerations into forward-looking strategic planning.

Respondents broadly agreed on the key drivers that could accelerate nature finance. Across the survey responses, the **regulatory environment emerged as a particularly important driver**, reflecting the increasing role of disclosure frameworks and sustainability regulations in shaping financial markets.

Financial instruments were also viewed as critical enabling mechanisms. Respondents highlighted the importance of:

- Blended finance structures
- Sustainability commitments by firms and investors
- Green bonds and sustainability-linked loans
- Market-based mechanisms such as biodiversity credits
- Sovereign financing mechanisms

While mechanisms such as payments for ecosystem services and nature-based insurance solutions were recognised as relevant, they were generally viewed as less influential drivers in comparison with mainstream financial instruments.

Technological innovation was also viewed as an important enabling factor. In particular, respondents emphasised the role of **remote sensing and artificial intelligence for monitoring ecosystems and environmental change**. Respondents also highlighted the importance of raising awareness and building institutional capacity to support wider adoption of nature-related analytics.

Despite this growing momentum, respondents identified several major

barriers that continue to limit the scale of nature finance.

The most frequently cited barrier was the **lack of granular environmental data**, particularly asset-level data that can be linked directly to investment decisions. Respondents also highlighted:

- Lack of standardised metrics and taxonomies
- Insufficient policy and regulatory support
- Limited availability of large-scale investment vehicles
- Lack of bankable conservation and restoration projects
- Limited availability of insurance or risk-sharing mechanisms

Several respondents also emphasised the need for **independent, science-based baseline datasets on the state of nature**, noting that reliable baseline data is essential for both risk assessment and investment monitoring.

These responses reinforce findings from the wider literature indicating that the **public sector often plays a critical role in de-risking nature investments**, particularly during early stages of market development

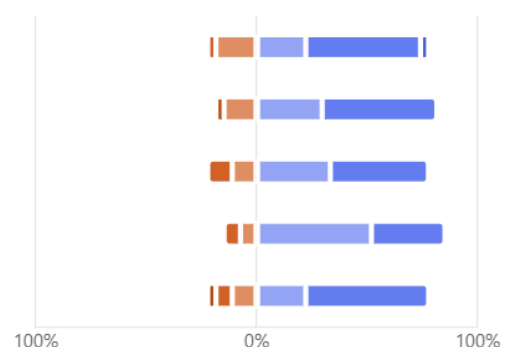
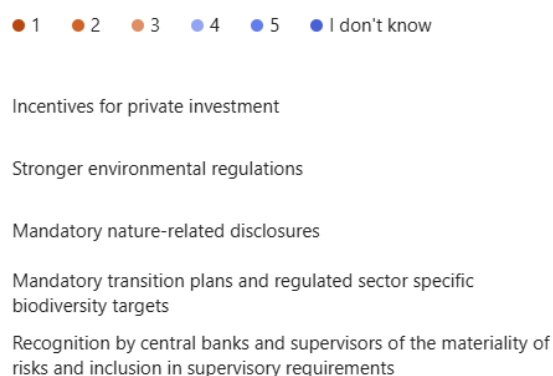


Figure 3: How important are the following for driving nature finance? (Scale: 1 = Not important, 5 = Very important)

● 1 ● 2 ● 3 ● 4 ● 5 ● I don't know



Figure 4: How important are the following for driving nature finance? (Scale: 1 = Not important, 5 = Very important)

● 1 ● 2 ● 3 ● 4 ● 5 ● I don't know

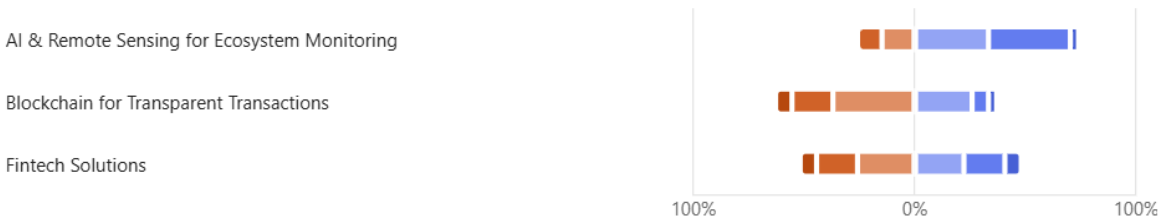


Figure 5: How important are the following for driving nature finance? (Scale: 1 = Not important, 5 = Very important)

● 1 ● 2 ● 3 ● 4 ● 5 ● I don't know

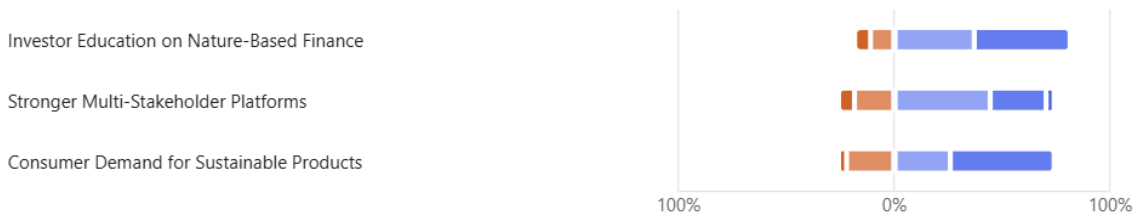


Figure 6: How important are the following for driving nature finance? (Scale: 1 = Not important, 5 = Very important)

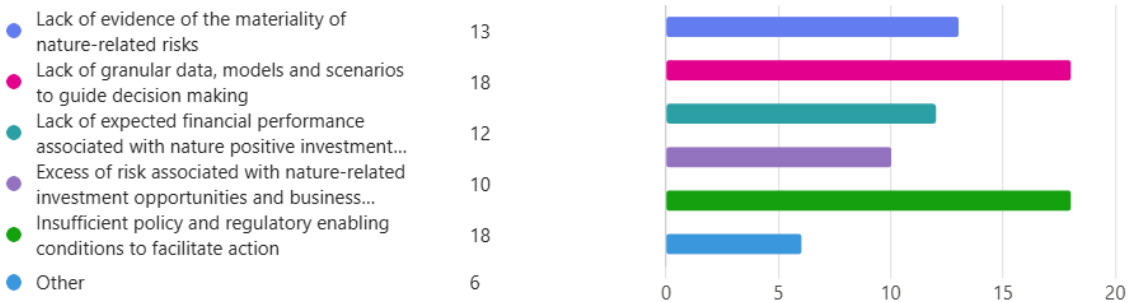


Figure 7: What are the main barriers to your organisation in doing more to manage nature-related risks and seek financing opportunities?

## Barriers to Nature Investment

The survey also explored barriers specifically affecting **private investment in nature-related activities**.

### Financial and Economic Barriers

Among the financial barriers assessed, **lack of financial returns and profitability emerged as the most important constraint** on nature-related investment. Respondents noted that many nature-positive projects currently lack stable revenue streams or clear investment models capable of generating attractive risk-adjusted returns.

Respondents also highlighted:

- Limited market development for nature investments
- Illiquidity of investment opportunities

In contrast, **high upfront costs and short investment horizons were generally considered less significant barriers**.

These findings suggest that the primary challenge is not necessarily the scale of capital required but rather the **lack of mature financial structures capable of delivering stable returns from nature-positive activities**.

### Policy and Regulatory Barriers

Respondents also identified policy and regulatory factors as major barriers. Across respondents, the following were consistently rated as **very or extremely important barriers**:

- Weak environmental policies and enforcement
- Lack of incentives for private investment
- Unclear land and resource rights

These responses highlight the importance of **stable governance frameworks and regulatory clarity** in enabling nature investments.

### Data and Measurement Barriers

Data limitations emerged as another major barrier. In particular, **lack of standardised metrics for measuring environmental outcomes was identified as the most important data-related barrier**.

Respondents also highlighted:

- Insufficient environmental data and transparency
- Limited historical data and track records for nature projects

These challenges create uncertainty for investors, particularly where returns depend on environmental outcomes.

### Institutional and Capacity Barriers

Institutional constraints also play an important role. Among respondents:

- **44.4% rated limited expertise and awareness as extremely important barriers**
- **22.2% rated them as very important**

Other institutional challenges include:

- Fragmentation among stakeholders
- Bureaucratic hurdles associated with nature-related projects

Interestingly, **transaction costs associated with EO data were generally considered less significant barriers**, suggesting that respondents view EO data as a potentially valuable input rather than a major cost burden.

## Environmental Uncertainty

Respondents also assessed environmental uncertainties affecting investment decisions. Among these, **uncertain environmental impacts were considered slightly more important than natural disaster risks.**

Across all barrier categories, three issues emerged as particularly important:

- Lack of financial returns and profitability
- Lack of incentives for private investment
- Lack of standardised metrics

These findings highlight the interconnected nature of financial, policy and data challenges in scaling nature finance.

## Earth Observation Data Needs

Survey results indicate that most organisations already have some familiarity with Earth Observation data, although levels of expertise vary.

Among respondents:

- **44.4% reported basic knowledge of EO data**
- **25.9% reported advanced knowledge**
- **11.1% identified themselves as EO experts**

This suggests that awareness of EO technologies is spreading within the financial sector, but that deeper technical expertise remains relatively limited.

When asked about the types of geospatial information most relevant to their decision-making, respondents most frequently prioritised:

- Land-use and land-cover information

- Biodiversity indicators

These data types were considered particularly valuable for understanding environmental impacts, monitoring ecosystem change, and assessing exposure to environmental risks.

