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BRAZILIAN COALITION ON CLIMATE, FORESTS AND AGRICULTURE

BRAZILIAN RESTORATION AND REFORESTATION OBSERVATORY

THE IMPORTANCE OF NON-MANDATORY DATA IN NATIONAL RESTORATION MONITORING

Monitoring native vegetation recovery is essential for assessing progress and effectiveness, providing a solid foundation for strategic decision-making in public policies and tracking Brazil's commitments at both national and international levels.

The Brazilian Restoration and Reforestation Observatory (ORR) plays a strategic role in this context by enabling the reporting, validation, and public availability of restoration data across Brazil's biomes in a single, nonprofit, and open-access platform. This process ensures transparency for voluntary initiatives led by the private and nonprofit sectors, giving visibility to those actively driving landscape and territorial restoration efforts.

Hosted by the Brazilian Coalition on Climate, Forests and Agriculture – a multisectoral movement with over 400 members advocating for sustainable land use and a low-carbon economy – the ORR integrates complementary information into government monitoring platforms. It fosters cooperation among various stakeholders, from regional initiatives such as biome-specific collectives to global platforms like FAO's FERM, promoting greater transparency and strengthening evidence-based decision-making.

Integrating ORR into the national native vegetation recovery monitoring platform under Planaveg is crucial for enhancing governance and ensuring data transparency. This requires formalizing cooperation between civil society and the government, defining standardized protocols, and developing tools to ensure system interoperability. These efforts will drive restoration monitoring in Brazil, providing more reliable data for decision-making and catalyzing investments and public policies for ecosystem recovery.
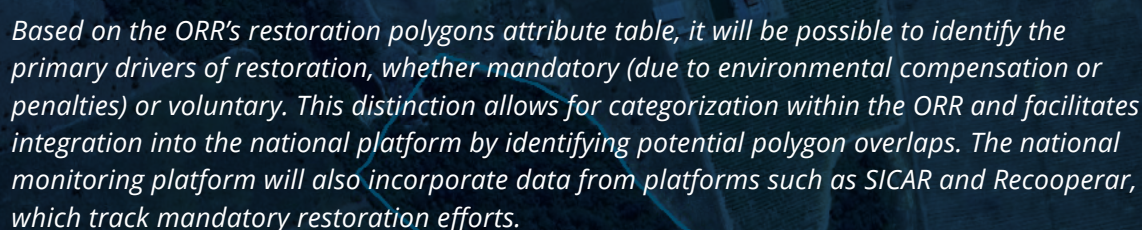
QUICK READ

- Ecosystem restoration is a strategic response to the climate and biodiversity crises, fostering sustainable development and integrating economic sectors.

- Monitoring restoration efforts is essential for evaluating their effectiveness and informing strategic public policy decisions.

- The Restoration and Reforestation Observatory centralizes and makes restoration data publicly available across Brazilian biomes, ensuring transparency and visibility for voluntary initiatives.

- By complementing governmental databases, ORR strengthens multisectoral cooperation, regional and national coordination, and overall transparency in restoration monitoring.

- ORR's integration into Planaveg's national monitoring system enhances governance, acknowledges civil society's role, ensures data transparency, and establishes standardized protocols, ultimately improving the scale and reliability of restoration monitoring.

CONTEXT

Ecosystem restoration has gained prominence in national and international forums, expanding its scope beyond environmental concerns. It is increasingly recognized as a crucial component of solutions to the climate and biodiversity crises, being integrated into other discussions—particularly as a strategic economic element and a driver of sustainable development. Its relevance is widely acknowledged across multiple sectors of society.

In this context, Brazil took an important step in 2024 by revising the National Plan for Native Vegetation Recovery (Planaveg), which identified Monitoring and Spatial Intelligence as one of its four core strategies. This initiative underscores the government's recognition that monitoring is essential for guiding public policies.

As part of this strategy, progress has been made in developing a national platform to integrate and consolidate data on native vegetation recovery from entities such as the Brazilian Institute for the Environment and Renewable Natural Resources (Ibama), the Ministry of the Environment and Climate Change (MMA), and the National Institute for Space Research (INPE). This tool will also include data on secondary vegetation regeneration, a key factor in achieving Brazil's goal of restoring 12 million hectares of native vegetation. The monitoring strategy is based on a system incorporating three main components: (1) secondary vegetation data from TerraClass/INPE, (2) data from public systems (e.g., environmental infractions, compensation measures, mandatory restoration), and (3) voluntary data from civil society (aggregated in the ORR).

