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IDENTIFYING
REGULATORY
BARRIERS AND
RECOMMENDATIONS
FOR ASSESSING
ASSET GEOLOCATION
IN SOUTH AMERICA

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List of abbreviations

All

| | |
|-------------|---|
| FIs | Financial Institutions |
| LEAP (TNFD) | Locate, Evaluate, Assess, and Prepare |
| SARAS | Environmental and social risk management system |
| TNFD | Taskforce on Nature-related Financial Disclosures |

Brazil

| | |
|----------|--|
| ANEEL | National Electric Energy Agency |
| APPs | Permanent Preservation Areas |
| AURs | Restricted Use Areas |
| BCB | Brazilian Central Bank |
| CAR | Rural Environmental Registry |
| CMN | National Monetary Council |
| CNPJ | National Register of Legal Entities |
| CPF | Individual Taxpayer Registry |
| FEBRABAN | The Brazilian Federation of Banks |
| IBAMA | Brazilian Institute of Environment and Renewable Natural Resources |
| IBGE | Brazilian Statistics Institute |
| ICMBio | Chico Mendes Institute for Biodiversity Conservation |
| INDE | The National Spatial Data Infrastructure |
| LGPD | General Law on Protection of Personal Data |
| RLs | Legal Reserves |
| SARB | Banking Self-Regulation System |
| SFN | National Financial System |
| Sicar | National Rural Environmental Registry System |
| TCU | Federal Court of Accounts |

Colombia

| | |
|-------------|--|
| Asobancaria | The Banking and Financial Institutions Association of Colombia |
| FCDS | Foundation for Conservation and Sustainable Development |

IDEAM Institute of Hydrology, Meteorology and Environmental Studies

Ecuador

Asobanca Association of Banks of Ecuador

SB Superintendency of Banks of Ecuador

Peru

SBS
agers Superintendency of Banking, Insurance and Private Pension Fund Man

Executive Summary

The Taskforce on Nature-related Financial Disclosures (TNFD) framework recognises the crucial role of local context in precisely assessing the impact of financial sector assets on the natural environment. The TNFDs LEAP (Locate, Evaluate, Assess, and Prepare) approach - integrated process of assessing risks and opportunities related to nature - heavily relies on location data, highlighting the fact that nature impacts vary depending on whether an asset is situated in an urban area, a coastal zone, or a tropical rainforest. Financial institutions and companies may therefore wish to gain a better understanding of the geographical locations of their direct operations, assets and supply chains to identify and manage risks related to nature.

Aligned with this framework, this report examines the obstacles in incorporating geolocation criteria into the decision-making procedures of financial institutions' portfolios. The report provides recommendations to market participants in Brazil, Colombia, Ecuador, and Peru to strengthen their capability in effectively managing risks linked to the natural world. Furthermore, the report extends its recommendations to financial institutions that may finance companies and projects within these countries even if they are not located in such countries.

The methodology used to prepare this report comprised four steps:

- 1 **Rapid investigation of the environmental and financial regulation of each country**
- 2 **Preliminary analysis of the main barriers to geolocation of assets**
- 3 **Twelve interviews with different agents of the financial system, including commercial banks, development banks and regulatory entities and with a minimum of two interviews per country**
- 4 **Results distributed in three topics:**
 - **Regulations related to social and environmental risks or nature related.**
 - **Accessibility of public data and its utilisation by financial institutions (FIs)**
 - **Data management and privacy**

In summary, the results obtained by each country are outlined below:



| Regulations related to social and environmental risks or nature related | Accessibility of public data and its utilisation by financial institutions | Data management and privacy |
|--|--|---|
| <p>The Brazilian Financial System already has regulations that directly or indirectly address the assessment and/or disclosure of geolocation information of assets, positioning the country at the forefront in addressing these issues in Latin America.</p> <p>Environmental protection and the management of social and environmental risks are intricately tied to the environmental regulations set forth by the government and the regulatory financial institution. Brazil boasts a comprehensive and ever-evolving regulatory framework aimed at promoting sustainability and environmental preservation. However, the explicit connection with geolocation is not always apparent.</p> | <p>During the interviews, the strength of Brazil's regulatory environment in asset geolocation was acknowledged, along with the extensive availability of public data. Nevertheless, there is room for improvement in the accessibility of databases and the establishment of comprehensive training programs within financial institutions to foster a deeper understanding and continuous integration of geolocation data in the assessments of their portfolios.</p> <p>The granularity of available data varies significantly across federal, state, and municipal levels, with municipal data often being the least accessible and reliable. Finally, the absence of a unified data platform and inconsistencies among environmental agencies further complicate comprehensive risk assessments and decision-making processes for stakeholders.</p> | <p>Banking secrecy laws safeguarding clients' financial data, coupled with interpretations of the General Data Protection Law (LGPD), can complicate access to vital environmental databases.</p> |



| Regulations related to social and environmental risks or nature related | Accessibility of public data and its utilisation by financial institutions | Data management and privacy |
|---|---|---|
| <p>The Environmental and Social Risk Assessment System (SARAS) of financial institutions in Colombia is currently unregulated, and its implementation is voluntary. Consequently, the country has the potential to gain from a more structured regulatory environment in this area.</p> <p>The supervisory authority of the financial system uses information about the geographical distribution of assets to monitor loan portfolios. This enables the regulator to effectively monitor these assets and identify specific areas where financial operations are more concentrated. However, it is not presently possible to precisely identify the environmental impact of the asset in the area where it is located. The location of this asset can be known through the address declared by the customer to the financial institution.</p> <p>Currently, the supervisory entity uses a geovisualizer to identify climate-related risks (not yet related to nature) to which the assets of the financial system are exposed.</p> | <p>The financial system has introduced significant technological initiatives regarding the geolocation of assets, which still face some integration limitations in their socio-environmental risk management. During the interviews, the need for better coordination between financial institutions and regulatory authorities managing databases related to geolocation was observed. This includes a call for clear guidelines on how to properly georeference assets, ensuring consistency and accuracy in the process.</p> | <p>Regarding the location of assets, financial institutions can request the registered address of the asset, as this information is public. However, personal data and customer-related information, protected by law, cannot be accessed or disclosed. Thus, there should be no legal conflict in obtaining the customer's location, provided that the customer is appropriately informed that this data is necessary for analysis by the financial institution.</p> |







| Regulations related to social and environmental risks or nature related | Accessibility of public data and its utilisation by financial institutions | Data management and privacy |
|--|--|---|
| <p>The Ecuadorian Environmental and Social Risk Assessment System became regulated in 2022. This regulatory environment provides the regulatory entity with the opportunity to establish guidelines that encompass the geolocation of assets in the portfolios of financial institutions.</p> <p>Additionally, the Ecuadorian financial system adheres to the <u>Sustainable Finance Protocol of Ecuador 2.0 (2023)</u>, a voluntary agreement by the Association of Banks of Ecuador (Asobanca) regarding the integration of green and social criteria into banking products and operations. The protocol's appendix lists the TNFD as one of the international reporting standards but does not provide additional information or specify how banks can adopt the framework.</p> | <p>Financial institutions need training on the importance of georeferencing their assets to enhance environmental risk management in their operations. They should also report their impact on nature more clearly. Achieving this requires the establishment of a comprehensive database that consolidates all necessary information.</p> | <p>In the case of geolocation data, this information is public and included in the environmental licenses issued by the Ministry of the Environment. Therefore, this data can be used for georeferencing by the bank without implying any conflict or violation of the law. It is worth noting that, for georeferencing, only coordinates (location) are required, and no other data, such as customer identification, balance, or debt, among others.</p> <p>If the asset or project does not require an environmental permit because it's categorized as having a non-significant environmental risk, obtaining the geographical coordinates will depend the client, who may report inaccurate data or with errors, which compromises the geolocation accuracy.</p> |



| Regulations related to social and environmental risks or nature related | Accessibility of public data and its utilisation by financial institutions | Data management and privacy |
|--|---|--|
| <p>The Environmental and Social Risk Assessment System in Peru is currently not regulated. However, the financial sector has established guidelines through a resolution on environmental and social risk management. This regulation allows the inclusion of the assessment of georeferenced assets in portfolio evaluations. In 2021, as part of the Green Protocol, the Ministry of Finance published a Green Finance Roadmap to establish activities supporting the adoption of environmental criteria by financial institutions in Peru and boost the country's sustainable finance market.</p> | <p>During the interviews, a significant need for an updated and more comprehensive geolocation database was observed. Such a database would significantly enhance its ability to analyse portfolios based on geolocation criteria, potentially leading to a better assessment of risks and decision-making processes in socio-environmental risk management. To effectively implement these guidelines, it is crucial to raise awareness and provide training within the financial sector on the use of geolocation tools for assets.</p> | <p>To obtain the required address and geographical coordinates of the asset to be financed, financial institutions rely on forms and documentation submitted by the customer. Essentially, this information is acquired directly from customer statements, ensuring the privacy and security of personal data.</p> |

In various regions, comparable difficulties have been recognized concerning geolocation regulations, accessibility of public data, and the management and privacy of data. The ensuing suggestions seek to offer a cohesive strategy for all essential parties involved.

|     | |
|--|---|
| Geolocation Regulations | <p>Unified Geolocation Standards: Adopt a standardized geolocation system across jurisdictions to ensure consistency and facilitate easier data sharing and interpretation.</p> <p>Transparency in Geolocation Use: Make clear the purposes for which geolocation data is collected and utilised, particularly in relation to environmental impacts and financial assessments.</p> <p>Integration with Climate-Related Requests: When geolocation data is utilised for financial decision-making, ensure it is integrated with climate impact assessments. This will provide a holistic view of the potential consequences of financial actions on the environment.</p> |
| Public Data Availability | <p>Unified Organised Data Portal: Implement a centralised data portal that aggregates public data from various sources, ensuring that the information is accessible, well organised, and user-friendly.</p> <p>Regular Updates on Information: Maintain the data portal with timely and regular updates, ensuring that the information remains relevant and up to date.</p> <p>Open Data Initiatives: Promote the release of non-sensitive public data in open formats to enhance transparency and stimulate innovation among financial institutions and environmental agencies.</p> <p>Adherence to and Influence on Global Standards: Adhering to and potentially influencing global standards for financial and environmental reporting, such as TNFD.</p> |
| Data Management and Privacy | <p>Clear Data Privacy Protocols: Establish and regularly review protocols concerning the storage, sharing, and deletion of data to ensure user privacy is maintained.</p> <p>Stakeholder Collaboration: Foster collaboration between financial regulators, financial institutions, and environmental agencies. This will ensure that data management practices align with both financial and environmental goals.</p> |

1. Introduction

Our economy, financial stability, and society's overall resilience rely on the well-being of our natural environment. However, the rapid loss of biodiversity across the globe presents an increasingly apparent and tangible threat to businesses. In that sense, the framework and guidance offered by the Taskforce on Nature-related Financial Disclosures (TNFD) represents a transformative development for corporations and financial institutions.

Location is a key innovation of the TNFD framework as it recognises that local context is critical to accurately assessing an organisation's nature-related impacts, dependencies, risks and opportunities. More specifically, under the TNFD's voluntary assessment approach LEAP (Locate, Evaluate, Assess, and Prepare), the "Locate" phase accentuates the importance of identifying specific locations where an organisation's assets, business processes, products, and services intersect with nature.