Other relevant data types identified by respondents included water-related indicators, ecosystem services information, and spatial data related to environmental hazards.

## Data Format and Resolution

Survey responses highlight a strong preference among financial institutions for processed and easily accessible EO data products. Most respondents indicated that they would prefer to access EO-derived insights through structured datasets rather than raw satellite imagery.

The most commonly preferred formats included:

- CSV datasets (21 of 27 respondents)
- Raster data formats (13 respondents)
- Vector data formats (15 respondents)

This preference reflects the analytical workflows used within most financial institutions, where data must be easily integrated into risk models, spreadsheets or portfolio analytics systems.

Respondents also emphasised the importance of both spatial and temporal resolution.

In terms of spatial resolution, medium resolution datasets (10–30 metres) were most frequently identified as suitable for organisational needs. However, preferences varied depending on the application. Some respondents indicated that higher spatial resolution may be

necessary for site-level monitoring, while lower resolution data may be sufficient for portfolio-level analysis.

With respect to temporal resolution, respondents most frequently prioritised monthly or annual updates, with 13 respondents selecting each option. Only

four respondents prioritised more frequent updates.

These results suggest that for most financial applications, annual or monthly monitoring may be sufficient, particularly where the objective is to track environmental trends rather than detect short-term events

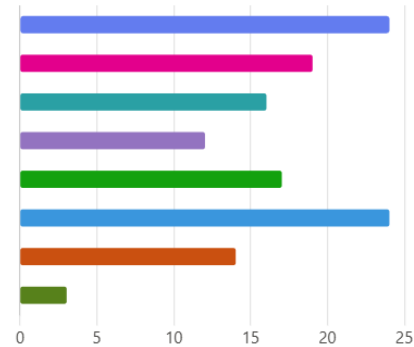
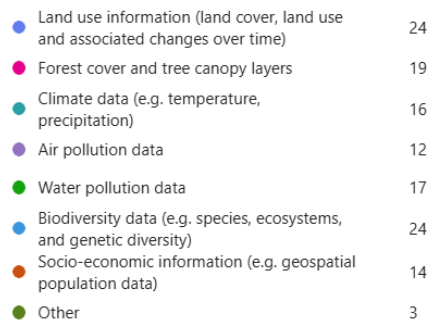


Figure 8: Which geospatial information would be the most important for your organisation in terms of ability to make the decisions necessary?

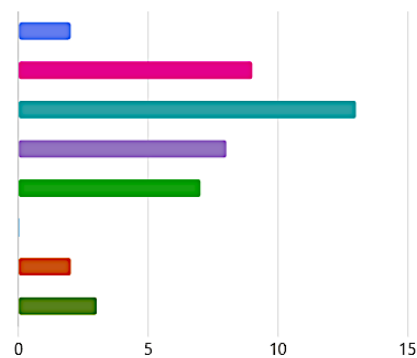
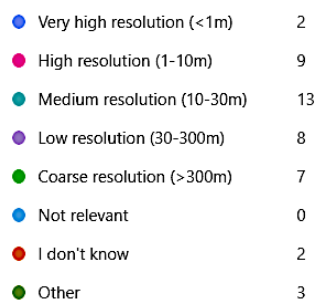


Figure 9: Which spatial resolution would be best suited for your organisation's purposes?

## Data Accuracy and Validation

Trust in the accuracy of EO-derived data emerged as an important issue among survey respondents.

Approximately **78% of respondents agreed that EO datasets should be validated using ground-truth or externally verified data** for locations of interest. This reflects concerns that global datasets may exhibit biases or inaccuracies when applied to specific local contexts.

At the same time, respondents expressed differing views regarding the trade-off

between spatial precision and global coverage.

Around half of respondents indicated that it may be more important to have highly accurate local information, even if this limits global comparability. Others emphasised the importance of globally consistent datasets that allow comparisons across portfolios and geographies.

These responses highlight the need for EO data providers to offer **transparent methodologies and clear information about data accuracy and limitations**, enabling users to assess whether datasets are suitable for specific applications.

## Data Access Challenges

Most respondents indicated strong interest in using EO-derived datasets.

Approximately **89% of respondents expressed interest in using existing EO data**, while more than half indicated willingness to pay for commercial EO products where these provide additional value.

At the same time, **37% of respondents indicated that they would prefer datasets derived exclusively from open-access EO data**, reflecting both cost considerations and the growing importance of open science in environmental data.

One third of respondents also expressed interest in **EO tasking**, indicating potential demand for targeted satellite observations in specific contexts.

The most significant obstacle to accessing reliable nature-related data was identified as **lack of standardised metrics and methodologies**. Other frequently cited barriers included:

- Data gaps in existing datasets
- Limited availability of asset-level geolocation data
- Fragmented environmental data platforms

Several respondents emphasised the difficulty of linking environmental datasets with financial datasets, particularly due to fragmented land registries and complex supply chain structures.

Respondents also highlighted several areas where environmental data remains particularly difficult to obtain, including:

- Supply chain exposure data
- Ecosystem services valuation
- Biodiversity indicators
- Asset location and ownership data

Data availability challenges were particularly acute in the **Global South**, where respondents noted that environmental data infrastructure is often limited despite these regions being critical nodes in global supply chains.

● Limited availability of existing data	16
● Poor data quality	14
● Limited access to asset geolocation of investee companies or credit clients as a...	16
● Lack of standardisation/metrics	21
● High costs associated with data acquisition	11
● Timeliness and frequency of updates	6
● Data gaps (data not being measured at all) in specific regions or sectors	17
● Other	3

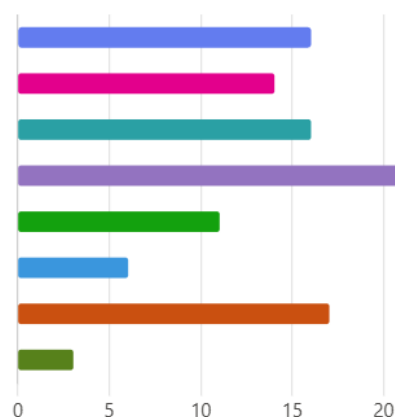


Figure 10: What are the main obstacles you face in accessing reliable nature-related data?

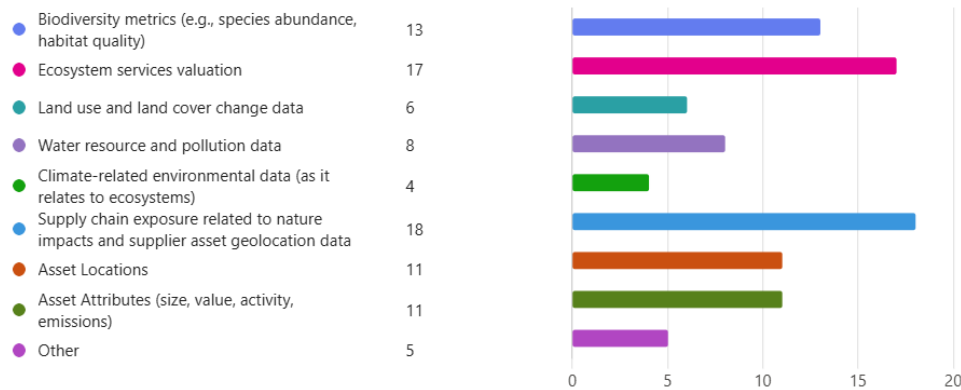


Figure 11: What types of data do you find most challenging to acquire?



Figure 12: What area of nature intervention do your activities relate to?

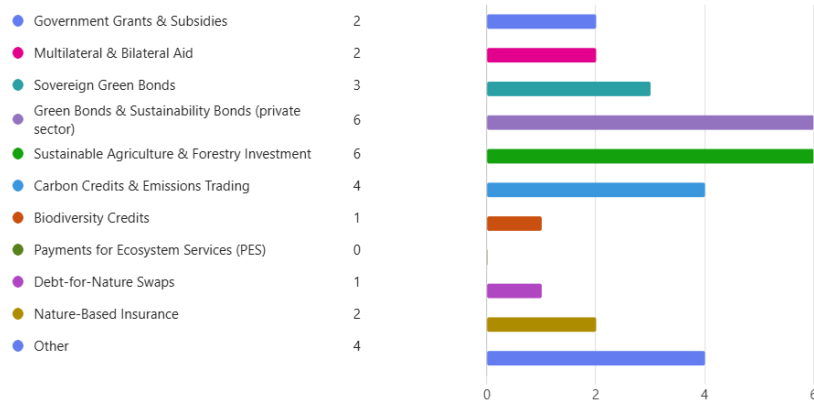


Figure 13: What instruments are you involved in?

## Pilot 1: Mining Supply Chains

Mining plays a critical role in the global economy and in supplying key minerals required for industrial development and the energy transition. However, mining operations are also associated with significant environmental impacts, including land degradation, freshwater pollution, biodiversity loss and waste generation. These environmental impacts create both **physical environmental risks and transition risks** for financial

institutions that finance or invest in mining companies. The LEON mining pilot focuses particularly on **freshwater impacts associated with mining activities**, which represent one of the most significant environmental risks in the sector.