Based on the ORR's restoration polygons attribute table, it will be possible to identify the primary drivers of restoration, whether mandatory (due to environmental compensation or penalties) or voluntary. This distinction allows for categorization within the ORR and facilitates integration into the national platform by identifying potential polygon overlaps. The national monitoring platform will also incorporate data from platforms such as SICAR and Recooperar, which track mandatory restoration efforts.

The ORR complements governmental databases by integrating voluntary restoration data collected by regional initiatives and biome-specific collectives across all Brazilian biomes, operating as a collaborative platform. It consolidates information from well-established regional initiatives such as the Atlantic Forest Restoration Pact and the Cerrado Restoration Network (Rede Araticum). These collectives have developed their own monitoring platforms, generating robust databases aligned with the realities of each biome. The ORR also provides a space for collectives that lack their own platforms, including the Caatinga Restoration Network (ReCaa), the Southern Ecological Restoration Network, the Amazon Restoration Alliance, and the Pantanal Restoration Pact. These initiatives aim to facilitate the reporting and systematization of ongoing or completed restoration efforts within their respective biomes.

However, significant challenges remain in establishing an effective and standardized monitoring system. Brazil's ecological diversity presents unique challenges for each restoration collective, complicating the development of common attributes that are comparable across biomes and vegetation types. Efforts to establish a standardized attribute table are crucial to ensuring data comparability while respecting the ecological and socio-economic specificities of each region. Another major challenge is maintaining engagement in voluntary data collection, given that the Observatory platform relies on self-reported data from non-mandatory restoration projects. It is essential for restoration stakeholders to recognize the strategic value of sharing their data.

From a governmental perspective, continuous monitoring faces technical and operational challenges, such as adapting to shifts in public policies across different administrations, hiring specialized personnel, and integrating data from multiple sectors. In this scenario, civil society-led initiatives like the ORR have demonstrated greater flexibility in securing funding, making decisions, and mobilizing stakeholders quickly – helping to overcome bureaucratic barriers typical of public administration. This agility allows the ORR to complement governmental efforts, strengthening restoration monitoring governance and transparency.

Thus, the Observatory serves as a strategic facilitator, connecting multiple actors and initiatives not only to aggregate and validate restoration data but also to enhance cooperation across different scales and sectors. The platform aims to build a multi-scale monitoring framework that aligns with local and regional needs while supporting national and global restoration commitments.

The ORR's data integration reinforces the role of Restoration Biome-Level Organizations, enabling diverse stakeholders to contribute to a collaborative and representative database. This model reflects the power of collective action, which is essential for covering a vast and diverse country like Brazil. By integrating restoration metrics into a single platform, the Observatory becomes a strategic tool for policymakers, investors, and organizations, fostering cooperation and expanding funding opportunities.

Furthermore, the ORR is integrated into the FAO's Framework for Ecosystem Restoration Monitoring (FERM), the official global platform for monitoring and disseminating best practices under the UN Decade on Ecosystem Restoration. The FERM also supports countries in reporting restored areas under Target 2 of the Kunming-Montreal Global Biodiversity Framework (KM-GBF) and informing the Convention on Biological Diversity (CBD) Parties. This integration was officially announced at a FAO-hosted event during the CBD COP16 in Cali, Colombia. As a result, biome-level collectives' data – interoperable between the FERM and ORR – are now available on a global platform, increasing visibility and contributing to the UN Decade and CBD restoration reporting efforts.

By promoting multi-scale and participatory monitoring, the ORR enhances data governance and transparency. This innovative approach positions Brazil as a leader in native vegetation recovery efforts, leveraging technology and territorial intelligence to accelerate ecosystem restoration and drive progress toward national environmental goals.

