

Nature-related disclosures in a megadiverse country:

energy and infrastructure sector case study

Locate phase of the Taskforce on Nature-related Financial Disclosures



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Letter of Presentation

The loss of biodiversity in Brazil and around the world threatens the functioning of ecosystems and thus human life on earth. With the aim of halting and reversing the current decline in global levels of biological diversity, the Kunming-Montreal Global Biodiversity Framework (GBF) was signed during the 15th Conference of the Parties to the Convention on Biological Diversity (COP15) in December 2022.

This international agreement consists of four long-term goals aimed at leading the planet to live in harmony with nature by 2050 and 23 action targets to be achieved by 2030 by all signatory countries to the Convention on Biological Diversity.

Each target is preceded by a set of indicators that countries must follow, to monitor progress towards achieving the targets over the years. These indicators were discussed and agreed upon during the 16th Conference of the Parties on Biodiversity (COP16), which took place in Cali, Colombia, in 2024.

The countries that have signed the agreement are currently internalizing the targets set at the international level through the National Biodiversity Strategies and Action Plans (NBSAPs).

Among the 23 targets of the framework, it is worth highlighting Target 15, which is directly linked to the private sector and financial institutions. It requires the private sector to report on its risks, impacts and dependencies

on biodiversity, progressively reducing the negative impacts and increasing the positive impacts of the economy on biodiversity.

One of the indicators of Goal 15 refers to the accession of companies to the Taskforce for Nature-Related Financial Disclosures (TNFD). The TNFD is a global initiative launched in 2021 and led by the financial market. Its focus is to provide financial institutions and companies with a complete view of environmental risks to structure reporting on impacts and dependencies on nature.

The Brazilian Business Council for Sustainable Development (CEBDS) and its members recognize the importance of biodiversity management by companies, considering the use of scientific targets and internationally recognized reporting tools to measure the risks, impacts and dependencies of the economy on biodiversity.

Recognizing the importance of the Kunming-Montreal Global Biodiversity Framework and deepening discussions on the impacts, risks and dependence of the economy on biodiversity,

CEBDS has implemented actions and training initiatives on measuring impacts on biodiversity over the past four years. These technical discussions on the targets of the framework and the sustainability indicators aim to improve companies' knowledge of nature-related reporting.

In addition, CEBDS acted as coordinator of the TNFD Consultation Group in Brazil and played a leading role during the drafting of the standard between 2021 and 2023, conducting online seminars and workshops with the Brazilian business sector to discuss versions of the framework and share experiences and perceptions of companies and financial institutions on its application through recommendations to the TNFD technical team.

On this journey, during COP15, the Council launched the Action for Nature Platform, which was restructured in 2023, when the “Nature-related Disclosure Pilot - TNFD case” began.

The aim of the project is to support companies in reporting on the TNFD in Brazil and to contribute to greater transparency regarding nature-related financial information in the country. This project adopts the community-of-practice model, which offers participants the opportunity to create an environment for learning and sharing experiences between organizations from different sectors and at different levels of maturity of the TNFD standard. The pre-competitive environment provided by this model allowed us to systematize the challenges and lessons learned from nature-related reporting for companies operating in megadiverse countries, taking into account the territories' perspective on biodiversity, as well as the specificities of the different biomes, ecoregions and ecosystems they comprise.

Divided into four phases following the TNFD LEAP methodology (Locate, Evaluate, Assess and Prepare), the pilot is based on the joint piloting of the TNFD by 20 companies from different segments of the real economy and financial institutions, divided into three macro sectors: (i) land use, (ii) energy and infrastructure, (iii) finance and development.

This publication, prepared jointly with Arcadis, technical coordinator of the Energy and Infrastructure group, and Fundação Dom Cabral, institutional partner of CEBDS for the first phase of the project, presents a general overview of the structure of the TNFD, providing a view of the piloting of the Locate phase, considering the peculiarities of measuring the impacts, risks and dependencies of companies and institutions in the energy and infrastructure macro-sector that operate in Brazil, which is a megadiverse country, in addition to lessons learned from the collective exercise of CEBDS in the Locate phase of the TNFD, followed by impact statements from companies that participated in the pilot.

With this more specific and targeted perspective, we seek to reflect in this publication the challenges and particularities of the energy and infrastructure sector, presenting in a clear and objective manner the sectors and subsectors present in the group; the mapping of ecologically sensitive locations identified by the group, as well as the layers and methodologies used; the matrix of materiality in impacts and dependencies for the group's subsectors; the number and distribution of projects in the sector in the group by biome, ecoregion, sub-watershed and ecological sensitivity class; the spatial distribution and heatmaps of biomes, ecoregions and sub-watersheds for the subsector with the largest number of companies in the group.

Have a good reading!

The CEBDS Nature-related *Disclosure* Pilot - TNFD Case



The Pilot Project on TNFD



THE BRAZILIAN TNFD CONSULTATION GROUP

Over the past four years, CEBDS has worked on actions and training initiatives to measure the net impact on biodiversity and provided technical debates on the targets of the Kunming-Montreal Global Biodiversity Framework and the sustainability indicators to improve companies' knowledge of nature-related disclosure.

On this journey, in 2021 CEBDS became the coordinator of the TNFD Consultation Group

in Brazil and played a leading role during the drafting of the standard.

During this period, workshops were held with Brazilian real economy companies and financial institutions to discuss and contribute with recommendations for the versions of the standard and to exchange experiences and perceptions of companies on the application of the TNFD framework.



THE ACTION FOR NATURE PLATFORM INITIATIVE AND THE NATURE-RELATED DISCLOSURE PROJECT - TNFD CASE

CEBDS, the Brazilian representative of the WBCSD, led by more than 100 major companies, launched the Action for Nature Platform at COP15 in 2022 to drive changes in the perception and management of natural resources in the territories where companies operate, depend on and influence, by developing science-based targets and guidelines for positive, consistent and credible nature-related actions.

The initiative, reformulated in 2023, has a positive impact axis whose main objective

main objective is to train companies in nature-related disclosure.

In this context, the “CEBDS Nature-related Disclosure Pilot Project - TNFD case” was structured as one of the actions promoted by the initiative, with the aim of supporting companies in their endeavor to become leaders in the responsible biodiversity management by promoting, through a community of practice (CoP), a space for the exchange of experiences and learning between organizations from different sectors of the real economy and financial institutions with different levels of maturity of the LEAP methodology.



CEBDS COMMUNITY OF PRACTICE ON TNFD

The project is structured according to the CoP and aims to increase the knowledge of participating companies on TNFD through the exchange of experiences, as well as to promote the development of new tools, metrics and

databases adapted to the Brazilian reality and even create new knowledge to support the construction of nature-related reporting in the country:

CEBDS Nature-Related Disclosure Pilot: TNFD case



MAIN GOALS OF THE PROJECT

The main foundations of the project are built around the following pillars:



1. Business capacity building: preparing companies to report on TNFD through a space for learning and sharing experiences with a focus on Brazil.



2. Local reality: aligning metrics and understanding the activities, processes, dependencies and impacts of companies operating in a megadiverse country such as Brazil;



3. Sectoral cases and positive impacts: mapping risks and opportunities related to natural assets and services that ecosystems provide for positive sectoral action in nature;



4. Best practices at scale: sharing the results obtained at national and international events and with business, civil society and political leaders with the aim of transforming the performance of the business sector in a positive direction.



PROJECT GOVERNANCE

The initiative has a participatory governance consisting of the Executive (CEBDS) and two Committees, the Steering Committee and the Technical Committee, as well as the institutional partner and participating companies that have defined a common sector strategy aligned with key global commitments to define priority sensitive territories through a co-creation process.

The Technical Committee, formed by CEBDS and the technical coordinators of each sector group that played a very important role in the implementation of the pilot, acting jointly in the elaboration of all phases, procedures, orientations and definitions of tools and all technical contents related to the joint piloting of the Locate phase.



SECTORAL CASES

Each sectoral group is technically coordinated by one of the technical partners, consisting of 20 companies from different segments of the real economy and financial institutions into three macro-sectors: land use, energy and infrastructure, and finance and development.