### Institutional Exposure to Mining

Among the ten respondents participating in the mining section of the survey:

- **8 respondents reported exposure to large-scale industrial mining**
- **5 respondents reported exposure to junior or mid-tier mining companies**
- **1 respondent reported exposure to artisanal or small-scale mining**
- **3 respondents reported involvement in mine rehabilitation or closure financing**

Respondents also indicated exposure across a wide range of mineral types, including:

- Precious and base metals such as gold, silver, copper and nickel
- Battery minerals and rare earth elements such as lithium, cobalt and graphite
- Bulk commodities such as iron ore, bauxite and coal
- Industrial minerals including phosphate, potash and silica

This diversity reflects the broad exposure of financial institutions to mining supply chains.

#### Environmental Risks Associated with Mining

Respondents identified several key environmental risks associated with mining operations. The most frequently cited sources of **freshwater pollution** from mining activities include:

- Tailings dam failures and spills
- Chemical leaching from processing activities
- Excessive water withdrawals

Beyond freshwater impacts, respondents also highlighted several additional environmental risks:

- **Land degradation and habitat destruction (identified by all respondents)**
- Waste management issues (identified by 8 respondents)

- Air pollution and greenhouse gas emissions (identified by 5 respondents)

These findings highlight the wide range of environmental impacts associated with mining activities.

#### Current Data Practices

Respondents indicated that their institutions currently use a range of data sources to assess mining risks. These include:

- Financial and operational data (6 respondents)
- Sustainability reports (5 respondents)
- Regulatory and compliance data (3 respondents)

However, the use of EO data remains relatively limited. Among respondents:

- **3 institutions reported actively using EO data**
- **6 institutions reported experimenting with EO data**
- **Only 2 institutions reported systematic integration of EO data into risk assessments**

This suggests that EO adoption within the mining finance sector remains at an early stage. When asked about the scale of EO data for mining sector assessments, most respondents (7/10) preferred global data. Needs for spatial resolution in measuring Scope 1 (direct risks and impacts) at a site level varied from respondent to respondent. Most respondents considered *data on direct supply chains* to be the most important in measuring Scope 3 (supply chain risks and impacts) at a corporate level.

Respondents identified several important use cases for EO data in the mining sector. These include:

- Identification of high-risk mining assets for risk mitigation
- Monitoring of environmental risks associated with mining operations
- Supporting engagement with mining companies on environmental performance
- Informing lending and investment decisions

Respondents also highlighted the importance of supply-chain data when

assessing **Scope 3 environmental risks** associated with mining companies.

Most respondents indicated that **direct supply chain data between corporations and their assets is the most relevant scale for assessing supply-chain risks.**

These findings suggest that EO data could significantly enhance **environmental monitoring and risk analysis across mining supply chains**, particularly when combined with asset-level information.

• Direct investments in mining companies.	5
• Indirect exposure through supply chains or lending to mining-related industries.	6
• Insurance underwriting for mining operations or infrastructure.	3
• Impact-focused investment in mining-related projects.	1
• Other	2

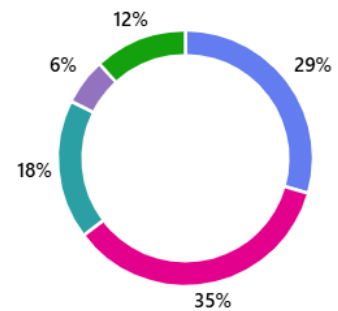


Figure 14: What is your institution's primary exposure to the mining sector?

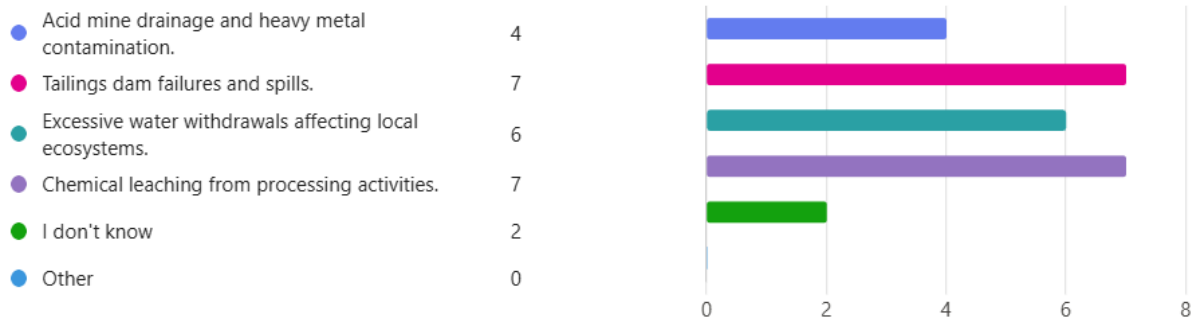


Figure 15: What do you consider the main source of water pollution to freshwater ecosystems from mining activities?

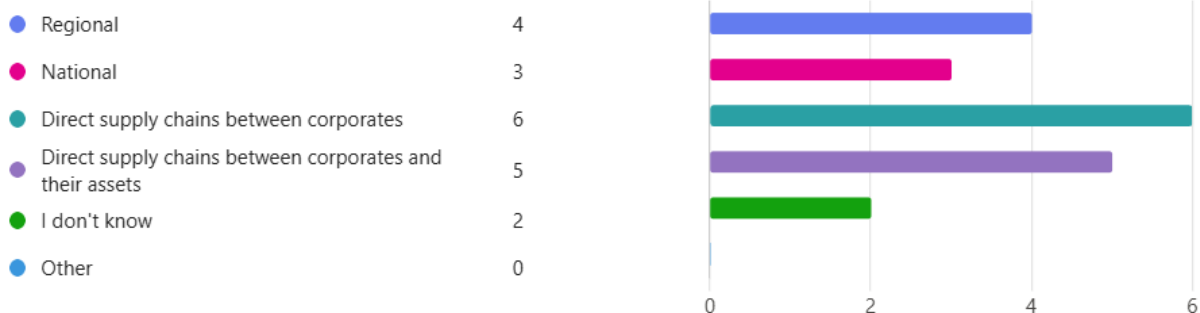


Figure 16: In measuring Scope 3 (supply chain risks and impacts) at a corporate level, what scale would be most important for your organisation?

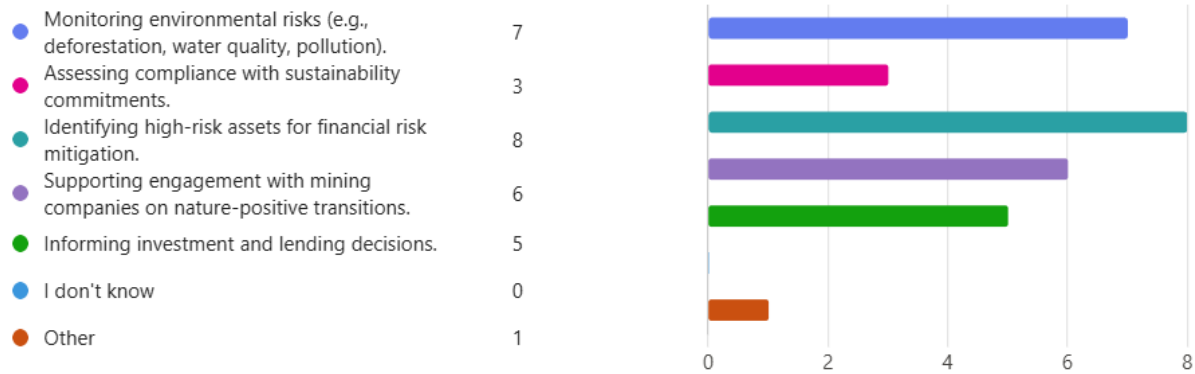


Figure 17: What is currently the most relevant use case for EO data for mining sector insights in your organisation?

## Pilot 2: Agri-Foods Supply Chain

Agriculture and food production are among the most significant drivers of biodiversity loss and ecosystem degradation globally. Agricultural expansion contributes to deforestation, habitat fragmentation, soil degradation and water stress.

Financial institutions are increasingly exposed to nature-related risks through agricultural supply chains, particularly in relation to **deforestation risk commodities and land-use change**.

### Current Data Practices

Among the fifteen respondents participating in this section:

- **11 respondents reported collecting information on land conversion policies of investee companies**
- **7 respondents reported collecting information on sourcing locations of deforestation-risk commodities**

However, the spatial resolution of this data varies significantly. Some respondents collect information at national or regional levels, while others collect more detailed information at the plot or farm level.

### Supplier Data Challenges

A key challenge highlighted by respondents is the **limited availability of supplier-level geolocation data**. Use of company-disclosed supplier lists remains limited.

Among respondents:

- 8 reported not using supplier lists in their risk assessments
- 2 indicated they did not know
- 1 indicated the question was not applicable

Where supplier lists are used, they are primarily used for **traceability rather than geospatial risk analysis**.

Respondents identified several key data gaps within supplier lists, including:

- Quantity of commodities procured from each supplier
- Jurisdictional information
- Mill identifiers
- Geographical coordinates of sourcing locations

These data gaps limit the ability of financial institutions to link supply chains to environmental risks detected through EO data.

## Use of EO Data in Agriculture

Despite these challenges, some respondents reported experience using satellite data in agricultural contexts. Examples of EO applications include:

- Monitoring deforestation and forest degradation
- Identifying high-risk sourcing areas
- Supporting due diligence and risk assessments
- Predicting forest fire risks
- Verifying corporate disclosures

However, many respondents reported **limited expertise in using EO data**, and several indicated that post-processing complexity remains a barrier.