Despite its significance, obtaining and accessing geolocation data can be a challenging endeavour. Corporations, as well as public and private financial institutions, have identified issues hindering the smooth acquisition and utilisation of asset geolocation information. These issues encompass concerns related to privacy, data accuracy, regulatory compliance, and the need for standardised protocols and frameworks. Overcoming these challenges is imperative for unlocking the full potential of asset geolocation data and its applications across diverse domains.

This is especially challenging for financial institutions because the accuracy and security of asset geolocation data are of paramount importance in their operations. These institutions often rely on precise asset geolocation information for critical decision-making, such as environmental risk assessment, and the location of physical branches. This report focuses on identifying the regulatory barriers that financial institutions in Brazil, Colombia, Ecuador, and Peru face when using asset geolocation data to assess nature-related dependencies, impacts, risks and opportunities. Through discussions with regulators, self-regulating bodies, and financial institutions, the report aims to provide a clear understanding of the current challenges and to offer recommendations for improved data utilisation.

The main findings are organised under three distinct themes:

- a. Regulations related to social and environmental risks or nature related risks;
- b. Public data availability and data access challenges; and
- c. Concerns related to data management and privacy.

The goal is to provide comprehensive recommendations that help streamline the process for financial institutions, ensuring both compliance and efficient operations. Through this, it is expected that financial institutions and regulators can align more closely with the TNFD's vision and recommendations, promoting a more nature-conscious financial landscape.

2. Methodology

For the preparation of this report, four main steps were adopted. First, a survey of environmental and financial regulations with potential relevance to asset geolocation was carried out by NINT - Natural Intelligence. This step was crucial as it enabled the identification of specific regulations which were in effect in the analysed countries and how they could impact asset geolocation assessment. Understanding the laws and regulations was the first step in assessing the ability for financial institutions to assess risks and opportunities related to sustainability and the environment.

A preliminary analysis of the main barriers related to asset geolocation assessment was then conducted. This was important to identify the initial challenges that financial institutions could have faced when attempting to integrate geolocation information into their operations. These barriers could have been related to technology, regulatory compliance, data availability, or other critical issues.

To validate initial findings and deepen our understanding of the implications of asset geolocation for financial system, twelve interviews were conducted with different types of financial market players in the four analysed countries with a minimum of two interviews per country. The interview scripts used can be seen in Appendix 1 and 2. The selection of private banks and public development banks was deliberate, as these institutions played significant roles in the financial markets and had different approaches to environmental and sustainability issues.

The research team sought to understand perspectives from entities of various sizes, different portfolio compositions, and varying levels of maturity regarding their environmental and social risk management systems. In the case of Brazil and Colombia, interviews also involved financial regulators. In Peru and Ecuador, the research team was unable to secure interviews with financial regulators to support the preparation of this report.

These interviews provided a broader and more detailed view of the perceptions, challenges, and strategies adopted by financial institutions regarding asset geolocation, contributing to a more comprehensive and informed analysis. In our pursuit to gain deeper insights into the challenges and intricacies surrounding asset geolocation data utilisation within financial sectors, the research was analysed according to three main themes:

| | |
|---|--|
| Regulations related to social and environmental or nature- related risks | Assessment of how regulations related to social and environmental or nature-related risks, when present, address asset geolocation assessment challenges. |
| Accessibility of public data and its utilisation by financial institutions (FIs) | It refers to the ease with which public data, such as government records and databases, can be accessed and utilised by external entities. This topic also delves into the barriers and challenges financial institutions face when trying to access and gather public data, focusing on inconsistencies and collection practices. |
| Data Management and Privacy | This topic covers practices and protocols for storing, processing, and safeguarding data, to ensure that clients’ privacy is respected and that data is used ethically and in compliance with regulations. |

3. Main challenges with assessing asset geolocation for nature-related risk and opportunity assessments

This section deals with the challenges faced by countries regarding assessing asset geolocation for nature-related risk and opportunity assessments.

3.1 Brazil

Navigating the landscape of data management and financial regulations in Brazil is a multi-faceted challenge for financial institutions (FIs). Although there is a noticeable unfamiliarity with the Taskforce on Nature-related Financial Disclosures among Brazilian FIs, it is important to clarify that these guidelines have not been adopted in the country's regulatory frameworks. The regulator has been working to promote social and environmental risk management in financial institutions, and the government as a whole has been taking initiatives to foster sustainable investments. Specifically, regulations focus on ensuring responsible lending practices, geolocation data usage for monitoring deforestation, and maintaining data protection standards as seen with the General Law on Protection of Personal Data.

In Brazil, the Central Bank is at the forefront of sustainable finance and drives a strong sustainability agenda. Moreover, the emphasis on asset geolocation to ensure alignment with regulations showcase the country's proactive approach. For instance, the regulations like the BCB Resolution No. 140 of 2021 have been implemented, restricting rural credit to those properties in the Amazon property subject to an embargo resulting from the illegal economic use of deforested areas on the property, as disclosed by the Brazilian Institute of Environment and Renewable Natural Resources.

Yet, challenges persist:

- The stringent banking secrecy laws safeguarding clients' financial data, coupled with interpretations of the General Data Protection Law (LGPD, as per the Portuguese acronym) can complicate access to vital environmental databases. For instance, Chico Mendes Institute (ICMBio) provides a complete database, which includes names and Individual Taxpayer Registry (CPF, as per the Portuguese acronym) and/or National Register of Legal Entities (CNPJ, as per the Portuguese acronym), for individuals and entities embargoed by the agency due to environmental violations (such as deforestation, illegal burning, land contamination). This information is accessible on the ICMBio website and the ICMBio Open Data Platform. The data is made available by the Geospatial Information and Monitoring Division and is updated monthly. However, due to interpretations of the LGPD, the availability of this data became unstable for a period until legal alignment on the matter. This has made it challenging to monitor such violations.

- Brazil has several institutions responsible for environmental policies, such as monitoring the use of natural resources and aspects related to the National Environmental Policy. Public entities, foundations, institutes, and even the private sector are involved and make various environmental databases available online in Brazil. However, databases like the Rural Environmental Registry CAR, as per the Portuguese acronym)¹ grapple with issues of data security, scale, quality and verification.

The granularity of available data varies greatly across federal, state, and municipal levels, with municipal data often being the least accessible and reliable. Finally, the lack of a unified data platform and inconsistencies among environmental agencies further complicate comprehensive risk assessments and decision-making processes for stakeholders.

A. Regulations related to social and environmental or nature-related risks

In Brazil, environmental protection and the management of social and environmental risks are intricately tied to the environmental regulations set forth by the government and the regulatory financial institution. Brazil boasts a comprehensive and ever-evolving regulatory framework aimed at promoting sustainability and environmental preservation. However, the explicit connection with geolocation is not always apparent.

The introduction of the CAR in 2012 by the Law n° 12.651/2012² (Brazilian Forest Code) was a significant step, creating a central database for environmental data on rural properties, aiding in both environmental planning and deforestation prevention. Among the property information that must be included in the registration are the locations of native vegetation remnants, consolidated areas, Permanent Preservation Areas (APPs), Restricted Use Areas (AURs), and the location of Legal Reserves (RLs).

In 2014, with the issuance of CMN Resolution No. 4,327,³ Brazil gained worldwide recognition for its pioneering efforts in introducing rules for managing social and environmental risk undertaken by institutions within the National Financial System (SFN) and for the establishment of a policy of responsibility on this matter by these institutions. This resolution stipulated that institutions' management of socio-environmental risk should include the recording of data related to actual losses due to socio-environmental damage for a minimum period of five years, including values, type, location, and economic sector subject to the operation.

In 2015, BCB Circular No. 3.734⁴ stated that the presentation of geodetic coordinates (CG as per Portuguese acronym) is mandatory for rural credit operations, both for operating and investment purposes that link to a defined area of the rural property. More recently, regulations like the BCB Resolution No. 140 of 2021⁵ have been implemented, restricting

¹ Rural Environmental Registry available at <https://www.gov.br/pt-br/servicos/inscrever-imovel-rural-no-ca-dastro-ambiental-rural-car>

² [LEI N° 12.651, DE 25 DE MAIO DE 2012.](#)

³ [RESOLUÇÃO N° 4.327, DE 25 DE ABRIL DE 2014](#)

⁴ [CARTA CIRCULAR N° 3.734, DE 29 DE OUTUBRO DE 2015](#)

⁵ [RESOLUÇÃO BCB N° 140, DE 15 DE SETEMBRO DE 2021](#)

rural credit to those properties in the Amazon property subject to an embargo resulting from the illegal economic use of deforested areas on the property, as disclosed by the Brazilian Institute of Environment and Renewable Natural Resources. On July 2022, CMN Resolution No. 4,943/2021⁶, CMN Resolution No. 4,945/2021⁷, and BCB Resolution No. 151/2021⁸ came into effect. Alongside CMN Resolution No. 4,944/2021⁹ and BCB Resolution No. 139/2021¹⁰, which took effect in December 2022, these regulations share a common objective of addressing social, environmental, and climate risks. Related to new resolutions, the Article 38-D of CMN Resolution No. 4,943 stipulates that the risk management framework must also include, for social risk, environmental risk, and climate risk, the recording of relevant data for management purposes, including, when available, data related to the geographical region, as well as monitoring concentrations of exposures to economic sectors or geographical regions.

The introduction of CMN Resolution No. 5.081¹¹ in 2023 highlights Brazil's commitment to refining rural credit norms based on environmental compliance, ensuring financial decisions align with environmental protection measures. In the same year, FIs associated with FEBRABAN required meat-packing clients in the Legal Amazon and Maranhão to establish a system by December 2025¹² to prove they had not bought cattle linked to illegal deforestation from any suppliers. Together, these regulations underscore Brazil's commitment to integrate both environmental protections into standardised financial practice.

When it comes to geolocation regulations, the regulatory area is, at least in part, studying the matter. The focus is on effectively implementing and complying with the existing standards. These norms already demand significant effort from financial institutions, especially when trying to align with environmental agency standards and databases.

B. Accessibility of public data and its utilisation by financial institutions

Whilst on the one hand, Brazil has several databases and public data provided by the Government, on the other hand, the reliability of some of these public datasets stand out as a primary concern among financial institutions. They often grapple with these dataset's accuracy, sometimes necessitating external expertise, which adds to operational costs. Considering the challenges with data not yet validated by environmental authorities, it's acknowledged that the uncertainty in the legitimacy of such data complicates risk analysis. However, for CARs (Rural Environmental Registry) that are validated, an aspect often overlooked by financial institutions is whether there is a deficit in Legal Reserves (RL). Determining this deficit requires technical calculations, a task that most financial institutions, even large banks, tend to avoid. Consequently, despite the availability of data, these institutions often rely on the argument of unreliable data sources to limit the use of information provided by the CAR.

⁶ [RESOLUÇÃO CMN Nº 4.943, DE 15 DE SETEMBRO DE 2021](#)

⁷ [RESOLUÇÃO CMN Nº 4.945, DE 15 DE SETEMBRO DE 2021](#)

⁸ [RESOLUÇÃO BCB Nº 151, DE 6 DE OUTUBRO DE 2021](#)

⁹ [RESOLUÇÃO CMN Nº 4.944, DE 15 DE SETEMBRO DE 2021](#)

¹⁰ [RESOLUÇÃO BCB Nº 139, DE 15 DE SETEMBRO DE 2021](#)

¹¹ [RESOLUÇÃO CMN Nº 5.081, DE 29 DE JUNHO DE 2023](#)

¹² [FEBRABAN, NORMATIVO SARB 026/2023](#)

On the topic of data access, challenges abound in terms of accessing data due to inconsistencies at diverse levels and administrative bodies. Compounding this, is the misalignment and asynchronous updates across different data entities.