In the piloting of the individual TNFD, the analyses focus on understanding the business and value chains of the individual organizations using their asset-level information and data.

In the case of the collective exercise that makes up the project, data from participating companies in each sector were consolidated to understand sectoral materiality within the group. Overlay data for the companies' priority territories and their participating supply chains were aggregated during analysis using GIS software.

Phase 1 of the Project: The Locate Phase



DURATION OF THE LOCATE PHASE

The project, which began in September 2023, completed its first phase (the Locate phase) in September this year, in which twenty companies from different sectors participated with the

technical partners Arcadis, EY and I Care, as well as Fundação Dom Cabral - FDC as an institutional partner supporting the systematization of knowledge.

LESSONS LEARNED FROM THE CEBDS COMMUNITY OF PRACTICE IN THE TNFD LOCATE PHASE

The Locate phase provided a safe and representative environment for technical discussion on the piloting of the TNFD framework and provided the project companies with three major experiences:



Knowledge of the Locate phase: deepening of technical knowledge about each step of the L phase, with special attention to the Brazilian reality, as well as sharing experiences on data collection;



Sectoral learning: technical coordination and sharing of challenges and experiences within each sectoral group;



Collective experience: a monthly meeting with the 20 companies involved in the project to present the progress of each step of the L phase in each sectoral group, share the experiences and questions of each group, calibrate the data and share the experiences of the companies that have already piloted the TNFD individually.



FINANCE AND DEVELOPMENT SECTORAL CASE

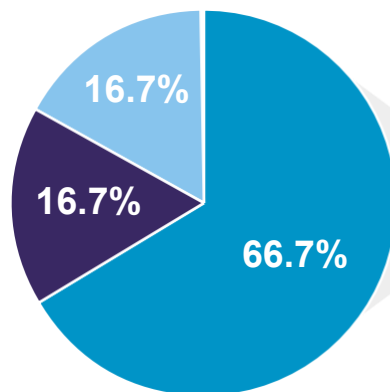
This sectoral case publication on piloting the locate phase of the TNFD seeks to share the challenges and lessons learned by the Energy and Infrastructure Sector Group (GSEI), which is composed of member companies of CEBDS

distributed among the energy sectors (66.7% of the group), water services (16.7%) and oil and gas (16.7%), as shown below.

ENERGY and INFRASTRUCTURE 6 participating companies



 **ARCADIS**



- Energy
- Oil and gas
- Water services

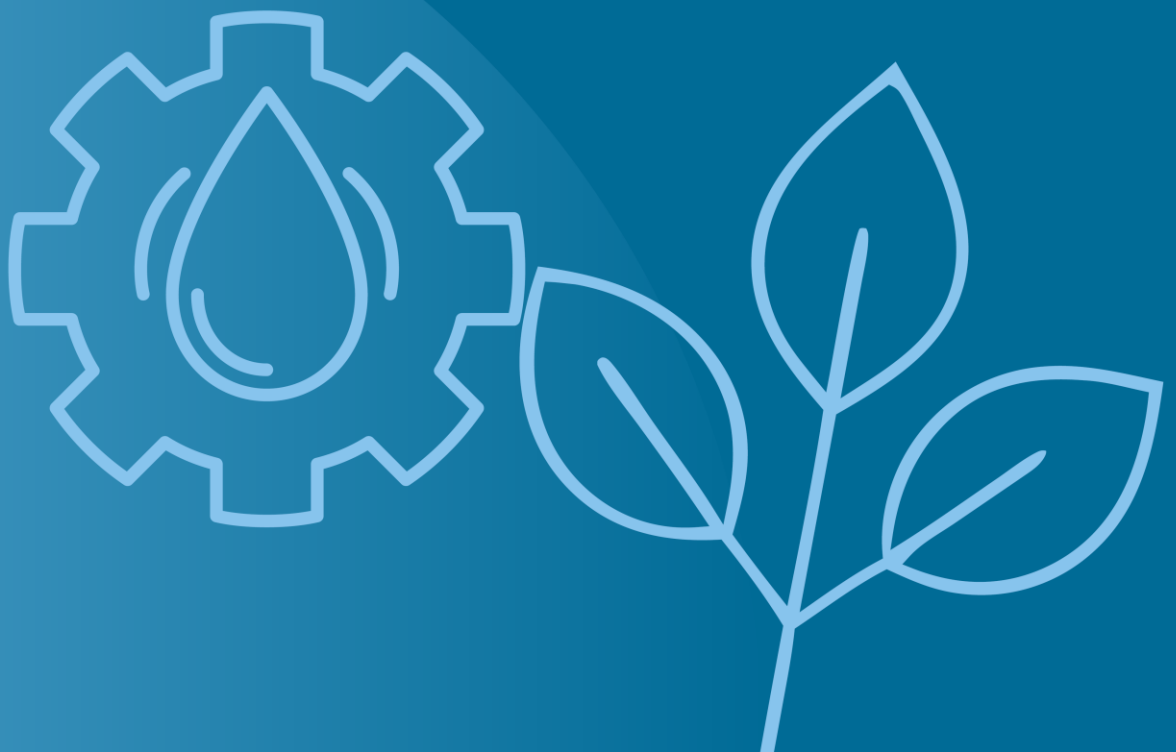


Notably, for the Locate phase, the data obtained from each sectoral group were combined with international and national databases that are widely accepted and recommended internationally to assess the integrity and importance of ecosystem services on the territories identified as priorities by the group, presenting in this publication: (i) the specific scopes of each company's operations, (ii) the sectors and subsectors of the group's

companies, (iii) the layers and methodologies used to map ecologically sensitive locations, (iv) the materiality matrix of impacts and dependencies for the group's subsectors, (v) the number of group companies' projects and their geographic distribution (biomes, ecoregions and sub-watersheds), (vi) the heatmaps of ecologically sensitive locations and the geographic distribution (biomes, ecoregions and sub-watersheds) of the group's projects.

Session 1:

The structure of the
*Taskforce on Nature-
related Financial
Disclosures* (TNFD) and
its LEAP methodology





The TNFD is a global initiative designed to provide companies and financial institutions with a framework for reporting and acting on growing nature-related risks and opportunities.

Launched in 2021, it is based on the market's experience with climate-related disclosures over the past decade, as well as on the work of the Task Force on Climate-related Financial Disclosures (TCFD), on whose reporting framework it is based.

The TNFD plays a critical role in providing a *framework* that supports companies and financial institutions in meeting the requirements of Target 15 of the Global Biodiversity Framework.

The Kunming-Montreal Global Biodiversity Framework was adopted at the 15th Conference of the Parties to the Convention on Biological

Diversity Biological Diversity (COP15) in Montreal in December 2022. This framework sets out a series of goals and targets to halt and reverse biodiversity loss by 2030, with a long-term vision for 2050 in which humanity will live in harmony with nature.

The Global Biodiversity Framework has four main goals and 23 specific targets. The goals include:

- > Improve the integrity and connectivity of ecosystems.
- > Ensure the sustainable use of natural resources.
- > Ensure equitable sharing of the benefits arising from genetic resources.
- > Provide the financial and technical resources needed to implement the framework, especially to developing countries.