## Data Needs

Respondents emphasised the importance of **supplier geolocation data**. Among respondents:

- **11 of 15 stated that exact geolocation of suppliers is necessary for effective decision-making**

Respondents also identified several key use cases for EO data:

- Client risk assessment
- Corporate benchmarking
- Monitoring of deforestation
- Development of investment products

Regarding monitoring frequency:

- **Semi-annual updates were preferred by 8 respondents**
- **Annual updates were preferred by 7 respondents**

Spatial resolution requirements varied, although high-resolution data was often preferred for site-level analysis.

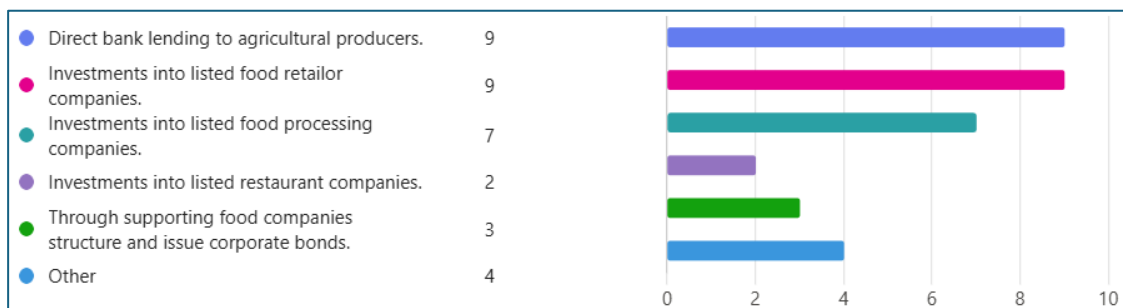


Figure 18: What is your main exposure to the agri-food sector?

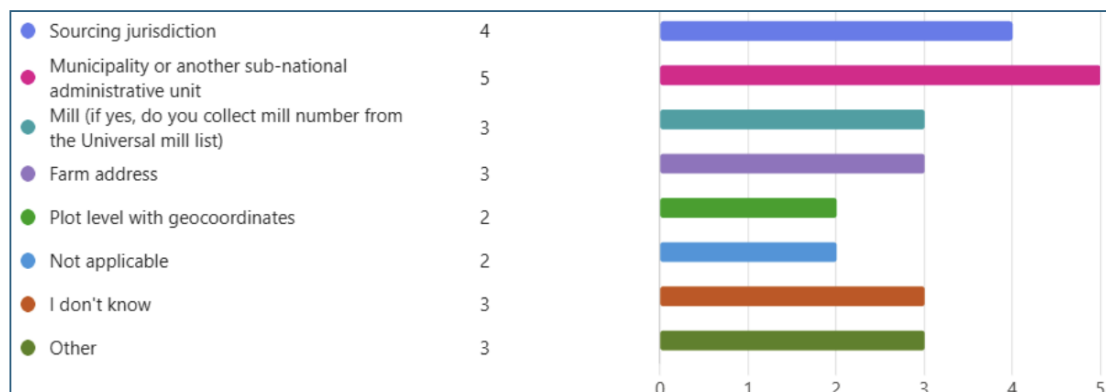


Figure 19: If you collect information on sourcing locations of deforestation risk commodities of bank clients/investee companies, please specify the geographical resolution



Figure 20: What is the most relevant way for your institution to utilise Earth Observation (EO) data to gain insights related to the agri-food sector?



Figure 21: What sustainable forestry practices do you currently gather data on from investee companies / bank clients in the forestry sector?



Figure 22: What nature negative practices do you currently gather information on from investee companies and bank clients?

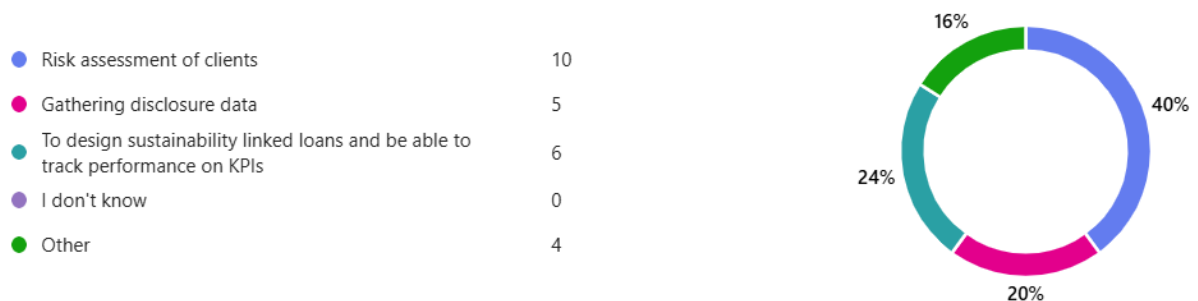


Figure 23: What use case do you think EO data would be most relevant for in your financial institution?

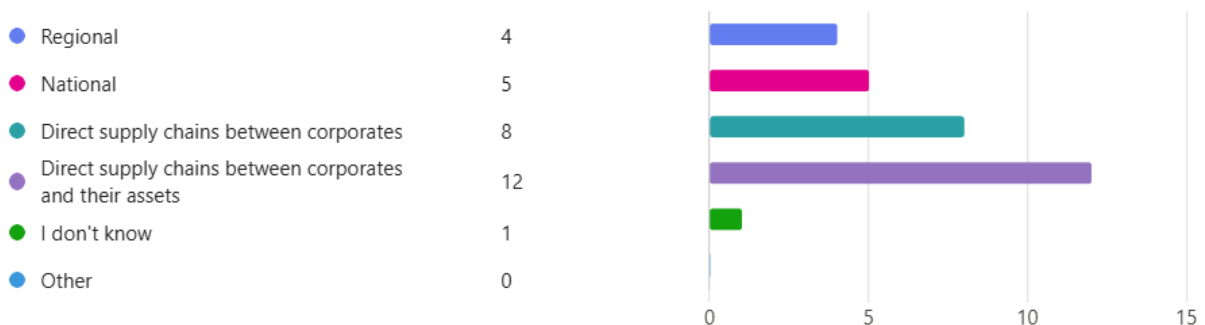


Figure 24: In measuring Scope 3 (supply chain risks and impacts) at a corporate level, what scale would be most important for your organisation?

## Pilot 3: Nature-Related Financial Risks

Nature-related financial risks are increasingly recognised as a material risk category for financial institutions. These risks arise both from the degradation of ecosystems (physical risks) and from economic and policy transitions associated with environmental regulation, changing consumer expectations and evolving market standards (transition risks). The LEON pilot on nature-related financial risks aims to explore how Earth Observation data can support improved measurement and management of these risks within financial institutions.

### Institutional Approaches to Nature Risk Assessment

Among the 21 respondents participating in this section of the survey, a large majority reported that their institutions are already beginning to assess nature-related risks, dependencies and impacts.

However, these assessments remain relatively early in development. Most respondents reported that nature risk assessments are **not yet fully integrated into core financial decision-making processes**. Instead, they are often conducted as exploratory analyses or pilot exercises aimed at building internal understanding of potential exposures.

When asked about the types of risks their organisations consider most important, **18 of the 21 respondents indicated that their institutions are equally concerned about both physical nature risks and transition risks**. This suggests that financial institutions increasingly recognise the importance of both environmental degradation and regulatory or market changes as drivers of financial risk.

### Priority Nature-Related Risks

Respondents were asked to identify the ecosystem services and environmental factors that their institutions most frequently assess when evaluating nature-related risks. Among these, **water-related risks were identified as the most important category**. In particular, respondents highlighted water scarcity and water stress as major concerns for sectors such as agriculture, mining and energy production. The most commonly assessed physical risks included:

- **Surface water stress (15 of 21 respondents)**
- **Land-use change (14 respondents)**
- **Biodiversity loss (12 respondents)**

In addition to these core risks, respondents reported assessing a broader range of environmental risks, including:

- Groundwater stress
- Water quality degradation
- Resource scarcity
- Pollination loss
- Flood protection services
- Soil quality and degradation
- Air pollution

These findings reflect the wide range of ecosystem services upon which economic activities depend and highlight the complexity of assessing nature-related risks across different sectors.

### Transition Risks and Opportunities

In addition to physical risks, respondents were asked to evaluate the drivers of **transition risks and opportunities** related to nature. The most important transition drivers identified by respondents included:

- **Evolving supply-chain regulations**

- **Changes in sector-specific environmental policies**
- **Reputational risks associated with environmental impacts**

Respondents noted that companies may face increasing pressure to demonstrate responsible environmental practices, particularly in sectors associated with deforestation, biodiversity loss or water use. Other transition drivers such as **changing consumer demand and investor sentiment** were rated as important by some respondents but less consistently across the survey.

These findings suggest that **policy and regulatory developments are currently seen as the primary drivers of transition risks related to nature.**

#### Difficulty of Nature Risk Assessment

Despite growing awareness of nature-related risks, many respondents reported that assessing these risks remains difficult. Among respondents:

- **8 of 21 respondents indicated that assessing nature risks is somewhat difficult**
- **6 respondents indicated that it is very difficult**

These difficulties arise from several factors, including:

- Limited availability of asset-level environmental data
- Lack of standardised methodologies for assessing nature risks
- Limited internal expertise within financial institutions
- Challenges in linking environmental datasets with financial portfolios

These findings highlight the importance of improved analytical tools and datasets for supporting nature risk assessments.