CATEGORY	[Restoration]
SOURCE	Biomatic collective that compiles the data: ☐ Amazon Restoration Alliance ☐ Atlantic Forest Restoration Pact ☐ Cerrado Restoration Network (Rede Araticum) ☐ Southern Ecological Restoration Network ☐ Caatinga Restoration Network (ReCaa) ☐ Pantanal Restoration Pact
RESTORATION ACTION LINKED TO A SPECIFIC PROGRAM/PROJECT?	☐ Yes ☐ No ☐ Unknown
NAME OF THE RESTORATION PROGRAM/PROJECT	[Text Format]
INSTITUTION THAT CARRIED OUT THE RESTORATION (EXECUTOR)	[Text Format]
INSTITUTION THAT COORDINATED AND/OR HIRED THE EXECUTOR (MANAGER)	[Text Format]
INSTITUTION PROVIDING FINANCIAL RESOURCES FOR THE RESTORATION (FUNDER)	[Text Format]
MAIN RESTORATION TECHNIQUE	☐ Isolation ☐ Control of competing plants ☐ Densification ☐ Enrichment ☐ Nucleation ☐ Direct Sowing ☐ Planting seedlings ☐ Agroforestry ☐ Unknown
SECONDARY TECHNIQUES COMBINED WITH THE MAIN TECHNIQUE	☐ Isolation ☐ Control of competing plants ☐ Densification ☐ Enrichment ☐ Nucleation ☐ Direct Sowing ☐ Planting seedlings ☐ Agroforestry ☐ Unknown ☐ Combined methods of different strategies
RESTORATION STRATEGY ASSOCIATED WITH THE TECHNIQUE	☐ Natural regeneration without management ☐ Natural regeneration with management ☐ Planting in Total Area ☐ Agroforestry ☐ Mixed Strategy ☐ Unknown
MAIN REASON FOR RESTORATION	☐ Environmental Adequacy ☐ Biodiversity ☐ Environmental compensation for a license ☐ Environmental compensation for crime repair ☐ Other infractions ☐ Carbon Projects ☐ Payment for environmental services Projects ☐ Other economic factors ☐ Hydric resources ☐ Other goals ☐ Other Volunteers ☐ Unknown

MAIN LOCATION OF RESTORATION EXECUTION?	☐ Legal Reserve ☐ Legal reserve surplus area ☐ Areas of permanent preservation ☐ Mandatory forest replenishment ☐ Forest easement area ☐ Alternative land use area ☐ Consolidated land use area ☐ Rural settlements ☐ Indigenous land ☐ Quilombolas land ☐ Protected Area Biological Reserve - REBIO ☐ Protected Area National Park - PARNA ☐ Protected Area Natural Monument - MONA ☐ Protected Area Wildlife Refuge - RVS ☐ Protected Area Environmental Protection Areas - APA ☐ Protected Area Relevant Ecological Interest ARIE ☐ Protected Area Forest National - FLONA ☐ Protected Area Extractive Reserve - RESEX ☐ Protected Area Fauna Reserve - RF ☐ Protected Area Sustainable Development Reserve - RDS ☐ Protected Area Private Natural Heritage Reserve - RPPN ☐ Unknown ☐ Others
DATE WHEN RESTORATION ACTIVITIES BEGAN	[Date Format]
IS THE PROGRAM/PROJECT ACTIVE?	☐ Yes ☐ No ☐ Unknown
DATE WHEN ACTIVITIES WERE CONCLUDED OR THE EXPECTED END DATE	[Date Format]
WEBSITE TO ACCESS THE INFORMATION	[website link]
DOES THE AREA HAVE RESTORATION MONITORING, EITHER IN THE FIELD OR REMOTELY?	☐ Yes ☐ No ☐ Unknown
CAN THE AREA BE DISPLAYED ON A PUBLICLY ACCESSIBLE MAP?	☐ Public ☐ Private

This standardization was developed in collaboration with the Restoration Biome-Level organizations and was supported by the Brazilian Society for Ecological Restoration (SOBRE) and RESTOR, ensuring greater robustness and comparability of the data.

To formalize this contribution, a cooperation agreement has been established, ensuring data privacy, as no personal data is involved, in compliance with Brazilian data security laws. This agreement also reinforces the public and non-profit nature of the platform and guarantees proper attribution of all sources.