Goal 15 of the Global Biodiversity Framework is particularly relevant to the corporate sector as it requires governments to encourage large companies and financial institutions to:

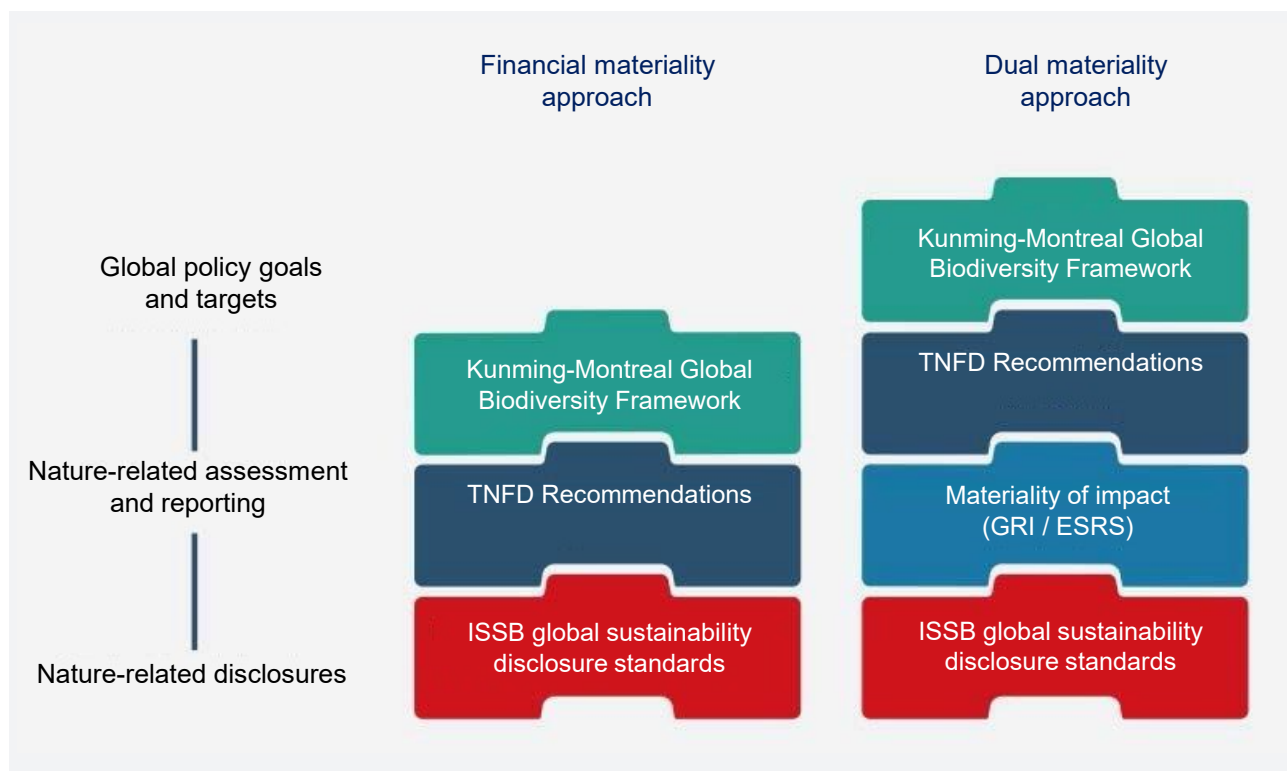
- > Monitor, assess and disclose their risks, dependencies and impacts on biodiversity.
- > Provide necessary information to consumers to promote sustainable consumption patterns.

In short, we can say that the elements that make up Target 15 promote transparency and corporate responsibility. This promotes more sustainable business practices and facilitates the mobilization of financial resources for projects that promote nature conservation. In addition, these disclosures

In short, we can say that the elements that make up Target 15 promote transparency and corporate responsibility. This promotes more sustainable business practices and facilitates the mobilization of financial resources for projects that promote nature conservation.

help integrate biodiversity considerations into financial decisions and align them with the goals of the Global Biodiversity Framework.

FIGURE 1: alignment with global reporting goals and baselines



Source: Recommendations of the Taskforce on Nature-related Financial Disclosures, 2023.

Opportunities for companies that join the TNFD

The TNFD was established to promote a change in the mindset and behavior of companies and financial institutions through corporate and portfolio risk management and by integrating nature into corporate reporting.

The initiative recognizes that the degradation of nature and actions to conserve, restore and use it sustainably pose significant risks and opportunities for business, finance and society. It aims to promote transparency and action on nature-related risks and opportunities so that companies can make more sustainable decisions and contribute to a positive future for nature.

The TNFD framework addresses the significant economic value that depends on nature, with more than half of global GDP being moderately or highly dependent on natural services. By providing a structured approach to nature-related disclosures, the TNFD aims to:

- > Improve transparency and comparability of reporting.
- > Support informed decision-making and strategic planning.
- > Align business practices with global sustainability goals as outlined in the Kunming-Montreal Global Biodiversity Framework.



The structure of the TNFD

The TNFD *framework* consists of four main pillars that mirror the structure of the TCFD and recommends 14 disclosures to encourage

companies to provide investors and other capital providers with clear, comparable and consistent information, as shown in the figure below.

FIGURE 2: Draft TNFD disclosure recommendations

Governance	Strategy	Risk and impact management	Parameters and targets
Disclose the organization's governance of nature-related dependencies, impacts, risks and opportunities.	Disclose the effects of nature-related dependencies, impacts, risks and opportunities on the organization's business model, strategy and financial planning, when this information is relevant.	Describe the process used by the organization to identify, assess, prioritize and monitor nature-related dependencies, impacts, risks and opportunities.	Disclose the parameters and targets used to assess and manage material nature-related dependencies, impacts, risks and opportunities.
Recommended disclosures	Recommended disclosures	Recommended disclosures	Recommended disclosures
A. Describe how the board monitors nature-related dependencies, impacts, risks and opportunities. B. Describe management's role in assessing and managing nature-related dependencies, impacts, risks and opportunities. C. Describe the organization's human rights policies and engagement activities, as well as board and management oversight, with respect to indigenous peoples, local communities, affected stakeholders and other interested parties in the organization's assessment of and response to nature-related dependencies, impacts, risks and opportunities.	A. Describe the nature-related dependencies, impacts, risks and opportunities identified by the organization in the short, medium and long term. B. Describe the effect that nature-related dependencies, impacts, risks and opportunities have had on the business model, the organization's business model, value chain, strategy and financial planning, as well as any transition plans or analyses underway. C. Describe the resilience of the organization's strategy to nature-related risks and opportunities, taking into account different scenarios. D. Disclose the locations of assets and/or activities in the organization's direct operations and, where possible, in upstream and downstream value chains that meet the priority locations criteria.	A(i) Describe the organization's processes for identifying, assessing and prioritizing nature-related dependencies, impacts, risks and opportunities in its direct operations. A(ii) Describe the organization's processes for identifying, assessing and prioritizing nature-related dependencies, impacts, risks and opportunities in its upstream and downstream value chain(s). B. Describe the organization's processes for managing nature-related dependencies, impacts, risks and opportunities. C. Describe how the processes for identifying, assessing, prioritizing and monitoring nature-related risks are integrated into the organization's overall risk management processes and how they inform them.	A. Disclose the parameters used by the organization to assess and manage significant nature-related risks and opportunities, aligned with its risk management strategy and process. B. Disclose the parameters used by the organization to assess and manage dependencies and impacts on nature. C. Describe the targets and goals used by the organization to manage nature-related dependencies, impacts, risks and opportunities and its performance against these.

Source: Recommendations of the Taskforce on Nature-related Financial Disclosures, 2023