Data like the CAR, while accessible, has raised questions regarding its accuracy and reliability. Financial institutions have notably underscored irregularities in CAR updates. Moreover, the potential of integrating various spatial tools that track deforestation and land-use changes, both Brazilian and international, remains underutilized. Despite limitations like the methodological issues in Brazil's PRODES algorithm, utilizing a combination of available tools and data analyses could significantly mitigate environmental risks. Interview insights further emphasised the vital role regulatory bodies should play in coordinating databases like CAR. The need for a centralized hub was emphasised to integrate not only existing valuable data, such as that from INPE, but also complementary information from various agencies. This hub, potentially overseen by the Ministry of Science and Technology, would provide crucial data not only to government agencies like the BCB (Brazilian Central Bank) and ANEEL (National Electric Energy Agency) but also to financial institutions and researchers in the field.

The intricacies related to the CAR encompass issues such as the dissonance between federal and state norms, fraudulent declarations concerning environmental parameters, and platforms allowing reporting in prohibited areas. Such shortcomings mean that properties with environmental liabilities might falsely present themselves as compliant. The absence of dynamic analytical tools within the CAR framework further exacerbates the challenge, hindering financial institutions from acquiring real-time insights. This becomes evident when diving deep into the specific example of the CAR (Box 1).

Box 1- CAR and its challenges

Financial institutions using the CAR, an essential tool designed to integrate the environmental information of rural properties, raised several challenges during interviews. Some of these challenges include:

- **Heterogeneity among states:** The implementation of the Forest Code in the states remains quite heterogeneous. According to data from 2022, the states that were already at the forefront of implementation were the ones that made the most progress, except for São Paulo, which joined this select group. Bahia and Minas Gerais are the states with the highest number of registrations in the country, and currently, both have around one million registrations in their databases.
- **Rural Property Registration Analysis Complexity:** The process of analysing the registrations is a significant challenge for almost everyone involved. The task is immense; it involves approximately 5.07 million rural properties, of which around 75% belong to family farmers (IBGE 2017) and relies on the efforts of government agencies in 27 federal units, each with varying levels of human and technological resources. Not all states have a dedicated team for CAR analysis, and in many cases, these teams are insufficient to handle the high number of registrations.
- **Cartographic databases issues:** Thematic cartographic databases, such as land cover, land use, terrain, vegetation, and hydrography, are essential as references for the

analysis of registrations. Many states do not have all the necessary databases, and often, those available lack adequate spatial resolution or technical quality.

- **The low technical quality of registrations:** In many states, the low technical quality of registrations is the main obstacle in this analysis stage, requiring numerous re-evaluations of the same registration until it is entirely accurate. Inconsistencies come in various forms, such as overlapping with another rural property, overlapping with non-registerable areas (such as indigenous lands and public-domain conservation units), delimiting permanent preservation areas (APPs as per the Portuguese acronym) in non-compliance with the reference databases used, and indicating consolidated areas where there is native vegetation and vice versa. Each time a technician from the state agency identifies an inconsistency, they must notify the owner or possessor to rectify the registration information.
- **Technological issues:** Rural producers report that the Prodes system¹³ has provided information to the CAR database that does not accurately reflect the reality of their properties, detecting deforestation in areas where there has been no human intervention. Some areas, when the satellite captures the image, are affected by some physical element interference (such as clouds) and their shadow creates a darker coloration in the area, suggesting deforestation in that region.

Source: Interviews, CPI (2023)¹⁴, Oprenterural(2023)¹⁵

Federal datasets, like those concerning embargos from IBAMA¹⁶, are generally available; however, state-level data can be inconsistent. The most notable discrepancies are found at the municipal level, where data is both limited and challenging to access, leading to concerns about its reliability. Such variability in data quality across different governmental levels complicates comprehensive risk assessments.

Monitoring and enforcement of legislation have also been identified as challenges. A study published in the Environmental Research Letters Journal¹⁷ found that only 13.1% of lands embargoed for deforestation in the Amazon from 2008 to 2017 were restored as required by law. Satellite images revealed that agricultural activities were maintained in 86.9% of the embargoed polygons, indicating a widespread failure to comply with legal mandates for land restoration.

The study suggests that remote sensing tools and geoprocessing could assist IBAMA in monitoring and applying the law. Embargoes on deforested areas are considered one of the most effective measures to combat deforestation because they impose immediate economic restrictions on the violators. Once an area is embargoed, the rural property owner is supposed to be prevented from using the land for production, obtaining financing, and selling products derived from the damaged area.

Moreover, geospatial information in Brazil is distributed among various public and private institutions. Datasets and information are usually found in isolation, in different formats and

¹³ A satellite monitoring program for deforestation in the Legal Amazon.

¹⁴ [CPI \(2023\)](#)

¹⁵ [Oprenterural \(2023\)](#)

¹⁶ IBAMA (Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis) is the Brazilian Institute of the Environment and Renewable Natural Resources, responsible for environmental protection and natural resource management in Brazil.

¹⁷ Verissimo César Sousa da Silva et al. 2022.

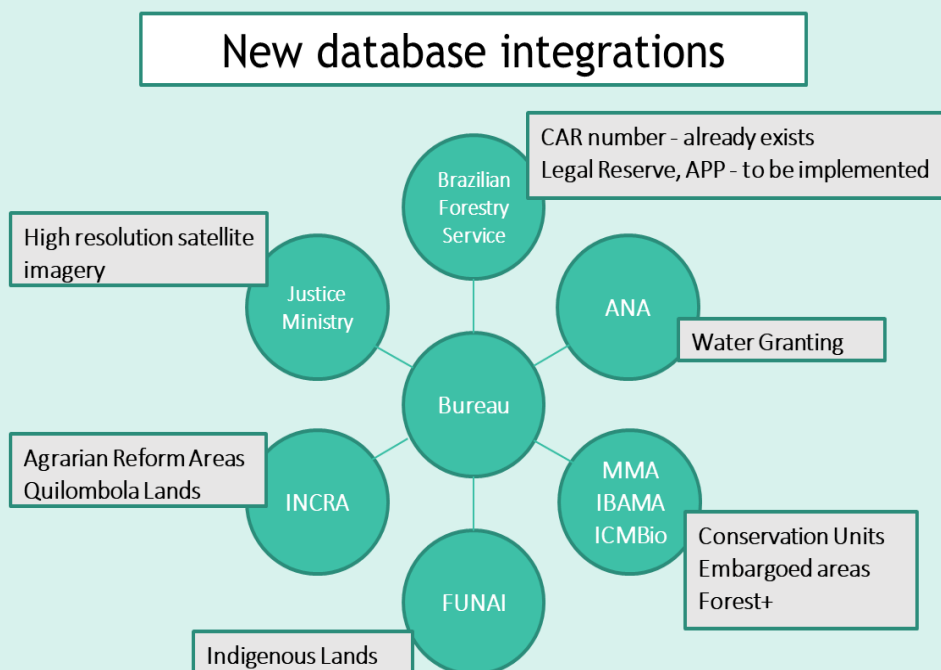
standards, often disorganised, within systems that did not interact with each other, serving only the purposes of the acquiring entity. This situation hinders their use, leading to redundancy in efforts and investments in obtaining and producing information.

On the other hand, Brazil has inspiring examples. First, the Green Rural Credit Bureau of Brazil, set for implementation in 2023, offers a pioneering model in blending georeferencing technology with sustainability criteria to redefine rural credit processes. Instigated by the Brazilian Central Bank, this initiative not only consolidates existing sustainability laws but promotes transparent information access, making credit issuance contingent on adherence to sustainable practices (Box 2).

Box 2 - Green Rural Credit Bureau: A Case Study in Geolocation and Sustainable Financing

The Green Rural Credit Bureau's core strength lies in its robust data integration approach, pooling data from seven key government agencies, ranging from the Brazilian Forest Service to the National Water Agency. This ensures that financed areas strictly conform to sustainable benchmarks. This system is not only aimed at negating credit risks for financial institutions, it also seeks to establish a standardised credit analysis approach across Brazil.

In the context of our project, the Green Rural Credit Bureau encapsulates the essence of marrying geolocation regulations with nature-related risk assessments. It stands as a testament to the power of centralized platforms, echoing our recommendation for a unified data portal. Brazil's venture into integrating geolocation and sustainability in finance highlights the potential advantages such systems could offer in Colombia, Ecuador, and Peru.



Source: BCB, 2022¹⁸

¹⁸ [BCB, 2022](#)

Another important example is The National Spatial Data Infrastructure (INDE as per the Portuguese acronym)¹⁹, an initiative that was created to integrate existing geospatial data from various Brazilian government institutions, harmonise them, and facilitate their dissemination and effective use. It was established by Decree No. 6,666, dated 11/27/2008 and it aims to streamline access to geospatial information by promoting organised data generation, use of standards, and avoiding duplication of efforts in data acquisition across government agencies.

In the examination of challenges encountered by financial institutions, the substantial availability of data in Brazil has been underscored. In general terms, FIs interviewed did not encounter obstacles when evaluating the geolocation of their assets. Two key considerations should be noted: firstly, a primary concern for FIs revolves around the lack of alignment and synchronised updates across diverse data sources. Secondly, distinguishing larger operations from smaller ones can be relatively straightforward.

The challenges experienced by financial institutions in data access are underscored by recent studies in regions like Matopiba.²⁰ The study developed by Embrapa²¹ determined by correlating geolocation data from the 2017 Agropecuário Census and the boundaries from the Rural Environmental Registry (CAR) indicated three situations: agricultural establishments that coincide with rural properties, agricultural establishments that do not coincide with rural properties, and rural properties that do not coincide with agricultural establishments. This highlighted inconsistencies between agricultural establishments and registered rural properties, emphasising the intricacies financial institutions navigate.

Additionally, another study conducted by Trase²² reveals that in the Cerrado and Amazonia regions, 58% of soy production originates from farms that exhibit indications of possible violations of the Forest Code. However, the compliance status of these farms remains unclear due to a lack of publicly accessible data. The research also indicates that a total of 74% of soy production is influenced by some form of potential non-compliance. Interviews highlighted that soybean traders, meatpackers, and large producers do not have their plants and units easily identified by the financial institutions. These findings combined underscore the pressing need and the difficulty for increased transparency, monitoring, and accountability within the soybean and meat supply chains.

C. Data Management and Privacy

Lastly, when considering data management and privacy, the inception of the LGPD²³ (as per the Portuguese acronym) in 2018 introduced challenges. According to LGPD, personal data is information related to an identified natural person - such as name, last name, ID, and Brazilian individual taxpayer identification number - or identifiable, as in the case of geolocation data (GPS), IP address, device identification. In 2022, the Normative SARB 25 was released, showing the commitment of the FEBRABAN Banking Self-Regulation System

¹⁹ [INDE, 2011](#)

²⁰ Matopiba is a region formed by predominantly cerrado (savanna) areas in the states of Maranhão, Tocantins, Piauí, and Bahia, where agriculture expanded from the second half of the 1980s.

²¹ EMPRAPA. Embrapa Analyse CAR and Agricultural Census data in Matopiba. 2023.