Currently, the ORR has an exclusive login area, allowing the Biome-Level organizations to report data directly into the database. Additionally, the system has automated features that correct data entry errors, cartographic projections, and vectorization, ensuring greater precision and data quality.

There is, to date, no other platform in the country functioning in this way, which makes the ORR data unique and robust.

In 2025, the ORR will focus on improving the quality of registered data by implementing topological validation to automatically correct overlaps in the database. Additionally, it will include visual technical analysis conducted by spatial data specialists and an assessment of land use and occupation compatible with restoration, based on the historical mapping of MapBiomas. These improvements will be available in the next update of the platform.

RECOMMENDATIONS FOR INTEGRATION WITH THE NATIONAL MONITORING PLATFORM

The Observatory can be integrated into the national monitoring system for native vegetation recovery, as outlined in Planaveg, as a specialized layer for voluntary restoration projects. The integration process should be carried out through the development of interoperable monitoring protocols, enabling communication between systems and databases, ensuring that both platforms maintain continuously updated data, aiming for the platform's sustainability.

To facilitate this integration among different databases and ensure efficient monitoring of restoration in Brazil, the following strategic recommendations should be considered:

FORMAL INSTITUTIONALIZATION OF COOPERATION:

Creating an institutionalized dialogue space between civil society and the Ministry of the Environment (MMA) is essential to consolidate this integration. The Thematic Advisory Chamber (CCT) for Monitoring, within the framework of Planaveg, can play this role, allowing the ORR and other restoration actors to contribute actively to the development of the official government monitoring platform.

DEFINITION OF STANDARDIZED PROTOCOLS FOR DATA SHARING AND VALIDATION:

Effective integration requires clear and standardized protocols to ensure that the collected data is comparable, reliable, and useful for decision-making at different scales. The ORR's experience in building self-reporting and validation methodologies, in collaboration with the Biome-level Organizations, can help define minimum quality criteria and interoperability between public and private data sources.

DEVELOPMENT OF TOOLS TO FACILITATE DATABASE INTEROPERABILITY:

AThe ORR already has experience in building interoperabilities and integration with various national and international platforms and actors, such as **FAO-FERM, RESTOR, FDA, and the Restoration Collectives**. This expertise can be incorporated into the integration process, ensuring smooth communication between systems. The development of specific technological tools, such as the use of Application Programming Interfaces (APIs) and standardized data formats, will enable the fast and secure sharing of information, strengthening data governance for restoration in Brazil.

ENSURING FUNDING AND TECHNICAL SUPPORT:

This measure should encompass regional initiatives and smaller collectives, ensuring equitable access to standardized guidelines and reducing barriers to participation in the integrated monitoring system. A system for periodic review should also be established to assess the effectiveness of the integration and allow for strategic adjustments as necessary.

These recommendations aim to consolidate a collaborative, transparent, and efficient monitoring model, where different actors can contribute and access information in an integrated and transparent manner.

The ORR gained international prominence starting in 2022 by establishing a dialogue with Restor and being invited to join FERM, the restoration monitoring platform managed by the Food and Agriculture Organization of the United Nations (FAO). This partnership was presented at an event during the UN Biodiversity Conference (COP 16), which highlighted national initiatives such as ORR. Additionally, the platform partnered with the Forest Declaration Assessment (FDA) and was recognized as a case study in the 2024 report.

CONCLUSION

The integration between the federal government and civil society monitoring system is essential to ensure a comprehensive and accurate view of the progress in restoration monitoring in the country. The Brazilian Restoration and Reforestation Observatory, with its outreach and collaboration with the Biome-level Organizations, has the capacity to mobilize and consolidate data from voluntary projects, while the government is responsible for compulsory data, creating a complementary and more robust system.

This strategic partnership strengthens transparency and provides more input for decision-making. By integrating different information sources, restoration monitoring becomes more reliable, facilitating investments, public policies, and environmental governance actions.

For this model to be fully effective, it is crucial to advance the institutionalization of data integration, ensuring formal cooperation mechanisms and strengthening shared governance. Recognizing the role of the ORR in this process will expand engagement and overcome challenges, consolidating a participatory monitoring system aligned with the scale and complexity of ecological restoration in Brazil.