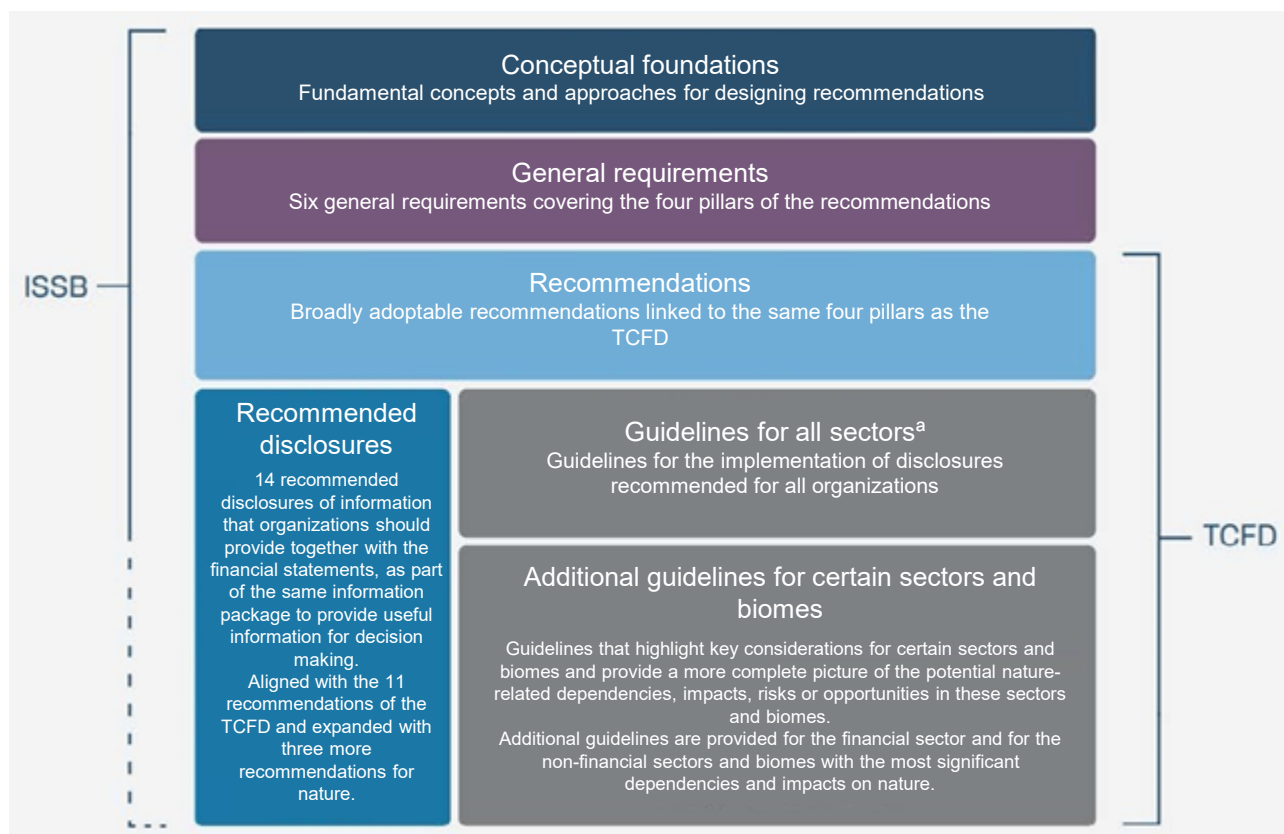
In addition, the methodological framework proposed by the TNFD focuses on general requirements, which is a differentiator from the TCFD approach:

1. Approach focused on the relevance of materiality;
2. Scope of disclosures, both in terms of the company and the value chain;
3. Consideration of dependencies and related impacts, risks and opportunities related to nature, based on an assessment of impacts and dependencies;
4. Specific localization of the interface with nature as an integral part of the assessment;
5. Integration with other sustainability topics, including climate-related disclosures;

6. Involvement of stakeholders in the disclosures.

The recommendations are voluntary and the TNFD expects disclosure of nature-related issues to improve over time as market understanding of nature-related issues and organizational capacity increases. The TNFD recommendations consider different approaches to materiality by meeting the material information needs of capital providers (in line with the ISSB IFRS Standards and TCFD - Financial Materiality recommendations) or the impact-related information needs of stakeholders (in line with GRI and ESRS - Impact Materiality).

FIGURE 3: TNFD architecture and alignment with global standards



Source: Recommendations of the Taskforce on Nature-related Financial Disclosures, 2023

The development of the TNFD framework followed an open innovation approach involving scientific, standard and corporate reporting organizations, market participants, NGOs, civil society organizations and representatives of indigenous peoples.

The TNFD also relied heavily on existing frameworks such as the TCFD recommendations and sustainability reporting standards from the *Sustainability Accounting Standards Board* (SASB) and the *Global Reporting Initiative* (GRI) to ensure consistency and comparability with existing corporate disclosures.

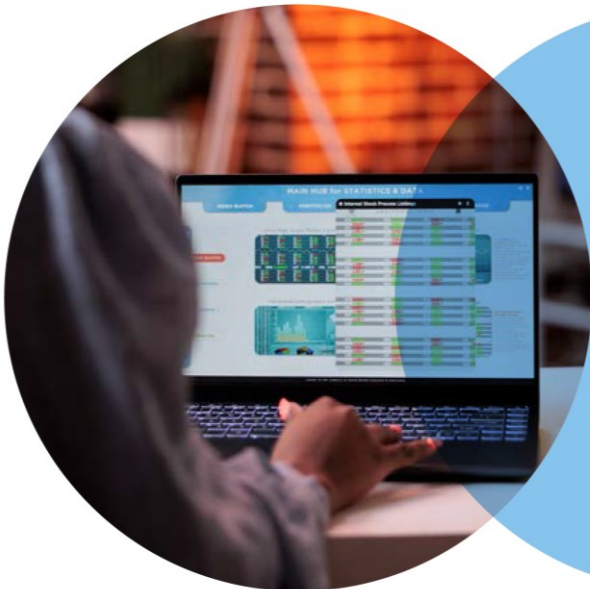
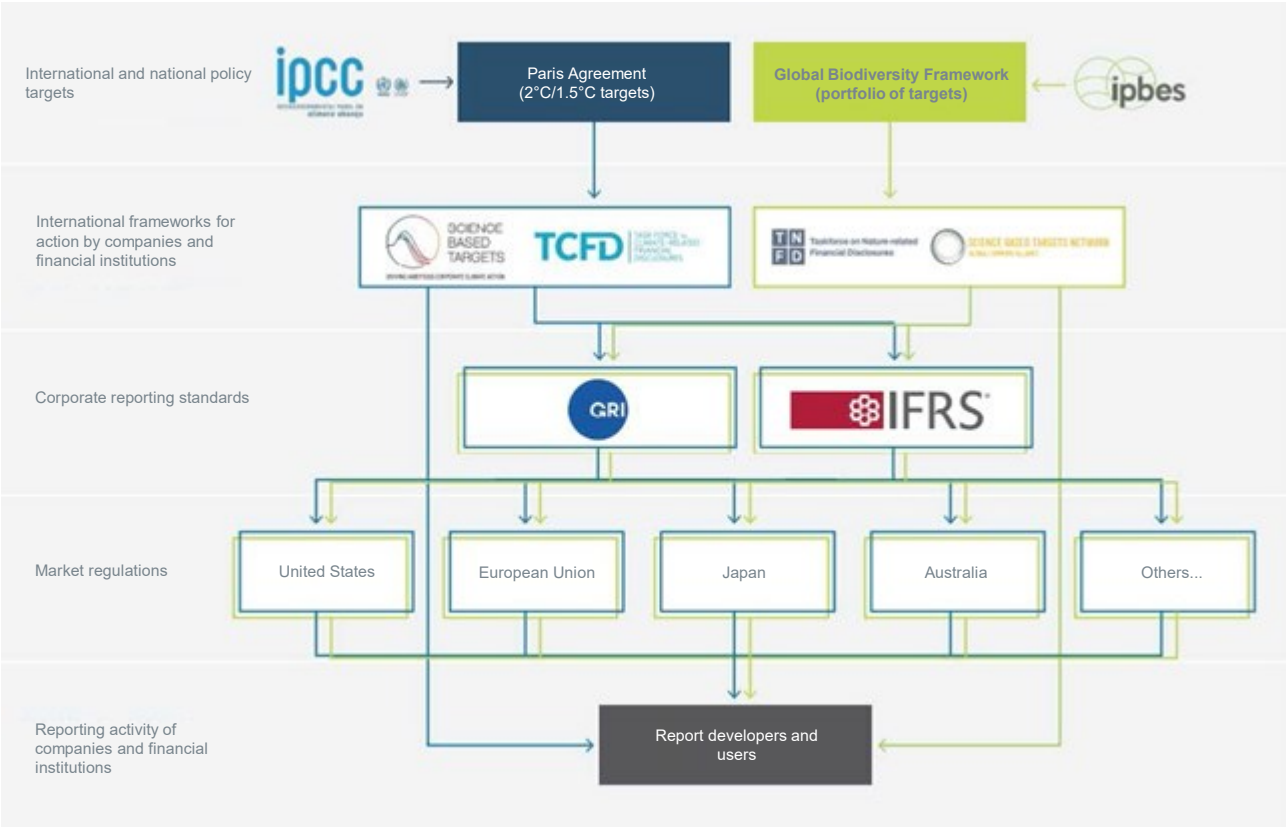


FIGURE 4: Where the TNFD fits into the emerging global reporting architecture



Source: Recommendations of the Taskforce on Nature-related Financial Disclosures, 2023.