²² Trase, Soy and Legal Compliance in Brazil, 2023

²³ [L13709 \(planalto.gov.br\)](#)

includes the development and implementation of privacy governance programs with minimum requirements and best practices.

Therefore, identifying data points in environmental and labour databases has become more constrained. Added to this complexity is the issue of banking secrecy in Brazil, a legal safeguard which guarantees the confidentiality of clients financial and banking information. Regulated by specific laws, banks are obliged to uphold this privacy unless there is a court-issued order permitting otherwise for criminal or fiscal investigations.

The intertwining of LGPD and banking secrecy resolutions²⁴ can result in challenges, especially when it comes to access to specific identifiers like CPFs and CNPJs (National Register of Legal Entities) in environmental databases. For financial institutions, ensuring LGPD compliance, particularly around customer identification, is a pronounced challenge related to geolocation, given the implications on privacy.

The Rural Environmental Registry is an example of the distortion of the right to data protection. With the advancement of satellite imagery technology, it is relatively simple to cross-reference the coordinates of an area where there has been illegal deforestation with CAR data, thus identifying the property owner, which ensures more efficient accountability of environmental offenders. However, it's essential to note that the primary intention behind CAR is environmental protection, not a contravention of data privacy laws.

Until 2022, only the number of registrations by state and municipality were disclosed in open data format. It was a civil society complaint to the Federal Court of Accounts (TCU as per the Portuguese acronym) that ensured the expansion of accessible data, including coordinates, the total area of native vegetation remnants, the total area of consolidated use, among others. Nevertheless, access to the names and CPFs of property owners was not available in the National Rural Environmental Registry System (Sicar) and is usually restricted by most state systems because it is considered "personal information" protected by the Brazilian General Data Protection Law.

Another case worth mentioning is that the Chico Mendes Institute for Biodiversity Conservation began disclosing complete data, including names and CPF and/or CNPJ (Brazilian business registration number) of those fined for environmental violations and those who had areas embargoed by the agency only in 2023. This data disclosure does not breach the General Data Protection Law (LGPD), as per IBAMA, and received a favourable opinion from the specialized attorney's office "as it is considered a necessary measure"²⁵ for the implementation of environmental defence public policies led by the agency.

3.2 Colombia

The Colombian financial sector is not yet familiar with the TNFD framework. The disclosure of information related to nature by the sector is not regulated, but according to the External Circular 031/2021²⁶ it is mandatory for listed issuers to disclose the environmental and social factors that are material to the company, considering that environmental factors include

²⁴ [LEI COMPLEMENTAR Nº 105, DE 10 DE JANEIRO DE 2001.](#)

²⁵ <https://oeco.org.br/noticias/icmbio-divulga-a-partir-deste-mes-nome-e-cpf-de-infratores-ambientais/>

²⁶ [ce031_21.pdf \(cerlatam.com\)](#)

but are not limited to climate criteria. Also the banking sector has initiatives to include criteria related to nature in their environmental and social risk management systems.

The financial system's supervisory authority uses information on the geographic distribution of assets to oversee loan portfolios. Financial institutions submit this data to the authority through required reporting forms. A potential use of this data is the ability to identify which area or region financial operations are concentrated in, and consequently, their potential nature-related impacts in these regions. In addition, the insurance industry is required by regulations to have detailed geolocation of insured assets.

Asobancaria, the Colombian financial union, in agreement with Amazon Alive²⁷ (USAID's SEED program) and the Foundation for Conservation and Sustainable Development²⁸ (FCDS) has developed a consultation tool not yet been officially launched, which brings together geoviewers with various maps of the different national agencies that have this information. This tool makes it possible to consult the geolocation of financial sector assets in the Colombian Amazon area, which is the area most vulnerable to deforestation risks.

A. Regulations related to social and environmental or nature-related risks.

In Colombia, banking entities, through *Asobancaria*, and the national government signed a voluntary agreement called *Protocolo Verde*²⁹ (Green Protocol), which has been in force since 2012 and renewed for the period 2022 - 2027, with 25 banks participating. The *Protocolo Verde* develops strategies for financial institutions to implement policies and practices for environmental responsibility, which includes the implementation of the environmental and social risk management system - ESMS (SARAS, as per the Spanish acronym), although geolocation criteria for the assets of the bank's portfolios are not referenced in this system.

The SARAS of financial institutions is not yet regulated, implementation is voluntary and not all of *Asobancaria*'s members have this system in place. Therefore, when it comes to geolocation of assets, there are no guidelines established by the regulatory authority as to how to include such criteria into financial institutions' SARAS systems.

Financial institutions are still required to, periodically report the geographical distribution of their portfolios to the financial regulator, down to the department and municipality level. This enables the regulator to effectively monitor these assets and pinpoint the specific areas where financial operations are most concentrated. However, this information is insufficient to allow the assets to be georeferenced. In terms of reporting for regulatory purposes, it is not possible to precisely identify the environmental impact of the asset in the area where it is located; it is only possible to know the location of such an asset through the address

²⁷ Amazon Alive (*Amazonía Mía*, in Spanish) is a program that assists the Government of Colombia to improve environmental crime prevention and prosecution for reduced deforestation and increased forest conservation. The program runs from July 2021 to June 2026, and is part of Strengthening Entrepreneurship and Enterprise Development (SEED) project by U.S. Agency for International Development (USAID).

²⁸ The Foundation for Conservation and Sustainable Development (*Fundación para la Conservación y el Desarrollo Sostenible* - FCDS, in Spanish) is a non-governmental organisation, which goals include the sustainable and equitable development of - mainly rural - human populations while preserving these regions' natural and social conditions, following an inclusive, inter-agency and multi-scale approach, in collaboration with communities and local, regional, and national organisations, sectors, and state authorities.

²⁹ [Protocolo-Verde-Asobancaria-2022-2027.pdf](#)

declared by the client to the FI, which does not mean that the FI is unaware of the specific location of the entire loan portfolio.

It is important to mention that, on the insurance companies' side, they are regulated by seismic risk issues, i.e., they must georeference their assets to identify and categorise the disaster risk to which they are exposed. This information must be made available to the supervisory authority when required; although in practice the reporting takes time to be carried out by the insurers.

With Decree 455 of 2023³⁰, which seeks to promote access to financing for the most vulnerable population, particularly in rural areas isolated from urban centres, rural and urban productive popular credit modalities, among others, have been made viable. In this regard, when the supervisory authority requests information from FIs on the placement of these loans, it is possible to obtain geolocation data on assets by zone.

Currently, the supervisory entity uses a geoviewer to identify climate-related risks (not yet nature-related risks) to which the assets of the financial system are exposed. It relies on two primary sources: 1) the Vulnerability Index of the National Planning Department, whose data is geolocated at department and municipality level; 2) flood information developed and managed by the Institute of Hydrology, Meteorology and Environmental Studies (IDEAM³¹, as per the Spanish acronym), derived from cross-referencing the geolocated portfolio with flood data.

At the initiative of *Asobancaria*, the tool *Geovisor Arco Deforestación Amazonía Colombiana* has been developed, that allows the geolocation of assets of associated banks that have implemented SARAS, to be able to integrate it into their financial management procedures for a better identification of the impact of their credit operations on nature.

B. Accessibility of public data and its utilisation by financial institutions

In accordance with the Transparency and Access to National Public Information Act 1712 of 2014³², government agencies responsible for maintaining public information databases are mandated to provide access to all citizens. Multiple public organisations, including ministries, geographical and scientific research institutes, regional corporations, and sectorial agencies, are tasked with developing mapping databases. As a result, they are obliged to publish this information on their respective platforms since it is considered open data, available for use and reuse under an open licence without legal restrictions. However, certain databases still require updates or standardisation, which presents challenges for the financial sector when attempting to access this information for geolocation queries related to assets.

The handling of geolocated data by second tier FIs, which extend credit through intermediary financial institutions, necessitates a distinct approach. Since they lack direct interaction with the clients, the borrowers, it is through these intermediary FIs that the collection of asset addresses becomes feasible. Consequently, the second-tier bank relies on the intermediary FI to manage geolocated data, enabling the integration of this information into

³⁰ [Decreto 455 de 2023 - Gestor Normativo - Función Pública \(funcionpublica.gov.co\)](#)

³¹ [IDEAM - IDEAM](#)

³² [Ley 1712 de 2014 - Gestor Normativo - Función Pública \(funcionpublica.gov.co\)](#)

its SARAS for evaluating the environmental impact of these assets. In essence, the second-tier bank is dependent on the intermediary FI's management of geolocated data.

Due to the lack of unification and updating of public mapping bases, *Asobancaria* developed its own geoviewer tool under the framework of the *Protocolo Verde, Geovisor Arco Deforestación Amazonía Colombiana* (Box 3), which still uses public sources, such as cartographic layers that contain information on environmental and social conflicts, deforestation and degradation, biophysical attributes, territorial planning, conservation and protection, among others, all developed by public organisations, through which it is expected that the banking sector can geolocate its assets to understand how they interface with nature, without incurring higher operational costs to identify potential environmental risks in the Colombian Amazon.

Regarding the integration of geolocation criteria into the banks' SARAS, the lack of regulation of the system may be considered by FIs as a limitation to this process, since without guidelines on how to geolocate their assets, the use of tools could not be better used by the financial sector. In this sense, the SARAS regulation, which may include geolocation guidelines, is on the regulator's agenda.

Box 3 - Geovisor Arco Deforestación Amazonía Colombiana

The Geovisor Arco Deforestación Amazonía Colombiana, which has not yet been officially launched, is a database of geoviewers for consultation. All this information is obtained from public sources (open data) and is stored in a database to which there is open access in order to use this information for the respective analyses, evaluations and generation of reports for decision makers.

The components and layers of the tool comprise of six different topics, such as biotic environment, territorial planning, risk management, socio-economic environment, land use conflicts, and security and conflict. The tool covers historical data and allows comparison between layers.

Positive aspects

On private data: The query geoviewer does not store private information on the banks' assets and clients, that is, it does not record the queries made about the client's projects, but it is possible to cross-reference the coordinates of the asset with the different layers (maps) to identify more precisely whether the asset has any impact on the area where it is located.

On updated database: Because the official annual deforestation data in the country are generated by IDEAM, the geoviewer depends on the institute's management of publishing this information to be able to integrate it into its database and thus keep it updated. This generates a temporary data update gap that can last more than a year, depending on the month in which the query is made. To overcome this, the FCDS develops its own deforestation database, although it does not contain updated official data, it is a very close reference and can be used by banks as they wait for the publication of the IDEAM. Banks are alerted to this gap and the source of deforestation data so they can evaluate its use in financial decision making.

On training: It is necessary to understand the content of the layers as well as their interactions to better identify the sensitivity of the area. The dynamics of deforestation and territory need a more accurate analysis for a better interpretation of the results when cross-referencing with the geographic coordinates of the project. In this regard, training workshops have been conducted so that those responsible for analysing this information do so correctly.

Attention points

On area coverage: At the moment, the geoviewer contains information specifically for the Colombian Amazon, as it is highly vulnerable to nature loss and the risk of deforestation; therefore, for financial institutions that do not have assets located in this area, it is only efficient to implement the geoviewer once the tool includes other areas or regions. In the case of banks and other financial institutions that do not have information on the areas where their assets are located, they have access to public databases, which, as mentioned previously, do not guarantee whether they are updated frequently. In addition, each database has its own format and criteria, making it difficult to access and apply in the location of the assets.