#### Tools and Analytical Frameworks Currently Used

Several analytical tools are currently used by financial institutions to assess nature-related risks.

The most widely used tool among respondents is **ENCORE (Exploring Natural Capital Opportunities, Risks and Exposure)**. **19 of the 21 respondents reported using ENCORE** in some capacity. Other tools mentioned by respondents include:

- **WWF Biodiversity Risk Filter**
- **WWF Water Risk Filter**
- Proprietary internal models
- External datasets such as **S&P Global nature risk datasets**

Three respondents also reported having **explored or applied the Nature Value-at-Risk (NVaR) approach.**

However, respondents emphasised that these tools often operate at relatively coarse spatial scales and may lack the asset-level detail required for investment decision-making.

#### Integration into Risk Management Frameworks

While many institutions have begun exploring nature-related risks, **full integration into financial risk management frameworks remains limited.** Among respondents:

- **Only one institution reported fully integrating nature risks into its overall risk management framework**
- **Six institutions reported incorporating risk assessment outcomes into business planning**
- **Most institutions reported partial integration**, typically combining qualitative and quantitative analysis

For many institutions, nature risk assessments remain exploratory exercises aimed at building internal knowledge rather than directly influencing investment decisions or risk pricing. Notably, **no respondents reported fully integrating nature-related risks into risk pricing models**. This suggests that the financial sector remains at an early stage in incorporating nature risks into core financial analytics.

### Benchmarking and Portfolio Analysis

Respondents were also asked about how their institutions benchmark nature-related risks across assets or portfolios. Survey responses suggest that approaches to benchmarking vary widely between institutions. Some respondents reported using:

- Sector-level benchmarking approaches
- Portfolio-level environmental indicators
- External datasets such as **S&P Global nature and biodiversity risk datasets**

However, respondents highlighted significant challenges in benchmarking environmental risks across assets, particularly due to the lack of standardised environmental metrics and limited availability of asset-level data. These limitations make it difficult for institutions to compare environmental risks across companies or sectors.

### Potential Role of Earth Observation Data

Respondents identified several areas where EO data could significantly improve nature risk assessments. The most frequently cited applications include:

- **Assessing ecosystem services and environmental dependencies at asset level** (18 respondents)

- **Monitoring biodiversity impacts associated with specific assets** (14 respondents)
- **Identifying the locations and characteristics of physical assets** (13 respondents)

EO data was seen as particularly valuable for linking environmental conditions to specific physical assets, allowing financial institutions to better understand the environmental risks associated with their investments.

### Data Resolution Requirements

Respondents were asked about their preferred spatial resolution for analysing environmental risks at the asset level. Among respondents:

- **7 indicated a preference for high-resolution data (100 m – 1 km)**
- **6 indicated a preference for ultra-high-resolution data (1–100 m)**
- **4 indicated that medium resolution (1–10 km) would be sufficient**

These responses suggest that asset-level environmental analysis often requires **relatively high spatial resolution datasets**, particularly when assessing risks associated with specific facilities or land parcels.

### Practical Challenges in Using EO Data

While respondents expressed strong interest in EO data, they also identified several practical challenges associated with using such datasets.

In particular, respondents highlighted:

- **Computational demands associated with processing large EO datasets**
- **Data storage requirements**
- **Limited internal expertise in remote sensing analysis**

When asked about the difficulty of using EO data given these constraints:

processed datasets would help reduce these barriers.

- **12 respondents indicated that using EO data would be moderately challenging for their organisation**
- Several respondents noted that additional analytical tools or

These findings reinforce the importance of providing **EO-derived indicators and analytical tools that are accessible to financial users without specialised EO expertise.**

• Nature-related risks	15
• Nature-related dependencies	16
• Nature-related impacts	16
• None of them	1
• I don't know	0
• Other	3

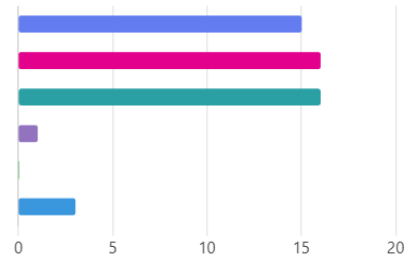


Figure 25: Does your institution measure nature-related risks, dependencies and impacts?

• 1 • 2 • 3 • 4 • 5 • I don't know

Implementation of the global biodiversity framework targets and goals, e.g. 30x30

Evolving domestic environmental regulations aiming at protecting biodiversity domestically (e.g. Forest Code in Brazil, EU Biodiversi...

Evolving regulations concerning supply chains (e.g. EUDR, palm oil etc)

Evolving sectoral policies and regulations, e.g. related to agriculture, forestry, mining or water consumption

Changing patterns of consumer demand, e.g. reduced meat consumption

Changing investor sentiments, e.g. engagement around deforestation or pollution

Reputational risks associated with activities that impact nature and biodiversity

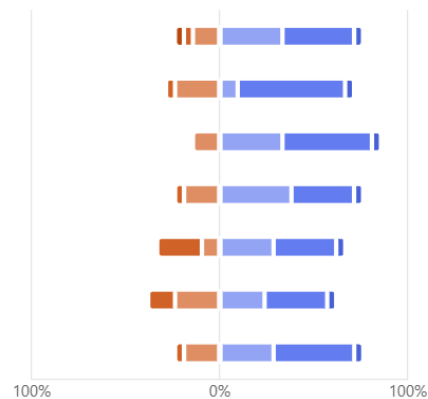


Figure 26: For transition risks (and opportunities), how important do you consider the following drivers to be in terms of likelihood and impact (scale: 1=not important, 5=very important)

• Using recognised external standards	5
• Benchmarking against top-performing peers or industry leaders	6
• Benchmarking against bottom-performing peers or industry averages	3
• Employing internal benchmarks based on historical performance	4
• Not currently benchmarking nature-related risks	3
• I don't know	4
• Other	3

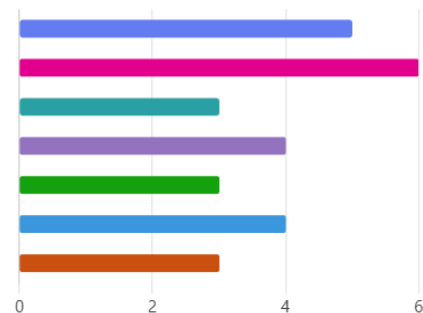


Figure 27: How does your institution benchmark nature-related risks, dependencies and impacts at asset-level or portfolio level?

- More standardised data and metrics available openly 13
- Improved approaches for assessing risks, dependencies and impacts available openly 17
- Improved data available from third-party data providers 13
- Clearly regulatory guidance and frameworks 11
- Training and capacity building available 6
- I don't know 1
- Other 0

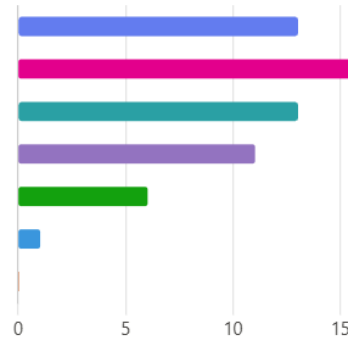


Figure 28: What additional resources or support would be most beneficial for your institution to improve nature-related risk assessments?

- Habitats (e.g., forests, wetlands, grasslands, etc.) 6
- Wildlife species (e.g., endangered species, keystone species, etc.) 1
- Ecological functions (e.g., carbon sequestration, water filtration, pollination, etc.) 3
- Ecosystem restoration or enhancement 4
- Other 3

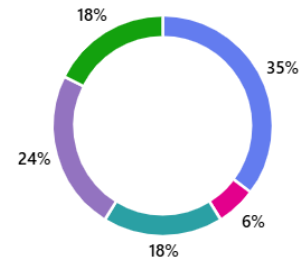


Figure 29: What biodiversity features are the focus of the biodiversity credit markets you participate in?

- Biodiversity index (e.g., species richness, species abundance) 3
- Habitat quality or extent 4
- Carbon sequestration or ecosystem carbon storage 4
- Water quality or ecosystem health 3
- Ecological restoration outcomes 3
- I don't know 2
- Other 3

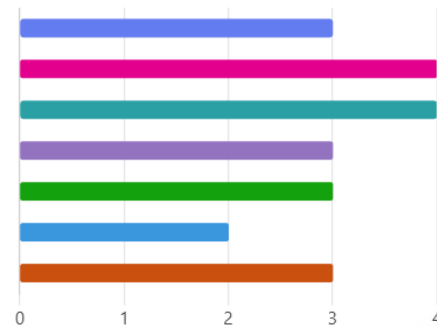


Figure 9.30: Question: What metrics are used in relation to the biodiversity credit markets you participate in?

## Pilot 4: Nature Credits

Biodiversity credit markets are emerging as a potential mechanism for mobilising private finance into biodiversity conservation and ecosystem restoration. These instruments aim to create tradable units representing measurable improvements in biodiversity or ecosystem condition, which can be purchased by companies, investors or governments seeking to support nature-positive outcomes. However, the development of credible biodiversity credit markets depends heavily on robust systems for **measuring, monitoring and verifying ecological outcomes**. Without reliable measurement systems, investors and buyers may lack confidence in the

environmental integrity of biodiversity credits. The LEON pilot on biodiversity credits therefore explores how Earth Observation (EO) data can support the monitoring and verification systems required for emerging biodiversity markets.