The development of the TNFD framework followed an open innovation approach involving scientific, standard and corporate reporting organizations, market participants, NGOs, civil society organizations and representatives of indigenous peoples.

In its methodology, the TNFD considers the positive and negative impacts of the business and has the following impact drivers:

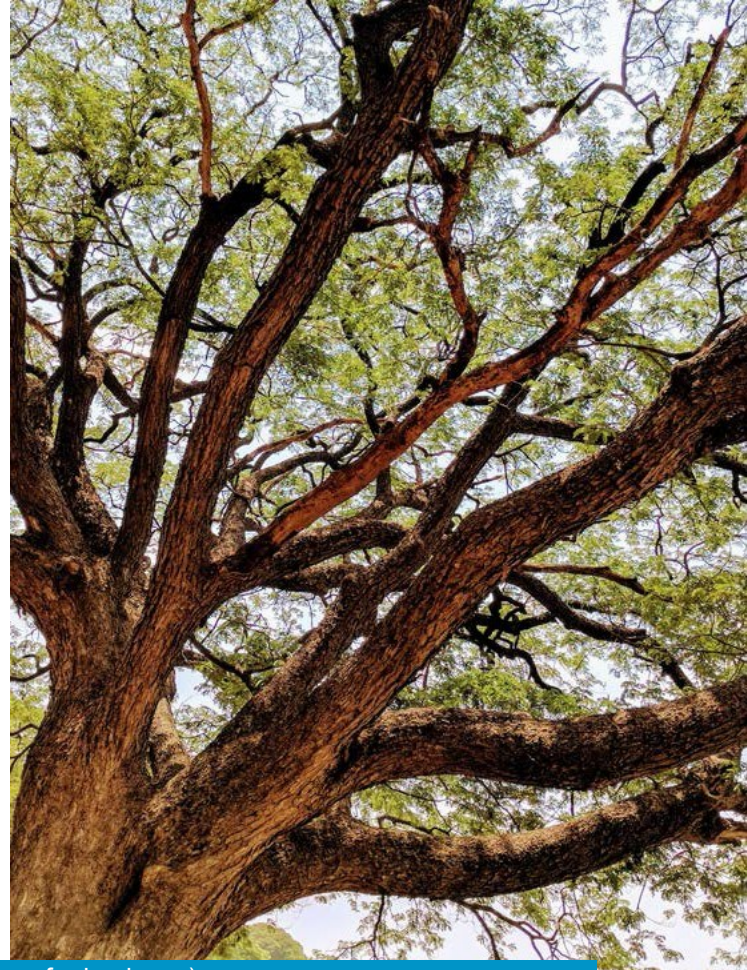
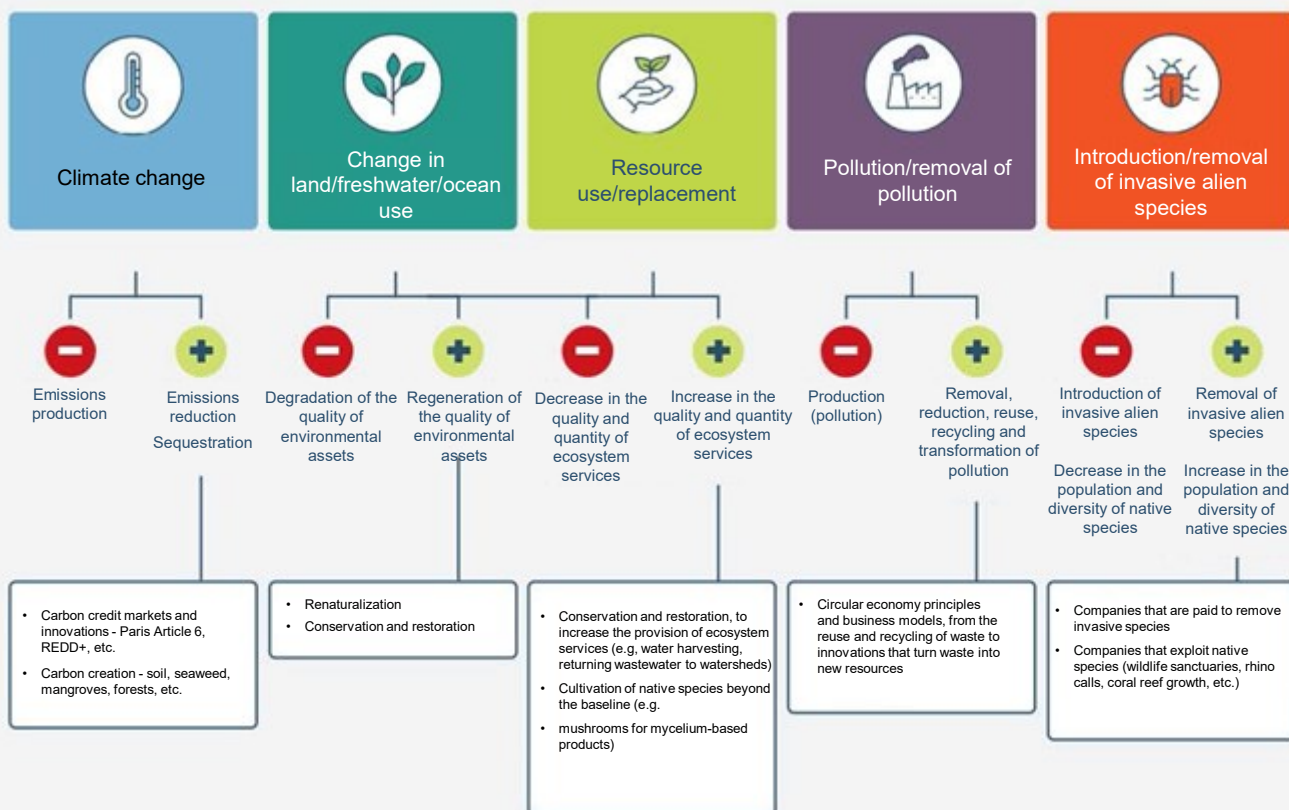


FIGURE 5: TNFD impact drivers (vectors of change in nature for business)



Source: Recommendations of the Taskforce on Nature-related Financial Disclosures, 2023.

The methodology of the TNFD: LEAP

The TNFD has developed the **LEAP** (Locate, Evaluate, Assess, and Prepare) methodology, a guide to help companies and financial institutions **identify, evaluate, assess, and disclose** their nature-related dependencies, impacts, risks, and opportunities.

The methodology was designed to help organizations identify what is potentially relevant and then apply their chosen materiality approach to the analysis to determine what they should disclose to the primary users of their sustainability reports and other stakeholders.

This methodology was developed based on existing *frameworks* and tools such as the Natural Capital Protocol and the Science Based Targets Network (SBTN) methodologies, drawing on data and guidance from other leading organizations that align with the TNFD principles, and has been tested by more than 200 organizations in different sectors, regions and biomes around the world.

LEAP is an internal analysis tool that is optional for companies wishing to adopt the TNFD recommendations, but not mandatory. The TNFD emphasizes that LEAP is not a rigid process, but a flexible guide that can be adapted to the specific needs of each company.

The LEAP methodology is structured in **four phases**:



LOCATE: In this phase, companies must identify their interfaces with nature at different levels: geographically (countries, regions, biomes), by activity sector and at the and value chain. The aim is to map where nature-related dependencies and impacts are most evident.