On risk categorisation: The implementation of a traffic light type feature in the tool is being assessed. This feature would indicate the risk category (high, medium, low) when georeferencing is performed by the financial institution which would allow for rapid identification and prioritisation in the management of deforestation risk.

On continuity of the geoviewer: It has not yet been determined who will be in charge of managing the tool after the cooperation project with Amazonía Mía and FCDS ends, which will occur in June 2026.

Source: Amazonía Mía and FCDS (interview, 2023)

C. Data Management and Privacy

To reach a good level of management of geolocated data, the supervisory authority advises that it is necessary that all market agents contribute to the process. Regulation would not be sufficient and efficient if FIs are not aware of the importance of implementing geolocation criteria in their evaluations, or that organisations responsible for the databases do not keep this information updated and accessible.

Adding to the above, it must also be taken into account that when evaluating climate and nature-related risks, financial inclusion is guaranteed; that is, the FIs' risk appetite is not impacted to the point of stopping investing in areas of high environmental risk, which is where vulnerable populations, that need investment to meet their needs, are located.

Regarding the improvement in the quality of information, the supervisory authority suggests through expectations documents (recommendations that FIs are expected to follow), and not through regulations, that FIs that have SARAS (13 entities) improve the collection of information from their clients to improve identification of the climate risks of their portfolios. In this sense, collecting the address of the financed asset does not guarantee its accuracy, since this often refers to the location where the credit disbursement or other

procedure was carried out and not to the project beneficiary of the credit; in the case of mortgage loans, it is easier to have more accurate data.

The supervisory entity has implemented open finance criteria, which allows the exchange of consumer information between the different actors in the financial system with the aim of achieving greater financial inclusion. This criterion is governed by Decree 1297 of 2022 and the Personal Data Protection Regime (Law 1266 de 2008 and Law 1581 of 2012^{33,34}). At the microdata level, when it is required by management processes, it is possible to share private data whilst preserving its confidentiality, without breaking the law.

For a Financial Institution (FI) to utilise a client's data through open finance, it must obtain the client's authorisation and employ it exclusively for the purpose they agreed on. Concerning the location of assets, FIs can request the registered address of the asset, as this information is public. However, personal data and information pertaining to the client, which is safeguarded by law, cannot be accessed or disclosed. Therefore, there should be no legal conflict in obtaining the client's location, provided that the client is duly informed that this information is required for the FI's analysis.

As mentioned before, in the case of Asobancaria's geoviewer, it is for consultation only and does not store clients' information in its database.

3.3 Ecuador

The Ecuadorian financial system has the Sustainable Finance Protocol of Ecuador 2.0³⁵, a voluntary agreement of the Association of Banks of Ecuador (*Asobanca*) on the integration of green and social criteria in the products and operations of banks, the annex of which lists the TNFD as one of the international standards on reporting, but does not elaborate further information or specify how banks can adopt the framework. The regulatory framework of the Ecuadorian financial system oversees the implementation of SARAS, which is a significant step towards enabling FIs to seamlessly incorporate the geolocation data of their assets into their credit approval processes. SARAS regulations incentivize banks to give precedence to the incorporation of geolocated data into their operations. This, in turn, encourages them to explore the development of asset geolocation tools, all the while safeguarding the personal data of their clients.

A. Regulations related to social and environmental or nature-related risks

The implementation of SARAS in banks is regulated by the Superintendency of Banks of Ecuador (SB) since 2022 through Book I.- Control Standards for Entities of Public and Private Financial Sectors³⁶, whose scope is to regulate products and services intended to finance activities and projects with social and environmental benefit. In general, this implementation can be considered in the initial phase, since not all banks have implemented it, especially smaller ones which have fewer resources for such implementation, and where

³³ [Ley 1266 de 2008 - Gestor Normativo - Función Pública \(funcionpublica.gov.co\)](https://www.funcionpublica.gov.co/funcionpublica/ver?id=1266)

³⁴ [Ley 1581 de 2012 - Gestor Normativo - Función Pública \(funcionpublica.gov.co\)](https://www.funcionpublica.gov.co/funcionpublica/ver?id=1581)

³⁵ [Protocolo-de-Finanzas-Sostenibles-2.0-Version-Final_Asobanca.pdf](#)

³⁶ [Superbancos, 2022](#)

it has been possible to implement, the process has not been homogeneous, i.e. there are SARAS with a more robust structure than others.

As it is through this system that banks can manage the geolocation and georeferencing criteria of their assets, the more developed and robust the bank's SARAS is, the more likely it is that geolocation criteria will be integrated. This is an indication that the institution has a culture adept at these issues and that it has more resources for the implementation of a georeferencing tool.

The initiative to integrate geolocation criteria in the banking sector comes from the FIs themselves, since there is no regulation in this regard. As mentioned previously, SARAS have recently begun being regulated, but there are still no specific guidelines on geolocation or what the credit evaluation should be like considering the location of the asset.

From private banking there are initiatives to implement asset geolocation criteria through georeferencing tools integrated into their SARAS. That is, the more developed the SARAS, the better the conditions for integrating the geolocation of the assets. Another important condition for an FI to be able to implement a geolocation tool is to have sufficient economic and human resources. This is correlated to the fact that the larger the FI, the better the conditions to develop its own tool.

These initiatives that allow the crossing of geolocation layers with the geographic coordinates of the banking client's projects can only be carried out in projects categorised as high environmental and social (E&S) risk, since clients with projects with this risk must declare their geographical coordinates, which become public in the available environmental permits by the Ministry of the Environment; that is, if the project is not categorised as high risk, the environmental permit is not necessary and, therefore, the client is not required to declare the location of its project through any other procedure.

Regarding the declaration of the physical address of the asset, it is not possible to guarantee that the information is accurate, it becomes more difficult in the event that the client has more than one address, it commonly declares one of them, generally the one with the lowest E&S risk, making it difficult for the bank to identify the real impact of the asset.

On the other hand, the SARAS of financial cooperatives is also regulated since 2022 by the Standard of Control for Environmental and Social Risk Management in Credit and Savings Cooperatives and Mutual Credit and Savings Associations for Housing³⁷, which establishes that for risk categorization must optionally incorporate territorial sensitivity, for which it is necessary to count on the geographic location of the economic activity.

B. Accessibility of public data and its utilisation by financial institutions

Public organisations, such as the Ministry of the Environment, provide various databases or maps to the public. Consequently, the FI needs to use multiple sources or databases to identify the specific information or layer of interest for georeferencing an asset. However, it is important to note that certain information within these databases is restricted to public entities. In other words, for a private bank to access this information, it must coordinate its acquisition and subsequently purchase it.

³⁷ [Norma-SARAS-codificada.pdf \(seps.gob.ec\)](#)

Another constraint associated with public databases is their often-incomplete updates or technical malfunctions, which can hinder the access to the desired documents. Consequently, while data access is generally free, it remains limited for FIs. This limitation poses a challenge when attempting to implement georeferencing tools for assets within their portfolios. In that sense, banks are considering the acquisition of layers developed by foreign companies, with the aim of completing the information necessary for better georeferencing of assets.

C. Data Management and Privacy

Regarding the management of customer information, this aspect is regulated in Ecuador's Law on Personal Data Protection.³⁸ In this regard, FIs are aware and aligned with the standard, knowing that they cannot publish sensitive information about their clients without their authorisation.

In the case of geolocation data, this information is public and appears in the environmental permits³⁹ issued by the Ministry of the Environment; therefore, this data can be used for georeferencing by the bank, not implying any conflict or violation of the law. It should be noted that for georeferencing it is only necessary to have the geographical coordinates (location) and no other data such as customer identification, balance, or debt, among others.

It is important to mention that, although environmental administrative authorizations (environmental permits) such as environmental license and environmental registry are mandatory for projects or activities with significant environmental impact (high, medium or low), in the case of projects or activities with non-significant environmental impact (e.g.: small stores, offices, etc.) there is no legal obligation to obtain the environmental permit (environmental certificate), in this case, obtaining the geographical coordinates of the facilities depends on the client, which may imply measurement bias and other types of errors that compromise the accuracy of the geolocation and the analyses derived from it.

Most FIs have teams responsible for the processing of their clients' data, which have evaluated or will evaluate this aspect of personal data protection in accordance with the law in the implementation of the tool or geoviewer.

3.4 Peru

Starting from 2015, the Peruvian financial system has adhered to minimum guidelines for managing environmental and social risks. However, these guidelines have not been updated to incorporate newer methodologies and international frameworks related to the management of risks associated with the environment and nature, although the National Competitiveness and Productivity Plan 2019 - 2030, approved by Supreme Decree N° 237-

³⁸ [1162059 - LEY ORGÁNICA DE PROTECCIÓN DE DATOS PERS 202107011248165227 \(www.gob.ec\)](http://www.gob.ec)

³⁹ <https://regularizacion-control.ambiente.gob.ec/suia-iii/pages/rcoa/preliminar/informacionPreliminar.jsf#no-back-button>

2019-EF⁴⁰, establishes as a policy measure on green financial instruments that IFs must implement SARAS until 2025.

In 2020 the *Protocolo Verde*⁴¹ (Green Protocol), a voluntary agreement, was relaunched and signed between the Ministry of the Environment and three financial unions: banks, microfinance institutions and municipal savings banks. The agreement aimed to promote collaboration between the public sector and the private financial sector to integrate environmental criteria in the management of financial entities; however, the inclusion of geolocation criteria for reporting is not evident or is not specifically defined.

The alignment with contemporary methodologies and international standards is insufficient and can potentially limit the Peruvian financial system's ability to effectively assess and mitigate environmental and social risks, particularly those linked to the natural world. As global awareness of environmental sustainability and responsible finance practices continues to grow, updating these guidelines could not only enhance the resilience of the financial sector but also align it more closely with evolving global standards, thereby contributing to the sustainable development of the Peruvian economy.

A. Regulations related to social and environmental or nature-related risks

In Peru, the financial system operates under the Regulation for Managing Social and Environmental Risk, as approved by SBS Resolution No. 1928-2015⁴², this regulation sets out the basic criteria for handling environmental and social risk. However, it does not mandate the regulation of SARAS or specify the geolocation of system assets. As a result, it is up to individual financial institutions to decide whether to voluntarily implement SARAS.

Its article 8 outlines the minimum requirements for the evaluation of social and environmental risk of projects within the Peruvian financial system. These requirements are designed to ensure a comprehensive assessment of the potential impact of projects on the social and environmental aspects. The article mandates the following actions:

- a) Clients of financial institutions are required to complete a questionnaire, which should be signed by the General Manager of the client or an authorised representative. Additionally, if the client has an individual responsible for social and environmental issues, their signature is also necessary, emphasising the importance of top-level commitment to these matters.
- b) Financial institutions are encouraged to utilise publicly available information sources that can facilitate the evaluation and ongoing monitoring of social and environmental risks associated with projects. This approach encourages transparency and accessibility of relevant data.
- c) Projects are to be categorised based on their social and environmental risks as either high, medium, or low. The criteria used for such categorisation should be made accessible to the regulatory authority, ensuring consistency and clarity in risk assessment.