### Participation in Biodiversity Credit Markets

Nine survey respondents participated in the biodiversity credits section of the survey. Survey responses indicate that most institutions are **not yet actively participating in biodiversity credit markets** but are exploring potential involvement or monitoring developments in this space. This reflects the early stage of

development of biodiversity credit markets globally. Many respondents reported that their organisations are still evaluating:

- potential investment opportunities in biodiversity markets
- the credibility of different biodiversity credit frameworks
- the availability of reliable measurement methodologies

### Biodiversity Features Targeted by Credit Schemes

Respondents reported that biodiversity credit markets they are observing or participating in focus on a wide range of ecological features. These include:

- species protection and recovery
- habitat restoration
- ecosystem integrity
- landscape-level biodiversity outcomes

However, responses indicate that the **types of biodiversity outcomes targeted by credit schemes vary significantly across markets**, reflecting the lack of standardised definitions and metrics for biodiversity outcomes. This diversity of approaches is one of the key challenges currently facing biodiversity credit markets.

### Metrics Used in Biodiversity Credit Markets

Respondents reported that a wide variety of metrics are currently used to quantify biodiversity outcomes in credit markets.

Examples mentioned include:

- species abundance indicators
- habitat extent and quality measures
- ecosystem condition indicators
- biodiversity intactness metrics
- composite biodiversity indices

However, the survey results also indicate considerable uncertainty among respondents regarding the specific metrics used within different credit systems. Many

respondents indicated that their institutions are **not yet actively measuring biodiversity outcomes themselves**, or that they do not yet have detailed knowledge of how biodiversity credits are quantified. This reflects the early stage of development of biodiversity credit methodologies.

Respondents emphasised that **lack of standardisation of biodiversity metrics represents a major challenge** for scaling biodiversity markets. Without consistent metrics, it becomes difficult for investors to:

- compare biodiversity outcomes across projects
- assess environmental integrity of credits
- evaluate financial risks associated with biodiversity investments

### Data Requirements for Biodiversity Credit Monitoring

Survey responses highlight the importance of **high-resolution ecological data** for biodiversity credit markets. Among respondents:

- **7 out of 9 prioritised the need for highly detailed localised ecological data**

Respondents emphasised that biodiversity monitoring often requires **site-level ecological information**, including:

- species presence or abundance
- habitat characteristics
- ecosystem condition indicators

This level of detail is necessary to ensure that biodiversity credit projects generate measurable and verifiable environmental outcomes. In terms of monitoring frequency:

- **6 of the 9 respondents indicated that annual monitoring would generally be required**

Annual monitoring is seen as sufficient for tracking ecological trends while remaining practical for project implementation.

#### Importance of Baseline Data

Respondents also emphasised the critical importance of **baseline biodiversity data**. Among respondents:

- **8 respondents indicated that baseline ecological data is essential for biodiversity credit markets**

Baseline data allows project developers and investors to determine whether biodiversity outcomes represent genuine improvements relative to pre-project conditions. In biodiversity markets, credits are typically issued only when projects demonstrate **additional biodiversity gains relative to baseline conditions**.

This principle of additionality is widely recognised in the academic literature on biodiversity offsets and credit systems (Maron et al., 2018; Guizar-Coutino et al., 2022). However, respondents noted that reliable baseline datasets are often difficult to obtain, particularly in regions where ecological monitoring has historically been limited. This creates uncertainty for both project developers and investors.

#### Challenges in Monitoring Biodiversity Outcomes

Survey responses suggest that monitoring biodiversity outcomes presents several major challenges. Respondents highlighted difficulties including:

- limited availability of baseline ecological data
- lack of standardised monitoring methodologies

- challenges in verifying biodiversity outcomes independently
- difficulties comparing biodiversity outcomes across projects

These challenges can undermine confidence in biodiversity credit markets and may slow the development of investment in biodiversity projects. Respondents emphasised the need for **transparent, credible monitoring systems** that allow investors to verify environmental outcomes.

#### Potential Role of Earth Observation

Survey responses indicate strong interest in the potential role of EO data in supporting biodiversity credit markets. Respondents identified several ways in which EO data could support these markets. The most frequently cited application was **monitoring and verification of biodiversity outcomes**. Among respondents:

- **7 of 9 indicated that EO could help improve the credibility of biodiversity credit schemes by enabling verifiable monitoring of outcomes**

EO data could support monitoring of several environmental indicators relevant to biodiversity credits, including:

- habitat extent and fragmentation
- vegetation condition
- land-use change
- ecosystem restoration progress

Respondents also highlighted that EO data could help improve **comparability between projects and schemes**. For example, EO datasets could provide consistent indicators across regions, allowing investors to compare environmental performance across biodiversity credit projects.

## Limitations of EO for Biodiversity Monitoring

While EO data has strong potential to support biodiversity markets, respondents also acknowledged several limitations. Some biodiversity outcomes, such as **species population dynamics**, may be difficult to measure directly using satellite data. EO data may therefore need to be combined with **field-based ecological monitoring** to provide a complete picture of biodiversity outcomes. Nevertheless, respondents emphasised that EO could play an important role in providing **independent, large-scale environmental monitoring**, which could significantly enhance the transparency and credibility of biodiversity credit markets.

## Implications for the LEON Pilot

Taken together, the survey responses suggest that EO data could play an important role in enabling biodiversity credit markets, particularly by supporting monitoring and verification systems. However, several challenges remain, including:

- lack of standardised biodiversity metrics
- limited baseline ecological data
- uncertainties regarding monitoring methodologies

The LEON biodiversity credit pilot therefore provides an opportunity to explore how EO data can be integrated into biodiversity monitoring frameworks, potentially helping to establish more credible and scalable biodiversity credit systems.

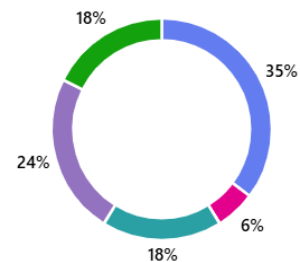
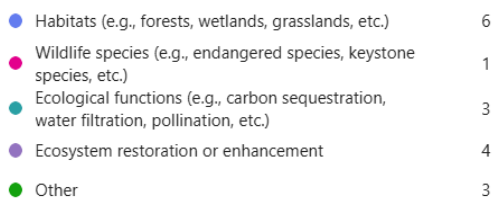


Figure 31: What biodiversity features are the focus of the biodiversity credit markets you participate in?

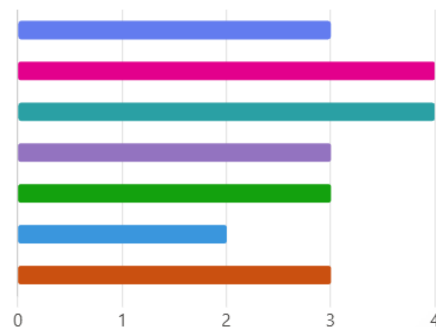
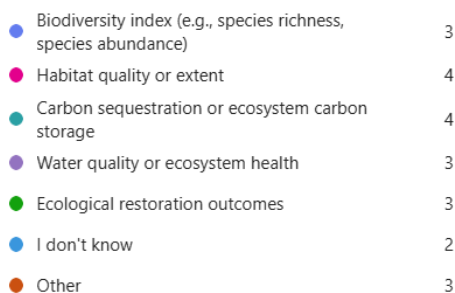


Figure 32: What metrics are used in relation to the biodiversity credit markets you participate in?

## Pilot 6: Sovereign Sustainability-Linked Finance

Sovereign financial instruments are increasingly being explored as mechanisms to mobilise large-scale capital for environmental and nature-related objectives. These instruments include green bonds, sustainability-linked bonds, and debt-for-nature swaps. Such instruments allow governments to raise capital while linking financial conditions to environmental outcomes or commitments. The LEON pilot on sovereign nature finance focuses on how Earth Observation data can support the **measurement, monitoring and verification of environmental indicators associated with sovereign financial instruments**.

Reliable environmental data is particularly important in sovereign instruments because environmental outcomes are often linked to **key performance indicators (KPIs)** that determine financial terms such as coupon step-ups or step-downs.

### Participation in Sovereign Nature Finance

Fourteen survey respondents participated in the sovereign finance section of the survey. Respondents included a mix of financial institutions, advisory firms, and organisations involved in sustainable finance. Most respondents reported **some level of familiarity with sovereign sustainability-linked instruments**, although relatively few indicated that their organisations are actively investing in or structuring such instruments. This reflects the fact that sovereign sustainability-linked bonds and debt-for-nature swaps remain **relatively new instruments**, and their use in nature-related contexts is still emerging.

Nevertheless, respondents indicated growing interest in sovereign nature finance as a potential mechanism for mobilising capital at scale.

### Investor Perspectives on Sovereign Nature Instruments

Respondents identified several factors that influence investor decisions regarding sovereign nature-linked financial instruments. Among the most important factors are **financial and risk management considerations**, including:

- credit risk associated with sovereign issuers
- macroeconomic stability
- liquidity of sovereign bond markets

Environmental considerations are also increasingly important, particularly for investors with sustainability mandates.

However, respondents noted that **investor confidence in nature-linked sovereign instruments depends heavily on the credibility of environmental KPIs and monitoring systems**. If environmental indicators are poorly defined or difficult to verify, investors may be reluctant to participate in such instruments.