EVALUATE: After mapping the interfaces, the Evaluate phase involves describing and analyzing the company's dependencies and impacts on nature in detail. Companies must identify the ecosystem services essential to their operations and the impacts of their activities on these services.



ASSESS: Based on the assessment of dependencies and impacts, the Assess phase aims to identify, analyze and prioritize nature-related risks and opportunities. It is crucial to determine the extent of these risks and opportunities, for which tools such as heat-mapping, asset tagging and scenario analysis can be used.



PREPARE: The final phase of the LEAP methodology focuses on how the company should prepare to respond to the risks and opportunities mapped in the previous phases. This includes integrating nature-related risks into existing risk management processes, setting goals and indicators to monitor progress, and producing reports to disseminate the relevant information to stakeholders in accordance with the TNFD's recommendations.

FIGURE 6: LEAP approach



Source: Recommendations of the Taskforce on Nature-related Financial Disclosures, 2023.

Session 2:

The TNFD's Locate phase, companies and financial institutions operating in a megadiverse country: a look at the Brazilian reality



Conserving biodiversity in a megadiverse country such as Brazil

Brazil, which has 15-20% of the planet's biodiversity, can lead the fair transition to a carbon-neutral, equitable and nature-friendly economy and has the potential to drive strategic global action to halt and reverse biodiversity loss crisis.

In this context, the business sector has an important role to play in driving necessary changes in production chains and business models so that impacts on nature are considered and reported as a basis for decision-making.

The CEBDS and its partners recognize the importance of biodiversity management and the conservation and sustainable use of natural resources based on sustainable production and consumption patterns. To this end, we recognize that the use of scientific targets and internationally recognized reporting tools to measure risks, impacts and business dependence on biodiversity is essential.

The TNFD plays a critical role in this process and has the potential to become an important framework to support the corporate sector to fully consider the conservation and sustainable use of biodiversity in its business model and decision making.

According to reports from companies that have already started piloting the TNFD, the Locate phase (L phase) is considered one of the most challenging. This is because, as we have already seen, the company must analyze the interface of its activities with

nature and try to identify the sites it operates that are most sensitive to biodiversity in terms of the impacts and dependencies of its activities.

Prioritizing the sites of dependencies and impacts of companies, financial institutions and their value chains is still a major challenge for companies around the world. This task is even more demanding when we consider companies operating in a megadiverse country, as the specificities of these territories in terms of biodiversity must be taken into account, since the activities in each region and biome have a specific context.

In a country like Brazil, for example, with such an abundance of biomes, ecoregions and ecosystems, as well as the existence of several endemic species, it is much more difficult to identify which areas are a priority for biodiversity conservation,



since, according to international bases, most of the territory could be considered a priority.

To understand the complexity of identifying priority areas for biodiversity conservation in a megadiverse country, it is important to know what this term means. According to the Convention on Biological Diversity, megadiverse countries are those that have high levels of biodiversity and collectively host at least two-thirds of the planet's biodiversity, despite only representing about 10% of the world's land area.

A country must have at least 5,000 endemic plants and marine ecosystems within its borders to be considered megadiverse. There are 17 megadiverse countries: South Africa, Australia, Brazil, China, Colombia, Ecuador, United States, Philippines, India, Indonesia, Madagascar, Malaysia, Mexico, Papua New Guinea, Peru, Democratic Republic of Congo and Venezuela.

Brazil tops this list, hosting between 15% and 20% of the world's biodiversity (PNUMA, 2019), with 120,000 species of invertebrates such as insects, 9,000 species of vertebrates such as mammals, and more than 46,000 species of plants, algae and fungi, not to mention the average of 700 new species discovered in the country each year, according to the CBD. It is worth highlighting how difficult it is to maintain these figures given the size of the country and the heterogeneity of its regions.

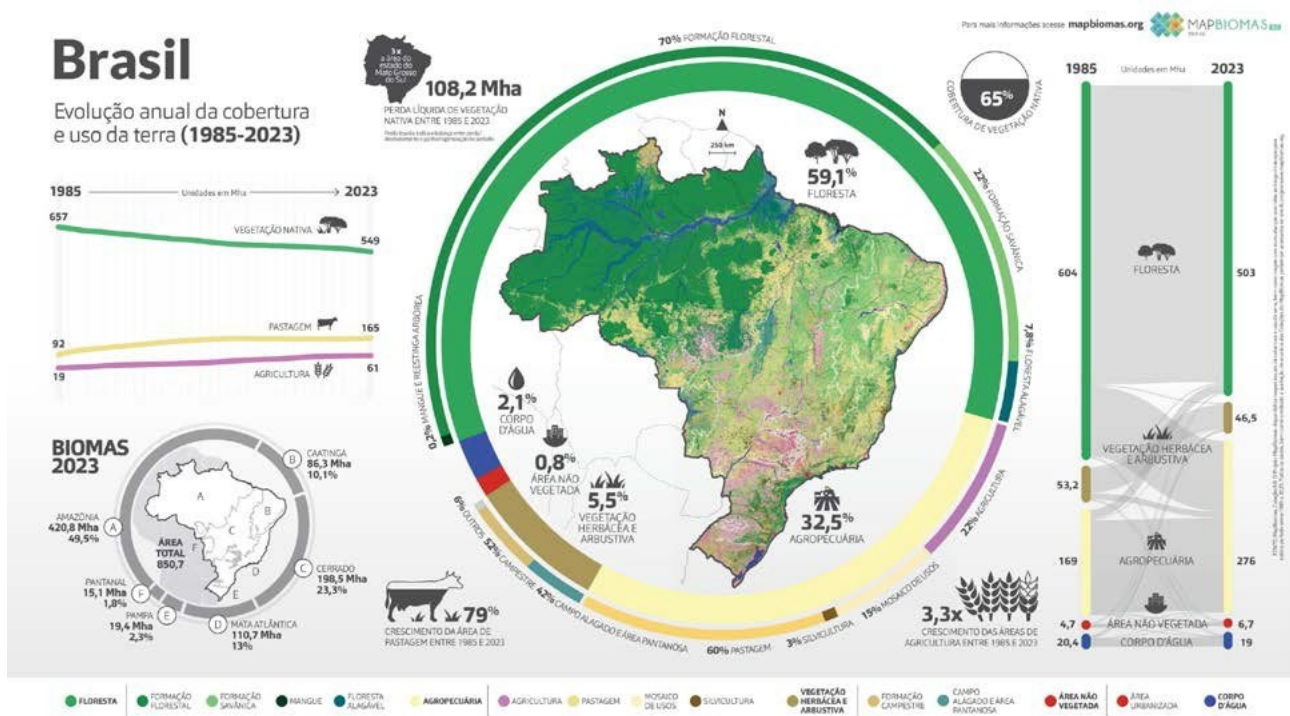
Currently, with only 65% of native vegetation coverage in Brazil according to data from MapBiomass, Brazilian biomes have suffered and continue to suffer major losses in biodiversity, which affects not only the maintenance of the ecological dynamics of the affected regions, but also the entire chain of consumption of natural resources, including production and the economy that uses these resources and environmental services, either directly or indirectly.

Currently with only 65% of native vegetation in Brazil (MapBiomass, 2024), Brazilian biomes have suffered and continue to suffer major losses in biodiversity, which affects not only the maintenance of the ecological dynamics of the affected regions, but also the entire chain of consumption of natural resources

With six biomes, Brazil faces conservation challenges, as each biome requires different strategies adapted to social and cultural specificities. As shown in **Figure 7**, according to MapBiomass, the Amazon, the largest biome in terms of extension, occupies 49.5% of the territory, with 420.8 million hectares. Next comes the Cerrado with 198.5 million hectares, representing 23.3% of Brazil's territory, followed by the Atlantic Forest with 110.7 million hectares (13%), Caatinga with 86.3 million hectares (10.1%), the Pampa with 19.4 million hectares (2.3%), and finally, the Pantanal, with a smaller extension, which is concentrated in the central-western region and covers 15.1 million hectares on Brazilian territory, which corresponds to 1.8%.