⁴⁰ [DS 237-2019-EF ACCESIBLE.pdf \(www.gob.pe\)](#)

⁴¹ [Protocolo Verde - Protocolo Verde \(minam.gob.pe\)](#)

⁴² [Resolución SBS N° 1928-2015](#)

d) To enhance objectivity and impartiality in the evaluation process, the opinion of an independent reviewer is to be sought. This step adds an extra layer of scrutiny to project assessments, promoting trust and credibility in the evaluation of social and environmental risks.

A variable with important weight in the Peruvian context is the continuity of policies and the government agenda due to the governance crisis faced in recent years. This instability significantly affects the progress of implementation of measures related to mitigation of the impact of the financial sector on the environment.

B. Accessibility of public data and its utilisation by financial institutions

In compliance with open data regulation⁴³, databases overseen by public administration entities in Peru are required to be accessible to the public free of charge. Currently, certain geolocated databases suffer from issues such as outdated information or incomplete coverage of the entire geographical area, presenting challenges for FIs in accurately georeferencing their assets.

Furthermore, the variance in data processing methods employed by different government agencies exacerbates the complexity of integrating these databases. This lack of data standardisation, including variations in scale, coordinates, and territorial delineations, hampers users' ability to utilise this information comprehensively and effectively, thereby limiting its accessibility.

In the same line as the *Protocolo Verde*, the Ministry of the Environment has also developed the *Hoja de Ruta de Finanzas Verdes*⁴⁴ (Green Finance Roadmap), as a tool that accompanies FIs in incorporating sustainability into their operations. In the Roadmap's Component 1 on greening the financial system, the generation and access to technical information is identified as the second guideline, which can open room for the proper management of databases related to nature. In Component 2 on green activities financing and green product design, the fifth guideline addresses green finance reporting, which could indicate room for the adoption of standards such as the TNFD.

C. Data Management and Privacy

The confidentiality of sensitive client information is upheld by the 2012 Personal Data Protection Act (Ley 29733)⁴⁵. In accordance with this legislation, FIs refrain from disclosing personal data, such as a client's project address. Instead, when reporting credit operations, FIs provide information at a broader level, typically categorised by economic sector or geographical department, without revealing more detailed data.

To obtain the necessary address and geographical coordinates for the asset to be financed, FIs rely on forms and documentation submitted by the client. Essentially, this information is acquired directly from the client's declarations, ensuring the privacy and security of personal data.

⁴³ [Decreto Supremo N.° 157-2021-PCM - Normas y documentos legales - Presidencia del Consejo de Ministros - Plataforma del Estado Peruano \(www.gob.pe\)](#)

⁴⁴ [HRFV 270121 \(www.gob.pe\)](#)

⁴⁵ [LEY DE PROTECCIÓN DE DATOS PERSONALES.indd \(www.gob.pe\)](#)

4. Recommendations for overcoming asset geolocation assessment challenges

The barriers to asset geolocation are inherently related to the challenges and considerations for managing nature-related financial risks. Ensuring the quality and accessibility of geolocation data is essential for effective supervision and an accurate assessment of environmental risks associated with the location of financial assets.





These recommendations are tailored to financial regulators, financial institutions, and environmental agencies, due to their relevance in this agenda:

- **Financial Regulators** are governmental bodies responsible for setting standards, rules, and guidelines related to financial transactions and institutions. They play a crucial role in dictating how geolocation data can be used in financial transactions, ensuring that data privacy laws are upheld, and setting the framework for data availability for financial entities.
- **Financial Institutions** are established entities engaged in financial transactions such as loans, investments, and deposits. They are the primary users of geolocation data, leveraging it to make informed financial decisions, and thus need to be aware of, and compliant with, the regulations set by financial regulators. They also rely on public data to assess credit risk, market feasibility, and more, making them major stakeholders in the realm of data availability and management.
- **Environmental Agencies** are in charge of safeguarding the environment by setting and enforcing regulations and ensuring sustainable development. They might use geolocation data to track financial investments related to environmental projects or assess the environmental impact of certain financial endeavours. Their interest in public data could relate to evaluating the environmental implications of various economic activities and ensuring that financial institutions respect environmental guidelines.

Additionally, these recommendations have been organised in two ways: (i) those applicable universally to all countries analysed in this report, and (ii) those specific to addressing issues inherent to each of them. The last section presents the final conclusions.

A. Recommendations across jurisdictions

Across multiple jurisdictions, similar challenges have been identified in relation to geolocation regulations, public data availability, and data management and privacy. The following recommendations aim to provide a unified approach for all key stakeholders involved.

| | |
|--|---|
|     | |
| Geolocation Regulations | <p>Unified Geolocation Standards: Adopt a standardized geolocation system across jurisdictions to ensure consistency and facilitate easier data sharing and interpretation.</p> <p>Transparency in Geolocation Use: Make clear the purposes for which geolocation data is collected and utilised, particularly in relation to environmental impacts and financial assessments.</p> <p>Integration with Climate-Related Requests: When geolocation data is utilised for financial decision-making, ensure it is integrated with climate impact assessments. This will provide a holistic view of the potential consequences of financial actions on the environment.</p> |
| Public Data Availability | <p>Unified Organised Data Portal: Implement a centralised data portal that aggregates public data from various sources, ensuring that the information is accessible, well-organised, and user-friendly.</p> <p>Regular Updates on Information: Maintain the data portal with timely and regular updates, ensuring that the information remains relevant and up to date.</p> <p>Open Data Initiatives: Promote the release of non-sensitive public data in open formats to enhance transparency and stimulate innovation among financial institutions and environmental agencies.</p> <p>Adherence to and Influence on Global Standards: Adhering to and potentially influencing global standards for financial and environmental reporting, such as TNFD.</p> |
| Data Management and Privacy | <p>Clear Data Privacy Protocols: Establish and regularly review protocols concerning the storage, sharing, and deletion of data to ensure user privacy is maintained.</p> <p>Stakeholder Collaboration: Foster collaboration between financial regulators, financial institutions, and environmental agencies. This will ensure that data management practices align with both financial and environmental goals.</p> |

B. Recommendations by country

One of the primary challenges faced by financial regulators in Brazil relates to the quality and validity of geolocation data. Given the country's vast territory and diverse ecosystems, ensuring the accuracy of this information is essential for accurately assessing environmental risks, such as illegal deforestation in the Amazon or degradation of conservation areas. This is particularly crucial in a country heavily reliant on agriculture and livestock. Brazil has shown that financial regulations support the assessment of asset geolocation in nature sensitive areas. However, even though information for Rural Credit Manual compliance, such as conversion units, indigenous land, and CAR, is easily accessible, there is an inherent challenge regarding the confidence in the accuracy and validity of this data.

In Colombia, coordinating asset geolocation and environmental risk management presents a challenge. While progress has been made in locating assets, there are still limitations in terms of data quality and accessibility. Collaboration with organisations managing public databases and the creation of unified portals can help overcome these barriers. The Colombian financial system presents important initiatives regarding the geolocation of its assets; however, it faces some limitations enabling integration of these criteria into its environmental and social risk management system. Such limitations are related to the quality and accessibility of the available information and the need for guidelines for this integration to occur.

In Ecuador, where the financial system has just started regulating asset geolocation, a challenge lies in clarifying how this process can be effectively implemented. This involves more detailed guidelines on the integration of asset geolocation criteria, such as consultation information and types of customer data to be used. It also requires a focus on capacity building so that all financial institutions can adapt to these changes.

In Peru, although there are environmental and social risk management guidelines in the country financial system, it is necessary to establish more specific conditions on geolocated data for better management of these risks. A significant challenge is adapting existing approaches to assess environmental risks related to asset geolocation. This is because tools and analyses developed for climate risks may not be directly applicable to the specific nature-related risks, such as mining in sensitive areas. Therefore, regulators need to develop specific strategies to address these unique risks.

COUNTRY:  BRAZIL

| Challenge / Issue | Financial Regulators | Financial Institutions | Environmental agencies |
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| Geolocation Regulations | <ul style="list-style-type: none"> Develop clearer guidelines on how geolocation data should be used in financial risk assessments, ensuring compatibility with international standards, particularly with the TNFD's disclosure recommendations. | <ul style="list-style-type: none"> Invest in training and development for personnel to ensure they are well acquainted with existing geolocation regulations and can apply them appropriately in risk assessments. Implement clear guidelines in organisation's risk policies regarding the use of geodata for deforestation validation and other material biodiversity issues. Proactively work with clients to obtain granular data, fostering transparency and a deeper understanding of environmental impacts. Amend existing climate risk frameworks to include nature-related data points, ensuring a holistic view of environmental risks. | N/A |

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| <p style="writing-mode: vertical-rl; transform: rotate(180deg);">Public Data Availability</p> | <ul style="list-style-type: none"> • Encourage transparency by implementing policies that require regular updating and publishing of relevant environmental and financial datasets. • Establish a standardised framework for data collection and reporting, emphasising the reduction of inconsistencies in public data repositories. • Implement the Green Credit Bureau, which offers a singular access point for ease of retrieval and analysis. Regular audits of this platform can help in identifying and rectifying inconsistencies, ensuring up-to-date and accurate information for risk assessments. | <ul style="list-style-type: none"> • Taking an active role in global sustainable initiatives that utilize geolocation data, showcasing Brazil's dedication to socially responsible and environmentally sustainable business practices on the international stage. • Adhering to and potentially influencing global standards for financial and environmental reporting, such as TNFD, emphasising Brazil's commitment to setting benchmarks and contributing to international best practices • Provide internal training for employees on the importance of geolocation and how to effectively use this data in financial operations and analyses. • Actively participate in open data initiatives, sharing non-sensitive information in an accessible and collaborative manner. This contributes to sectoral transparency and promotes innovation. | <ul style="list-style-type: none"> • Ensure that data on environmental factors, particularly geolocation data, is consistently updated, standardised, and made available in easily accessible formats for all stakeholders. • Bodies like the Ministry of Science and Technology might better coordinate database consolidation and distribution. Such ministries can facilitate collaboration between various stakeholders, including environmental agencies, financial institutions, and other governmental departments. • Given the vast number of validations still to be done, there is a recommendation for state-level efforts to update CAR (Rural Environmental Registry) databases. |
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| <p style="writing-mode: vertical-rl; transform: rotate(180deg);">Data Management and Privacy</p> | <ul style="list-style-type: none"> • Outline clear guidelines that balance the need for data access with privacy concerns, particularly in light of the Brazilian General Data Protection Law (LGPD). | <ul style="list-style-type: none"> • Implement robust data management systems that prioritise client’s data confidentiality while ensuring that crucial data can be used for risk assessments in a comprehensive and accurate scale. | <ul style="list-style-type: none"> • Prioritize the updating and streamlining of the Rural Environmental Registry (CAR) system. Ensure regular verifications, implement a more user-friendly interface, and foster closer collaborations between local farmers and environmental agencies for accurate reporting. • Ongoing dialogue and collaboration between relevant stakeholders, including environmental agencies, financial institutions, legal experts, and data protection authorities, to navigate the complex interplay of banking secrecy laws and data protection regulations. • Promoting transparency and accountability in the handling of environmental data, with appropriate safeguards to protect individuals' privacy rights. |
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COUNTRY:  COLOMBIA

| Challenge/ Issue | Financial Regulators | Financial Institutions | Environmental agencies |
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| Geolocation Regulations | <ul style="list-style-type: none"> Given the eventual implementation of a regulation that regulates SARAS, it would be important to include guidelines on data collection with the use of geoviewers for better management of environmental risks by FIs. | <ul style="list-style-type: none"> Prepare capacities for the implementation and improvement of SARAS when it starts being regulated in the country. | <ul style="list-style-type: none"> N/A |
| Public Data Availability | <ul style="list-style-type: none"> Improve coordination with organisations that manage public databases. Establish a unified, organised portal for existing data that can streamline access and provide consistent and updated information for stakeholders. Establish guidelines according to the type of bank to be able to access updated and standardised | <ul style="list-style-type: none"> Enhance the ability to manage customer contact to keep asset data up to date. Focusing on internal initiatives to develop geolocation proficiency among employees. Adhering to and potentially influencing global standards for financial and environmental reporting, emphasising Colombia's commitment to | <p><u>Geoviewer:</u></p> <ul style="list-style-type: none"> In addition to deforestation issues in the Colombian Amazon, the tool could be extended to other environmental issues and areas, including social analysis. To continue using the tool once the current administration ends its term, it is extremely important to define the |