### Key Barriers to Sovereign Nature Finance

Survey responses highlight several barriers that currently limit the growth of sovereign nature finance markets. The most frequently cited barriers include:

- **limited availability of reliable environmental data**
- **difficulty measuring and verifying environmental KPIs**
- **regulatory uncertainty surrounding nature-linked instruments**
- **political and governance risks**

Several respondents emphasised that sovereign environmental commitments may be difficult to monitor independently,

particularly where environmental data is limited or inconsistent. Respondents also noted that environmental KPIs used in sovereign instruments are sometimes **too broad or insufficiently measurable**, making it difficult to assess whether targets have been achieved.

### Financial Design Considerations

Respondents were also asked about the financial design features that influence investment decisions regarding sovereign nature-linked instruments. Among the features identified as particularly important were:

- **secondary market liquidity**, which determines how easily investors can buy and sell bonds
- **alignment with institutional investment strategies**, including ESG mandates
- **credit enhancement mechanisms**, which may reduce perceived investment risk

Respondents also mentioned the importance of **coupon step-up or step-down structures**, which link financial returns to environmental performance. However, respondents emphasised that the credibility of such structures depends on the **reliability of the underlying environmental indicators**. Without robust monitoring systems, investors may question whether environmental performance triggers are meaningful.

### Data Requirements for Environmental KPIs

Survey responses highlight the importance of **robust environmental datasets** for sovereign nature-linked finance. Respondents emphasised that environmental KPIs must be based on indicators that are:

- measurable
- transparent
- comparable across time

Among the most important types of data required are:

- baseline environmental data
- time-series environmental datasets
- geographically specific indicators

Respondents noted that many existing environmental datasets suffer from **significant time lags or inconsistencies**, which can limit their usefulness for monitoring financial instruments. In some cases, environmental indicators may only be updated every several years, which is not sufficient for monitoring annual performance targets associated with financial instruments.

### Verification and Monitoring Challenges

A recurring concern among respondents was the **difficulty of verifying environmental outcomes associated with sovereign commitments**. Unlike corporate assets, sovereign environmental indicators often relate to **large geographic areas or entire ecosystems**, making verification more complex. Respondents emphasised the importance of **independent monitoring systems** to ensure credibility of environmental KPIs. Several respondents also noted that monitoring frameworks should ideally combine:

- remote sensing data
- national environmental statistics
- independent third-party verification

Without such systems, there is a risk that sovereign instruments could face **greenwashing concerns**, which could undermine investor confidence.

### Potential Role of Earth Observation Data

Survey responses indicate strong interest in the potential role of Earth Observation data in supporting sovereign nature finance. EO data can provide several important capabilities that address current challenges. First, EO datasets can provide

**consistent and independent monitoring of environmental indicators** across large geographic areas. This makes EO particularly well suited for monitoring environmental KPIs associated with sovereign instruments.

Examples of indicators that could be supported by EO data include:

- forest cover change
- land degradation and restoration
- wetland extent
- coastal ecosystem health
- water availability and water stress

Second, EO data can provide **long-term time-series datasets**, allowing investors and policymakers to track environmental changes over time.

Third, EO systems can provide **globally consistent monitoring frameworks**, enabling comparisons across countries and regions.

These capabilities could significantly improve the transparency and credibility of sovereign nature-linked financial instruments.

• Debt-for-nature swaps	5
• Sustainability-linked sovereign bonds (SLBs)	7
• Green/blue bonds issued by sovereigns	12
• Not applicable	2
• Other	0

### Implications for the LEON Pilot

The survey results suggest that Earth Observation data could play an important role in supporting the development of sovereign nature finance instruments. In particular, EO data could help:

- establish reliable baseline environmental conditions
- monitor environmental performance associated with sovereign commitments
- provide independent verification of environmental KPIs
- improve investor confidence in sovereign nature-linked instruments

However, respondents emphasised that EO data will need to be integrated with other data sources and monitoring frameworks to fully support sovereign finance applications. The LEON sovereign finance pilot therefore provides an opportunity to explore how EO-derived environmental indicators can be incorporated into the design and monitoring of sovereign nature finance instruments

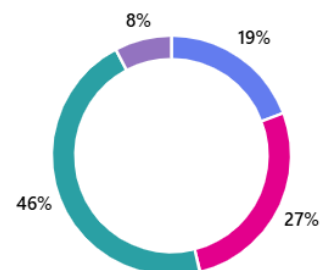


Figure 33: If you have participated, what type of nature-focused instruments have you engaged with?

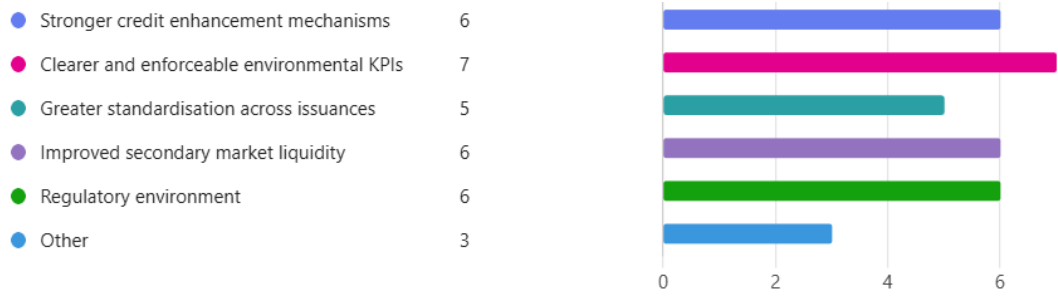


Figure 34: What would make you more likely to invest in these instruments?

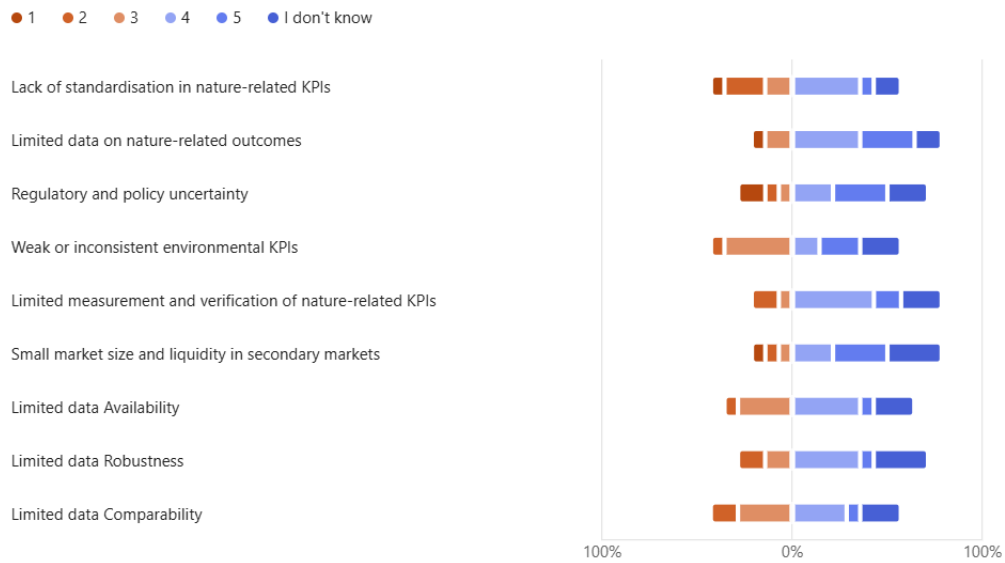


Figure 35: To what extent do you consider the following factors to constitute barriers to investing in sovereign nature finance instruments? (scale: 1=not a barrier / 5=significant barrier)

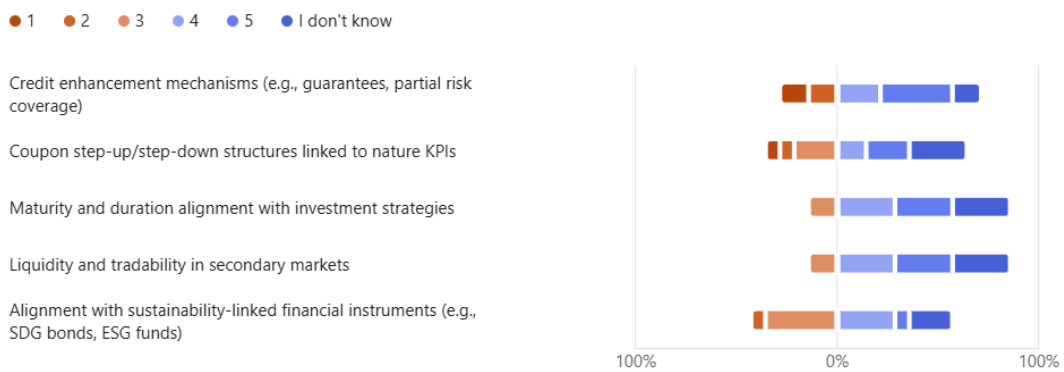


Figure 36: How important are the following financial features when considering investment in sovereign nature finance instruments? (scale: 1=not important / 5=extremely important)

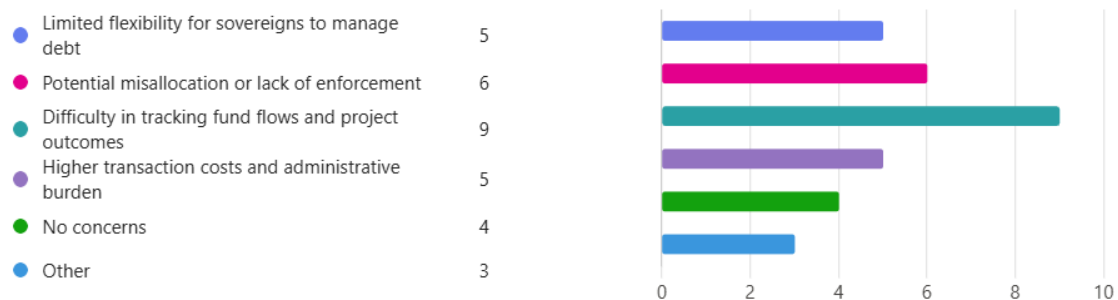


Figure 37: What concerns, if any, do you have regarding ringfenced financing (i.e. swaps and use-of-proceeds instruments earmarked for specific environmental projects)?