It should be emphasized that the Pantanal, despite having a small area compared to other biomes, is the largest floodplain in the world and, in addition to being included in the World Heritage List by Unesco, has been awarded the title of "Biosphere Reserve". With a unique cultural richness, it is home to important traditional, indigenous and quilombola communities, as well as many workers who live in and depend on these waters.

FIGURE 7: Vegetation cover in Brazil by biome from 1985 to 2023



Source: MapBiomas (2024)

Given this biodiversity and complexity, it is obvious how important it is to select the most sensitive or urgent sites in which to focus conservation efforts. In this sense, hotspots stand out, a concept developed in 1988 by the English ecologist Norman Myers to characterize areas of great importance for biodiversity associated with the high occurrence of endemic species, i.e., those that are exclusive to a region. In addition, these sites are subject to great human pressure and the strong effects of climate change.

According to conservation researcher Russell Mittermeier, former president of Conservation International, hotspots originally covered 16% of the Earth's surface, and today that number has been reduced to just 2%. This percentage contains approximately half of the world's endemic plant and vertebrate species. Brazil has two hotspots: the Atlantic Forest and the Cerrado.

Despite the importance of Brazilian biomes and ecosystems, they are all experiencing a greater or lesser loss of vegetation cover due to deforestation caused by certain human interventions.

The Atlantic Forest and the Cerrado require attention with regard to the risk of species extinction due to pressures from human activities. In addition, the latest Annual Deforestation Report in Brazil by MapBiomas shows that there was an increase in deforested area in the Cerrado (67.7%), the Pantanal (59.2%) and the Caatinga (43.4%) in 2023 compared to 2022, while the Atlantic Forest today has less than 29% of its original cover.

In light of this, the CEBDS, aware of the importance of conserving and sustainably using natural resources and the challenge for companies to identify robust metrics and methodologies to measure their risks, impacts

business dependence on biodiversity, taking into account the specificities of a megadiverse country, has jointly piloted the Locate phase of the TNFD, which is divided into four main components:

L1: Coverage of the business model and value chain:

- > **Goal:** Understanding the key components of the organization's direct business activities and upstream and downstream value chains.
- > **For the real economy:** The assessment can be done by organizational unit, product line, process or activity, using asset-level data from internal sources and from other due diligence processes.
- > **For financial institutions:** It is crucial to consider financed, facilitated, investment and/or insured activities and assets, and it is more appropriate to evaluate by sector, geography and asset class.

L2: Analysis of dependencies and impacts:

- > **Goal:** Identify the sectors and value chains where the organization is likely to depend on and/or have an impact on nature.
- > **For companies:** It is recommended to start with the sectors of activity and value chain activities identified in L1 and use tools such as ENCORE, IBAT, Trase and WWF Biodiversity Risk Filter.

- > **For financial institutions:** It is suggested to start with investment portfolios, using techniques such as *heat mapping* to identify potential exposure to nature-related risks.

L3: Interface with nature:

- > **Goal:** Identify the geographic locations where the organization's sectors and value chains interface with nature.
- > **For companies and financial institutions:** Offices and other operational locations should be considered as they may have dependencies and impacts on nature that create operational risks and opportunities.
- > **Tools:** Aqueduto, ENCORE, Global Forest Watch and other relevant tools from the TNFD Tool Catalog.

L4: Interface with sensitive sites:

- > **Goal:** From the sites identified in L3, determine which are considered environmentally sensitive, using the relevant tools and datasets.
- > **For companies and financial institutions:** It is recommended to understand the areas of influence around the locations of their activities.
- > **Tools:** IBAT, IUCN Red List, Protected Planet and other relevant tools.

The CEBDS collective pilot and adaptations to the steps of the Locate phase

Due to the specificities of a collective pilot, adaptations have been made to the steps of the Locate phase, as shown in the table below:

Individual Leap	CEBDS collective pilot Leap
L1: Coverage of the business model and value chain – What are the activities of our organization by sector and value chain? Where are our direct operations?	L1: Coverage of the business model and value chain – Where are the interfaces with nature across the companies in each group in terms of regions and sectors, including or not the value chains (direct, upstream and downstream operations)?
L2: Analysis of dependencies and impacts – Which of these sectors, value chains and operations are associated with potentially moderate and high dependencies and impacts on nature?	L2: Overview of dependencies and impacts – Given the companies that make up each group, which direct operations (and value chains, if any) are associated with potentially moderate and high dependencies and impacts on nature?
L3: Interface with nature – Are any of these sectors, value chains and direct operations associated with potentially moderate and high dependencies and impacts on nature? What specific biomes and ecosystems do our direct operations and value chains and sectors with moderate and high dependencies and impacts interact with?	L3: Interface with nature – From the perspective of each group under consideration, where are the operations with potentially moderate and high dependencies and impacts, considering the value chains or not? With which specific biomes and ecosystems do the direct operations of the group's companies and, where applicable, their value chains with high dependency and impact interface?
L4: Interface with sensitive sites – Which of our organization's activities in value chains and sectors with medium and high dependencies and impacts are located in ecologically sensitive sites? And which of our direct operations are located in these sensitive sites?	L4: Interface with sensitive sites – Which of the group companies' activities, including or not value chains, with high dependency and impact are located in ecologically sensitive sites? Which of the group companies' direct operations are in these sensitive sites?

It is worth noting that the data of the companies involved in the project were collected and analyzed by the consulting firms responsible for each sectoral group in order to protect their confidentiality.

All data is presented on maps as a single fictitious company that represents the entire sample and shows biomes, ecosystems or regions at a macro level, taking into account the specificities of each sector, but always preserving the anonymity of the data of the participating companies.

Session 3:

The Energy and Infrastructure sector case For Piloting the Locate Phase of the CEBDS Pilot Project on TNFD



GSEI is made up of six companies, covering the sectors of generation, transmission, distribution and marketing of energy, sanitation, oil and gas and derived fuels.

The operations of these companies occupy terrestrial, semi-aquatic and aquatic ecosystems, with different sizes, dependencies and impacts. The subsectors of hydroelectric power generation, wind power generation, raw water capture and refineries were included, totaling 436 assets distributed throughout Brazil.

In this way, the GSEI covered a variety of subsectors and activities, with projects of varying sizes distributed throughout Brazil, occupying terrestrial, semi-aquatic and aquatic ecosystems. Thus, their dependencies and positive and negative impacts related to nature are differentiated, according to the subsector, size and location.

According to ENCORE¹, the Energy and Infrastructure sector falls into two main sectors, namely *Public Utilities* and *Energy*, covering the subsectors indicated in the figure below.

Considering the goal of the Locate phase of the TNFD LEAP methodology to enable prioritization of operations with greater materiality in relation to nature and located in more ecologically sensitive locations, this pilot had as premises the use of free public databases for mapping ecologically sensitive locations, the consideration that direct operations are, in general, of greater materiality within the scope of GSEI companies, and also that all companies in the group would be represented in the project, although the selection of subsectors for participation also sought to consider the materiality of their dependencies and impacts so that they would be representative.

FIGURE 8. Sectors and subsectors related to Energy and Infrastructure, according to the ENCORE classification.

 Public utilities sectors	 Energy sector
Hydroelectric power generation	Drilling oil or gas wells
Wind power provision	Oil and gas exploitation research
Solar power provision	Oil or gas refinery
Nuclear/thermoelectric power generation	Oil or gas storage
Energy transmission and distribution	Oil or gas transportation
Gas distribution	
Gas retail	
Water service	

Source: Prepared by Arcadis, 2024.

¹ Free, online tool that helps organizations explore their exposure to nature-related risks and take the first steps towards understanding their dependencies and impacts on nature, defining how the economy depends on and impacts it. Financial institutions in particular can use ENCORE data to identify nature-related risks to which they are exposed through their investments and client portfolios. Find out more at <https://encorenature.org/en>.

For the interface stage with nature, the distribution of direct operations was verified in relation to biomes, ecoregions of the *World Wild Fund* – WWF and hydrographic sub-basins, identifying a wide distribution of projects among Brazilian biomes, with the exception of the Pantanal, located mainly in the Cerrado and Atlantic Forest and with less representation in the Amazon and Pampa.