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| | databases for better integration of the geolocation of assets. | contributing to international best practices | successor to the Geoviewer management. |
| Data Management and Privacy | <ul style="list-style-type: none"> Through guidelines and/or regulations, authorities can suggest that FIs improve the collection of information from clients in order to georeference their assets and thus improve FIs identification of risks associated with nature. | <ul style="list-style-type: none"> Implement robust data management systems that prioritise client’s data confidentiality while ensuring that crucial data is used for risk assessments in a comprehensive and accurate scale. | N/A |

COUNTRY:  ECUADOR

| Challenge/ Issue | Financial Regulators | Financial Institutions | Environmental agencies |
|--------------------------|--|--|--|
| Geolocation Regulations | <ul style="list-style-type: none"> Have more defined regulatory guidelines on the implementation of SARAS, which could specify the integration of asset geolocation criteria, such as consultation bases, type of client information to be used, considering that all FIs (large, medium, and small) must be prepared for it. | <ul style="list-style-type: none"> Improve and build out training on SARAS so that it can be implemented by all FIs. | <ul style="list-style-type: none"> Collaborate with relevant authorities to establish more detailed guidelines within the SARAS regulations that pertain to the integration of asset geolocation criteria. These guidelines should provide clear instructions on consultation bases and the type of client information to be used. |
| Public Data Availability | <ul style="list-style-type: none"> Establish a unified, organised portal for existing data that can streamline access and provide consistent and updated information for stakeholders. | <ul style="list-style-type: none"> Coordinate at the union level with the public bodies that develop the databases to be able to manage access to updated and complete data, free of charge even for private entities. Training provided by the union for financial entities to raise awareness about the importance | <ul style="list-style-type: none"> Consider the demand for high-quality geospatial data by financial institutions, it is advisable for the internal environmental agencies of Ecuador to focus on collecting, updating, and providing comprehensive and detailed geospatial data. This includes enhancing the quality and accessibility of data related to environmental issues such as |

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| | | of the use of geolocation data in financial operations. | deforestation, ecosystem conservation, and other nature-associated risk factors. |
| Data Management and Privacy | N/A | <ul style="list-style-type: none"> • Develop information for clients about their right to the protection of their data and how these are treated by the FI, with the aim of generating trust and encouraging feedback with more precise location coordinate data of their projects. • Implement robust data management systems that prioritise client’s data confidentiality while ensuring that crucial data can be used for risk assessments in a comprehensive and accurate scale. | <ul style="list-style-type: none"> • Collaborate with industry associations or unions to offer training programs to financial entities in Ecuador. These programs should emphasise the importance of using geolocation data responsibly and in compliance with privacy regulations. Promoting awareness and knowledge in this area will help FIs make better use of geolocation data while respecting privacy concerns. |

COUNTRY: PERU



| Challenge/ Issue | Financial Regulators | Financial Institutions | Environmental agencies |
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| Geolocation Regulations | <ul style="list-style-type: none"> Establish guidelines on the implementation of SARAS including asset geolocation criteria. | <ul style="list-style-type: none"> Implement preparation workshops to implement and improve SARAS in which it is important to identify the sensitivity of client’s activities depending on their location, since they may represent potential risks to nature. | <ul style="list-style-type: none"> Collaborate closely with financial regulators to develop comprehensive and highly detailed SARAS guidelines specific to the Peruvian context. These guidelines should encompass asset geolocation criteria, such as precise geographic coordinates and acceptable data sources |
| Public Data Availability | <ul style="list-style-type: none"> Improve coordination with organisations that manage public databases. Establish a unified, organised portal for existing data that can streamline access and provide consistent and updated information for stakeholders. | <ul style="list-style-type: none"> Provide training on accessing and utilizing available geolocation data. | <ul style="list-style-type: none"> Forge strategic partnerships with organisations managing public geolocation databases. Develop data-sharing agreements, focusing on data quality, regular updates, and standardised formats. This can be reinforced through the <i>Hoja de Ruta de Finanzas Verdes</i> (Green Finance Roadmap) tool since it has guidelines that focus on |

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| | | | <p>generation and access to technical information, which could include the management of geolocation data layers.</p> |
| <p>Data Management and Privacy</p> | <ul style="list-style-type: none"> • N/A | <ul style="list-style-type: none"> • Develop customer information mechanisms regarding the guarantee of protection of their data to obtain more accurate and reliable data from them. • Implement robust data management systems that prioritise client’s data confidentiality while ensuring that crucial data can be used for risk assessments in a comprehensive and accurate scale. | <ul style="list-style-type: none"> • N/A |

C. Final messages

The emphasis of this study revolved around Brazil, Colombia, Ecuador, and Peru. Nonetheless, the deduced insights and ensuing recommendations bear significance far beyond these borders. While these specific countries are renowned for their rich biodiversity, their recent initiatives, underline the progressive strides they are making in sustainable data management.

Tools and analyses developed for climate risks may often not directly apply to nature-related risks, including geolocation aspects such as the precise location of assets within sensitive ecosystems. This underscores the need for specific strategies to address nature-related risks that involve the precise geolocation of such assets. Identifying relevant metrics and data for nature-related risks is crucial for their management. In the context of asset geolocation, this implies collecting and evaluating specific geospatial data that enable a comprehensive understanding of risks based on local nature contexts, such as regional environmental impacts highlighted by the environmental agencies. Standardisation and international cooperation can facilitate the harmonisation of geolocation data and large-scale scenario analysis.

In general, it has been observed that in countries where financial system regulations are more advanced, such as in Brazil, there is greater guidance and information on how financial institutions should act regarding the assessment of asset geolocation. In cases where progress on this agenda is less advanced, such as in countries still implementing regulations for social and environmental risk systems, this issue is categorized as "nice to have", and therefore, not mandatory. This is emblematic since SARAS reinforces the perspective of territorial sensitivity, which refers to evaluating sensitivity based on geographical location. As the surroundings of a venture can significantly alter its exposure to social, environmental, and climatic risks.

The development of supervisory expectations regarding the governance of nature-related data entails ensuring that geolocation information is accurate and reliable. A further step may involve the use of global reference scenarios for nature-related risk scenario analysis, which may necessitate the integration of geolocation data on a global scale. The lack of granular data can be a barrier to this integration, highlighting the importance of collecting precise and granular geolocation data over time.

Another theme observed during the study was the keen awareness and appreciation for data protection and privacy. The interviewees recognized the importance of data protection and privacy, although not always with clarity on how these issues may indeed correlate with geolocation matters. Furthermore, this can already be considered a prerequisite for potential new demands on the subject. What stood out more was the issue related to the interpretation of the law, and to what extent it is possible to protect information from those who may have violated environmental regulations. A notable example discussed was the CAR database. This database is often seen as an emblematic model, illustrating how jurisdictions can navigate the intricate landscape of data accessibility and privacy.

The interviewees also emphasised that as we move forward, it is crucial to strike a balance that both values the privacy of individuals and entities and also empowers financial institutions to meet their due diligence obligations effectively. These discussions also

highlighted how these countries are paving the way in integrating these considerations within their frameworks.

Such advancements present a learning curve for regulators elsewhere, who may have traditionally placed a lesser emphasis on nature-centric data. For instance, the unified database frameworks pioneered by Brazil and Colombia could serve as benchmarks for other nations. Financial institutions, especially those funnelling resources into organisations within these regions, would gain a comprehensive understanding of the available data and the accompanying privacy regulations. This cohesive insight not only benefits the countries in focus but also extends as a guideline for global stakeholders striving for sustainable financial and environmental practices.

5. Appendix I - Script questionnaire for Financial Institutions

5.1. Diagnosis about integrating geolocation data into risk and opportunity assessments

- How do you determine the location of assets within your organisations value chain?
- How do you incorporate asset geolocation information into your nature-related risk and opportunity assessments? What types of geolocation data are considered?

5.2. Main barriers - all countries

Overall Constraints:

- What are the main challenges you face when trying to assess and quantify nature-related risks and opportunities?
- What regulatory challenges do you identify regarding the acquisition and evaluation of geolocation data for risk and opportunity analysis related to nature?

Data Access Challenges:

- What are the specific challenges your organisation faces when attempting to access and verify geolocation data from assets?
 - a. Are there any particular challenges related to rural properties or areas of environmental interest?
- How does your organisation obtain geolocation data from public sources to ensure regulatory compliance and assess risks associated with nature?

Collaboration and Data Sources:

- What types of (climate and) biodiversity-related data sources do your organisation utilise to assess risks and opportunities linked to nature in asset analyses?

Data Management and Privacy:

- Do you have specific policies for disclosing information about financing or investments involving assets with specific geolocation and environmental concerns?

Risk Monitoring:

- What is your organisation's approach to monitoring and assessing nature-related risks in funded projects or investments? Are there specific tools or methodologies used for this purpose?

Recommendations and Future Perspectives:

- In your opinion, what kind of guidance or directives could regulators provide to assist financial institutions in addressing geolocation challenges in risk and opportunity assessments related to nature?
- How do you think FIs can enhance their capacity to collect, analyse, and leverage geolocation data to assess and quantify nature-related risks and opportunities?

5.3. Main barriers - specific countries

Brazil

Overall constraints

- In the context of complying with regulations such as BCB No. 140 and CMN No. 5.081, how have they influenced your organisation's financing or investment decisions in projects related to nature?
- How does the requirement for the Rural Environmental Registry (CAR) under Law No. 12.651/2012 affect your organisation's process of accessing and verifying geolocation data for rural properties?

Data Access Challenges:

- Have BCB No. 140 and CMN No. 5.081 impacted your organisation's data access requirements for verifying the social, environmental, and climate practices of rural property borrowers or those with interests in rural properties?
- Considering BCB No. 140 and CMN No. 5.081, how does your organisation ensure that it is not extending credit to agents with illegal social, environmental, and climate practices? What role does geolocation data play in this process?
- How does your organisation address the need for data verification when assessing compliance with the social, environmental, and climatic requirements of BCB No. 140 and CMN No. 5.081?
- Do you encounter any challenges in accessing or verifying data required for compliance with BCB No. 140 and CMN No. 5.081, especially regarding geolocation data for rural properties?

Collaboration and Data Sources:

- Is there cooperation between your organisation and Brazilian regulatory bodies to facilitate access to data about embargoed areas, conservation units, or other nature-related aspects? How does this collaboration occur?

Data Management and Privacy:

- How is your organisation ensuring LGPD compliance when dealing with geolocation data from assets? What measures are being taken to protect the privacy and security of this data?
- How have the data protection and privacy provisions of Law No. 13,709 influenced your organisation's geolocation data collection practices for assessing nature-related risks?