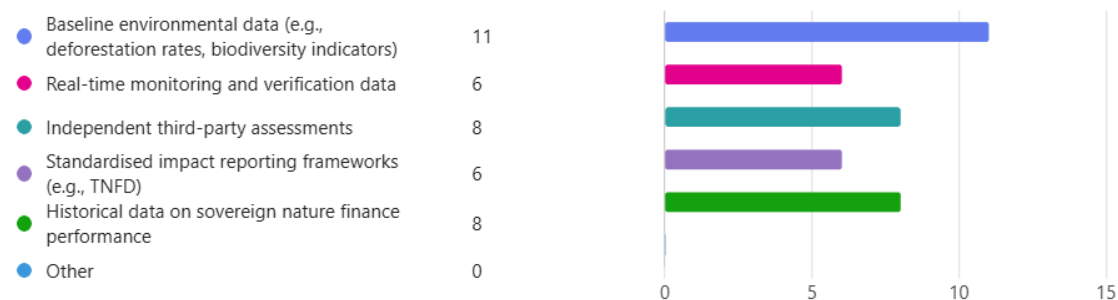


Figure 38: Focusing back on nature, what types of data do you require to assess the robustness of sovereign nature finance instruments?

## Summary and Conclusions

The LEON User Requirements Survey provides valuable insights into the needs, barriers, and expectations of organisations engaging with Earth Observation (EO) data in the context of nature finance. The survey gathered responses from a diverse set of organisations including banks, asset managers, advisory firms, NGOs and international organisations operating across global markets. In total, 27 organisations responded to the general survey, with participation across the thematic pilot areas ranging from four respondents in natural capital accounting to twenty-one respondents in the nature-related financial risks section.

Overall, the findings highlight growing recognition within the financial sector of the importance of nature-related risks and opportunities. Many organisations reported collecting information on nature-related risks, dependencies and impacts, as well as biodiversity commitments and

investment strategies. However, the operational integration of nature considerations into financial decision-making remains at an early stage. In particular, relatively few organisations currently maintain formal nature-related transition plans or fully integrated environmental risk management frameworks.

Across respondents, there was strong agreement that nature finance is likely to grow in importance in the coming years, driven by a combination of regulatory developments, corporate sustainability commitments and financial innovation. Instruments such as blended finance structures, green bonds and sustainability-linked loans were identified as important mechanisms for mobilising private capital toward nature-positive activities.

However, the survey results also highlight significant structural and informational barriers that continue to limit the scale and effectiveness of nature-related investment.

## Key Barriers to Scaling Nature Finance

The most significant barriers identified by respondents relate to **data availability, data quality and policy conditions**.

A lack of granular and standardised environmental data was consistently identified as one of the most important challenges facing organisations seeking to assess nature-related risks or evaluate nature-positive investment opportunities. Respondents also highlighted insufficient policy support and limited availability of large-scale investable projects as key constraints on the growth of nature finance. In addition to these systemic barriers, respondents identified several practical challenges related to environmental data systems. These include:

- lack of standardised metrics and taxonomies for nature-related data
- insufficient asset-level geolocation information
- fragmentation across environmental data platforms
- limited historical datasets for assessing environmental trends.

Respondents also emphasised that data gaps remain particularly significant in certain regions and sectors. In particular, respondents noted limitations in environmental data availability in parts of the **Global South**, as well as in complex sectors such as **marine ecosystems and agri-food supply chains**, where environmental risks are often difficult to monitor and attribute.

These limitations make it difficult for financial institutions to assess environmental risks associated with specific assets or supply chains, and to meet emerging disclosure requirements related to nature and biodiversity.

## EO Data Needs for Nature Finance

The survey responses highlight significant interest among financial institutions in the use of EO data to address many of the data challenges currently affecting nature finance. Respondents indicated particularly strong demand for EO-derived data relating to:

- land-use and land-cover change
- biodiversity and ecosystem indicators
- environmental risks affecting supply chains
- environmental performance of projects and investments.

In terms of data characteristics, users expressed a clear preference for **accessible and ready-to-use data formats**, rather than raw satellite imagery. Commonly preferred formats include structured datasets such as CSV files, raster and vector geospatial datasets, and visual dashboards or analytical platforms that allow environmental data to be integrated into financial workflows.

Respondents also identified preferred technical characteristics for EO data products. In particular, most users indicated that **medium spatial resolution datasets (approximately 10–30 metres)** are sufficient for many financial applications, and that **monthly or annual update frequencies** are appropriate for monitoring environmental trends relevant to financial decision-making.

Another important requirement highlighted by respondents is the need for **validated datasets with transparent methodologies**. Ground-truth validation and clear documentation of analytical methods were considered essential for building trust in EO-derived environmental indicators. Financial institutions emphasised that environmental datasets must be reliable and credible if they are to

be used in investment decisions, portfolio risk assessments or regulatory disclosures.

### Data Access and Operational Challenges

While the potential value of EO data is widely recognised, respondents identified several operational challenges that currently limit the effective use of EO data within financial institutions. One of the most significant challenges relates to **data integration**. Financial institutions often face difficulties linking environmental datasets with financial data systems, particularly when environmental data is not linked to specific assets, projects or supply chains.

Respondents also reported challenges related to:

- limited availability of asset-level geolocation data
- incomplete information on ownership structures within supply chains
- complexity in mapping environmental risks across multi-tier supply chains.

These challenges are particularly pronounced in sectors such as agriculture, forestry and mining, where supply chains often span multiple jurisdictions and involve numerous intermediate actors. As a result, many institutions struggle to connect environmental data with specific investment decisions or portfolio exposures.

### Implications for the LEON Project

The findings of the survey provide several important insights that inform the design and implementation of the LEON project.

First, the results confirm that EO data has the potential to play a transformative role in enabling and scaling nature finance. By providing spatially explicit environmental data, EO technologies can support

improved monitoring of ecosystem conditions, environmental risks and nature-related impacts associated with financial activities.

However, the survey also highlights that EO data products must be designed to align closely with the needs of financial institutions.

### 1. Prioritise EO Data Accessibility and Usability

EO data products should prioritise usability and accessibility for financial sector users. In particular, data products should:

- provide ready-to-use formats such as CSV files, raster/vector datasets and visual dashboards
- ensure that medium spatial resolution datasets (10–30 metres) and monthly or annual update frequencies are available
- include ground-validated datasets and transparent accuracy metrics where possible.

Providing accessible, decision-ready datasets will help financial institutions integrate EO-derived insights into investment and risk management workflows.

### 2. Address Data Gaps for High-Need Areas

The survey results highlight significant data gaps in several priority areas.

Future EO data development should therefore prioritise:

- supply chain monitoring
- ecosystem services and biodiversity indicators
- environmental monitoring in regions of the Global South.

Particular attention should be given to sectors where environmental risks are complex and poorly monitored, including

marine ecosystems, mining and agri-food supply chains.

Developing EO datasets that can support **asset-specific or local-level biodiversity indicators** will also be important for improving environmental risk analysis.

### 3. Develop and Promote Standards and Taxonomies

Improving the standardisation of environmental data will be essential for enabling wider adoption of EO-derived indicators within financial markets.

The LEON project can contribute to this effort by collaborating with existing initiatives to develop **common metrics and definitions for nature-related data**.

Integrating EO-derived indicators into existing frameworks such as the **Taskforce on Nature-related Financial Disclosures (TNFD)** and related sustainability reporting systems could help accelerate adoption by financial institutions.

Collaboration with existing data providers and analytical platforms will also be important for ensuring that EO-derived datasets are compatible with financial sector tools.

### 4. Support Nature Investment Enablement

EO data can also play an important role in enabling new forms of nature-related investment.

EO-derived indicators can support:

- financial risk assessment
- environmental impact monitoring
- transition planning and environmental performance tracking.

EO technologies can also support the development of emerging financial instruments such as biodiversity credits,

sustainability-linked bonds and blended finance structures by providing credible environmental monitoring systems.

Over time, EO-derived environmental indicators could help support the development of **investment pipelines for nature-based projects**, including the standardisation of environmental metrics used in financial instruments.

### 5. Build Capacity and Awareness

Finally, the survey findings highlight the importance of building institutional capacity within the financial sector to use EO data effectively.

Many organisations currently lack the expertise required to integrate EO-derived information into financial decision-making processes.

The LEON project can therefore play an important role in building capacity through:

- training materials and workshops on EO data for finance
- demonstration projects illustrating the practical use of EO data in investment and risk analysis
- engagement with senior decision-makers and financial analysts.

By supporting capacity building and awareness, the LEON project can help overcome institutional barriers and accelerate the integration of EO data into financial markets.