Recommendations and Future Perspectives:

- What guidance or directives from regulators would assist your organisation in better addressing geolocation challenges and nature-related risk and opportunity assessments within the context of the current regulatory framework in Brazil?

Colombia

Overall Constraints

- Do the regulations/ resolutions above affect your organisation's process of accessing and verifying geolocation data? How? Is there any other that you would like to discuss?

Data Access Challenges

- How does the National Policy for Biodiversity Management impact your data access and usage in biodiversity-rich areas?
- How does the National Policy for Biodiversity Management impact geolocation activities, particularly in areas rich in biodiversity?

Collaboration and Data Sources

- Have you participated in the implementation of the USAID Amazonía Mía geo-viewer⁴⁶ program?
- What are the benefits for the institution of using the geo-viewer?
- What are the limitations identified in the development of the geo-viewer?

Data Management and Privacy

- In the context of the Personal Data Protection Law, do you consider that regulation of open banking complements it very well for the management of asset geolocation data of the institution's customers?
- Have you identified geolocation data that qualifies as personal data under Law 1581? How does this classification impact data access procedures?

Ecuador

⁴⁶ https://pdf.usaid.gov/pdf_docs/PA00ZS8C.pdf

Overall Constraints

- Do the regulations/ resolutions above affect your organisation's process of accessing and verifying geolocation data? How? Is there any other that you would like to discuss?

Collaboration and Data Sources

- Do you know or have you ever used the [Geoportal Ecuador](#) to verify if the client interfered with areas of environmental importance?

Data Management and Privacy

- How does your institution ensure compliance with Ecuador's data protection and privacy laws when accessing and using geolocation data for asset management?
- What steps have been taken to address potential risks associated with handling sensitive geolocation data in accordance with the Personal Data Protection Law?

Peru

Overall Constraints

- Do the regulations/ resolutions above affect your organisation's process of accessing and verifying geolocation data? How? Is there any other that you would like to discuss?
- In the context of the Resolution N° 1928-2015, do you consider that there is any limitation or incentive gap to include geolocation criteria in the credit granting process?
- Would the obligation to include asset geolocation criteria represent any barriers to credit granting operations?

Collaboration and Data Sources

- Do you know or have you ever used the [National Georeferenced Data Platform Geo Peru](#) database to verify if the client interfered with areas of environmental importance?

Data Management and Privacy

- In the context of the Personal Data Protection Law, do you consider that the institution could manage the geolocation information of assets with the implementation of open banking regulation?

6. Appendix II - Script questionnaire for Financial Regulators

6.1. Diagnosis about Integrating Geolocation Data into Risk and Opportunity Assessments

- How does the bank assess geolocation of value chain assets?
- How does the central Bank incorporate asset geolocation information into its assessments of nature-related risks and opportunities within the financial sector?

6.2. Main barriers

Overall constraints:

- How does the Central Bank view the integration of geolocation data into financial risk assessments, particularly concerning nature-related risks and opportunities?
- From a regulatory perspective, what challenges do you identify in terms of financial institutions acquiring and evaluating geolocation data for nature-related risk and opportunity analysis?

Data Access Challenges:

- What role does the central bank see for geolocation information in enhancing the overall stability and sustainability of the financial system?
- In your view, what are the primary obstacles faced by financial institutions in accessing and verifying geolocation data of assets, particularly in rural or environmentally significant areas?

Only for Brazil: In light of BCB No. 140 and CMN No. 5.081, how do regulators assess and monitor financial institutions' adherence to the prohibition on extending credit to agents engaged in illegal social, environmental, and climate practices?

How do regulators evaluate financial institutions efforts to verify data necessary for compliance with BCB No. 140 and CMN No. 5.081, especially concerning geolocation data for rural properties?

Collaboration and Data Sources:

- Are there any regulatory initiatives or guidelines in place or being considered to encourage financial institutions to incorporate geolocation data in their risk evaluations, especially with respect to nature-related factors?

Data Management and Privacy:

- From a regulatory standpoint, are there specific guidelines or expectations for financial institutions concerning the disclosure of information related to financing or investments in assets with particular geolocation and environmental concerns?
- How do you see the role of Data Protection and Privacy Laws in ensuring data privacy when financial institutions collect and process geolocation data for risk assessments?
- Have the requirements of Data Protection and Privacy Laws influenced regulatory oversight of financial institutions' practices regarding the acquisition, processing, or disclosure of geolocation data?

Risk Monitoring:

- Are there any challenges or concerns that the central bank foresees in relation to the utilisation of geolocation data for assessing nature-related risks and opportunities? How do you think these could be mitigated?

Recommendations and Future Perspectives:

- What kind of regulatory guidance or directives do you think could be provided to assist financial institutions in addressing geolocation challenges in nature-related risk and opportunity assessments?
- How do you believe financial institutions can enhance their capacity to collect, analyse, and leverage geolocation data for assessing nature-related risks and opportunities?

7. Appendix III- Consulted Legislations

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| Brazil | <p>BRAZIL (2021). Central Bank of Brazil. Resolution No. 140, dated September 15, 2021. Official Gazette of the Union, Brasília, DF, September 16, 2021. Available at: [https://www.in.gov.br/en/web/dou/-/resolucao-bcb-n-140-de-15-de-setembro-de-2021-345119695]. Accessed on September 19, 2023.</p> <p>BRAZIL (2021). National Monetary Council. Resolution No. 4.943, dated September 15, 2021. Official Gazette of the Union, Brasília, DF, September 16, 2021. Available at: [https://www.bcb.gov.br/estabilidadefinanceira/exibenormativo?tipo=Resolu%C3%A7%C3%A3o%20CMN&numero=4943]. Accessed on September 19, 2023.</p> <p>BRAZIL (2021). National Monetary Council. Resolution No. 4.945, dated September 15, 2021. Official Gazette of the Union, Brasília, DF, September 16, 2021. Available at: [https://aprendevalor.bcb.gov.br/content/financialstability/Brazilian_Prudential_Financial_Regulation_Docs/ResolutionCMN4945.pdf]. Accessed on September 19, 2023</p> <p>BRAZIL (2023). Central Bank of Brazil. Resolution No. 139, dated September 15, 2021. Official Gazette of the Union, Brasília, DF, September 16, 2021. Available at: [https://www.bcb.gov.br/content/financialstability/Brazilian_Prudential_Financial_Regulation_Docs/ResolucaoBCB139.pdf]. Accessed on September 19, 2023.</p> <p>BRAZIL (2023). Central Bank of Brazil. Resolution No. 151, dated October 6, 2021. Official Gazette of the Union, Brasília, DF, October 7, 2021. Available at: [https://www.bcb.gov.br/estabilidadefinanceira/exibenormativo?tipo=Resolu%C3%A7%C3%A3o%20BCB&numero=151]. Accessed on September 19, 2023.</p> <p>BRAZIL (2023). National Monetary Council. Resolution No. 4.944, dated September 15, 2021.. Official Gazette of the Union, Brasília, DF, September 16, 2021. Available at: [https://www.bcb.gov.br/en/financialstability/Brazilian-Prudential-Financial-Regulation]. Accessed on September 19, 2023.</p> <p>BRAZIL. (2001). Law Complement No. 105, January 10, 2001. Provides for the secrecy of financial institution operations and other measures. Official Gazette of the Union, Brasília, DF, January 11, 2001. Available at https://www.planalto.gov.br/ccivil_03/leis/lcp/lcp105.htm</p> <p>BRAZIL. (2012). Law No. 12.651, May 25, 2012. Provides for the protection of native vegetation. Retrieved from https://www.planalto.gov.br/ccivil_03/_ato2011-2014/2012/lei/l12651.htm. Accessed on September 19, 2023.</p> |
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| | <p>BRAZIL. (2014) Resolution No. 4.327, dated April 25, 2014. Establishes the conditions and procedures to be observed by financial institutions and other institutions authorized to operate by the Central Bank of Brazil in contracting rural credit operations. Official Gazette of the Union, Brasília, DF, April 28, 2014. Available at: [https://www.bcb.gov.br/pre/normativos/res/2014/pdf/res_4327_v1_O.pdf]. Accessed on September 19, 2023.</p> <p>BRAZIL. (2018). Law No. 13.709, August 14, 2018. General Personal Data Protection Law (LGPD). Retrieved from https://www.planalto.gov.br/ccivil_03/_ato2015-2018/2018/lei/l13709.htm. Accessed on September 19, 2023.</p> <p>Brazil (2021). Central Bank of Brazil (BCB). Circular Letter nº 3.734. Available at: CIRCULAR N (bcb.gov.br)</p> <p>BRAZIL. National Monetary Council. Resolution No. 5.081, dated June 29, 2023. [Title of the resolution, if available]. Official Gazette of the Union, Brasília, DF, [date of publication, if available]. Available at: [insert link, if applicable]. Accessed on September 19, 2023.</p> <p>Central Bank of Brazil (BCB). 2021. Available at: https://www.bcb.gov.br/conteudo/home-ptbr/TextosApresentacoes/OD_ABBC_5.8.pdf.</p> <p>Central Bank of Brazil (BCB). Manual de Crédito Rural. Brasília: Banco Central do Brasil, 2021. Retrieved from https://www3.bcb.gov.br/mcr Accessed on September 19, 2023.</p> |
| Colombia | <p>Colombia (2008). Law 1266 of 2008 on Access to Public Data. Available at: https://www.funcionpublica.gov.co/eva/gestornormativo/norma.php?i=34488</p> <p>Colombia (2012). Law 1581 of 2012 on Protection of Personal Data. Available at: https://www.funcionpublica.gov.co/eva/gestornormativo/norma.php?i=49981</p> <p>Colombia (2014). Law 1712 of 2014 on Transparency and Access to National Public Information. Available at: https://www.funcionpublica.gov.co/eva/gestornormativo/norma.php?i=56882</p> <p>Financial Superintendency of Colombia (2021). External Circular 031. Instructions regarding the disclosure of information on social and environmental issues, including climate related issues. Available at: ce031_21.pdf</p> <p>Financial Superintendency of Colombia (2022). Climate risk and opportunity management for credit institutions. Available at: https://www.su-perfinanciera.gov.co/descargas/institucional/pubFile1061214/eng_guia-admin-riesgos-climaticos.docx</p> |

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| | <p>Financial Superintendency of Colombia (2023). Decree 455 of 2023. Available at: https://www.funcionpublica.gov.co/eva/gestornormativo/norma.php?i=205884</p> |
| <p>Ecuador</p> | <p>Ecuador. (2021). Law on Protection of Personal Data. Available at: 1162059_-_LEY_ORGÁNICA_DE_PROTECCIÓN_DE_DATOS_PERS_202107011248165227 (www.gob.ec)</p> <p>Superintendency of Banks of Ecuador. (2022). Book I.- Control Standards for Entities of Public and Private Financial Sectors. Available at: https://www.superbancos.gob.ec/bancos/wp-content/uploads/downloads/2022/08/L1_IX_cap_X.pdf</p> <p>Superintendency of Popular and Solidarity Economy (2023). Standard of Control for Environmental and Social Risk Management in Credit and Savings Cooperatives and Mutual Credit and Savings Associations for Housing. Available at: Norma-SARAS-codificada.pdf (seps.gob.ec)</p> |
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