The mapping of ecologically sensitive sites was done using free public databases, covering conservation units, priority areas for biodiversity conservation, Ramsar sites, indigenous lands, quilombola communities, vegetation cover, emerging critical sites and water risk. These layers meet the criteria determined by the TNFD, which are: areas important for biodiversity, areas with high ecosystem integrity, areas important for the provision of ecosystem services, areas with rapid decline in ecosystem integrity and areas of high physical water risk.

Challenges included the need to adapt the LEAP methodology considering the collective approach adopted and the heterogeneity of the group's operations, as well as the mapping of sensitive sites, considering that Brazil is a megadiverse and extremely heterogeneous country, which required calibration efforts regarding the criteria and weightings so that it would in fact be possible to understand the most sensitive sites among those evaluated (in this case, for the whole of Brazil), based on topics that are material to the sector.

It should be noted that ENCORE, in its July 2024 version², was considered insufficient for assessing the materiality of the dependencies and impacts of the group's subsectors, as it presents a generalist approach for some subsectors and disregards regional specificities. Thus, the relevance of this serving as an initial subsidy for this assessment was assessed, but with the need for review and/or refinement by companies, considering the national context.

Among the recommendations, it is important to highlight the relevance – for companies that aim to report their dependencies, impacts, risks and opportunities related to nature – of establishing an internal team dedicated to this purpose, with the support and involvement of senior management and organization of their databases, considering the need for georeferenced data and standardized information. The adaptability and continuous improvement relevant to the LEAP methodology is also highlighted, with the selection and adaptation of databases and tools used for analyses related to nature, which better reflect the reality of megadiverse countries such as Brazil.

Thus, this assessment represents an important contribution to understanding the dependencies and impacts related to the nature of the Energy and Infrastructure Sector Group (GSEI), from a collective perspective for companies in the sector.

² In October 2024, a new version of Encore was launched, which provides greater detail on economic activities.

Application of the Locate Phase

Methodology

As this is a pilot project with the goal of collectively analyzing the sector group with its respective participating companies, it was necessary to make adaptations to some recommendations of the methodology advocated by the TNFD (2023), such as the concomitant application of L1 and L2 and other indications below.

- **L1 - Coverage of the business model and value chain**

In stage **L1**, only the direct operations of the participating companies were considered, with value chains not being addressed in this pilot project. This decision was based on the premise that the impacts and dependencies of direct operations are, in general, more relevant (material) within the scope of GSEI. Furthermore, the definition of scope (subsectors to be considered) involved the materiality of impacts and dependencies, taking the ENCORE classification as a reference.

- **L2 - Overview of dependencies and impacts**

In stage **L2**, the assessment of the materiality of dependencies and impacts related to nature considered the ENCORE classification (June/2024 version), which were used to build a materiality matrix for the GSEI analysis subsectors.

L2 was developed concurrently with stage L1, because, although the materiality of dependencies and impacts was considered in defining the subsectors that would be subject to analysis in stages L3 and L4, as well as in the following phases of the LEAP approach, it was considered as a premise that all companies in the group would be covered. Therefore, due to the different areas of activity of the participating companies, it was defined in advance that at least three subsectors would be chosen for evaluation in stages L3 and L4.

- **L3 - Interface with nature**

In stage **L3**, the subsectors selected in the previous stages were superimposed on maps of biomes (IBGE, 2019), ecoregions of *World Wild Fund* (OLSON *et al.*, 2001) and hydrographic sub-basins (ANA, 2017), aiming to understand and characterize the spatial distribution of direct operations of GSEI companies in Brazilian territory.

- **L4 - Interface with sensitive sites**

In stage **L4**, the mapping of ecologically sensitive sites considered the databases (layers) determined by the Technical Committee of the pilot project, which meet the criteria determined by the TNFD, as shown in Table 1. All these layers are available free of charge on the internet.

TABLE 1. Layers used to map the ecologically sensitive sites. Preparation: Arcadis, 2024.

Layers	Data source	TNFD criteria for ecologically sensitive sites
Conservation Units	Ministry of Environment (2024)	1) Important areas for biodiversity 2) Areas with high ecosystem integrity
Priority areas for biodiversity conservation (biological significance)	Ministry of Environment (2018)	1) Important areas for biodiversity
Ramsar Sites	Ramsar Convention on Wetlands (2022)	1) Important areas for biodiversity 3) Important areas for the provision of ecosystem services
Indigenous lands	National Foundation for Indigenous Peoples (2024)	2) Areas with high ecosystem integrity 3) Important areas for the provision of ecosystem services
Quilombola communities	National Institute for Colonization and Agrarian Reform (2024)	3) Important areas for the provision of ecosystem services
Vegetation cover	MapBiomass – Collection 8 (2023)	1) Important areas for biodiversity 2) Areas with high ecosystem integrity
Emerging critical sites	Global Forest Watch (2023)	4) Areas with rapid decline in ecosystem integrity
Water risk	Aqueduct – Water Risk Filter 4.0 (2023)	5) Areas with high physical water risk

Layers used to map the ecologically sensitive sites

For mapping ecologically sensitive sites, a georeferenced database was created from the layers presented in **Table 1**.

For each layer, *sensitivity levels* were defined (from three to five levels), to which *scores* were assigned, ranging from 1 to 8, with the lowest score always being equal to 1 (lowest sensitivity) and the others being multiples of 2 (i.e. 2, 4, 6 or 8), marked as indicated below.

Furthermore, we sought to mitigate the cumulative effect of some layers that refer to the same TNFD criteria.

- > In the case of layers that already have a hierarchy of attributes (priority areas for conservation, emerging critical sites and water risk), this pre-established division was adopted as the sensitivity levels, with only the scores being established for each level.
- > For **conservation units, indigenous lands, quilombola communities and Ramsar sites**, sensitivity levels were established considering two factors: the overlap with these areas (greater sensitivity) and the distance from them (lower sensitivity, decreasing as the distance to the areas increases). Furthermore, for conservation units, the group to which they belong was also considered, as established by Federal Law No. 9,985/2000, with the level of sensitivity being

higher for those with full protection and lower for those with sustainable use.

- > **Regarding vegetation cover**, sensitivity levels were defined based on the percentage of native vegetation formations, regardless of phytophysiology, in the Otto Pfafstetter watershed polygons (ottobasin) level 4, of the National Water Agency. Thus, the higher the percentage of native vegetation cover in relation to the total extension of the ottobasin, the higher the sensitivity level score for this layer (scoring criteria: 0-30% native cover in the otto basin, 30-50% native cover in the ottobasin and >50% native cover in the ottobasin).
- > Considering the **materiality of water risk** for most of the analysis subsectors, we assessed which Aqeduct (*indicators*) were most related to the GSEI, also discarding those with a low level of detailed information for the Brazilian territory and duplication of information (i.e., layers with very similar information). To map ecologically sensitive sites, five of the 13 indicators evaluated by Aqeduct were selected, namely: water stress, interannual variability, seasonal variability, drought risk and coastal eutrophication potential. The inclusion of the latter was due to the fact that there were no other indicators with a sufficient level of detail to reflect the impact of water resource pollution. The eight unused Aqeduct indicators were: water depletion, declining groundwater, riverine flood risk, coastal flood risk, untreated connected sewage, unimproved clean water/lack of clean water, lack of sanitation, and Peak RepRisk reputational risk index (by country).



Based on the established scores, all layers were converted to matrix format, reclassifying the pixels of each image. From a map algebra, the layers were then superimposed and the model calculated the sum of the sensitivity level scores for each pixel. It should be noted that the sum values are dimensionless and can only be compared when the reclassified variable sets are considered on the same criteria scale. Finally, a weighted linear combination was used to generate a final score for the sensitivity level of each pixel, delimiting four sensitivity classes (very high, high, medium and low), whose numerical limits were established based on the calculation of quartiles, or four equal parts, for the sample. Figure 9 presents a summary of this methodological procedure.

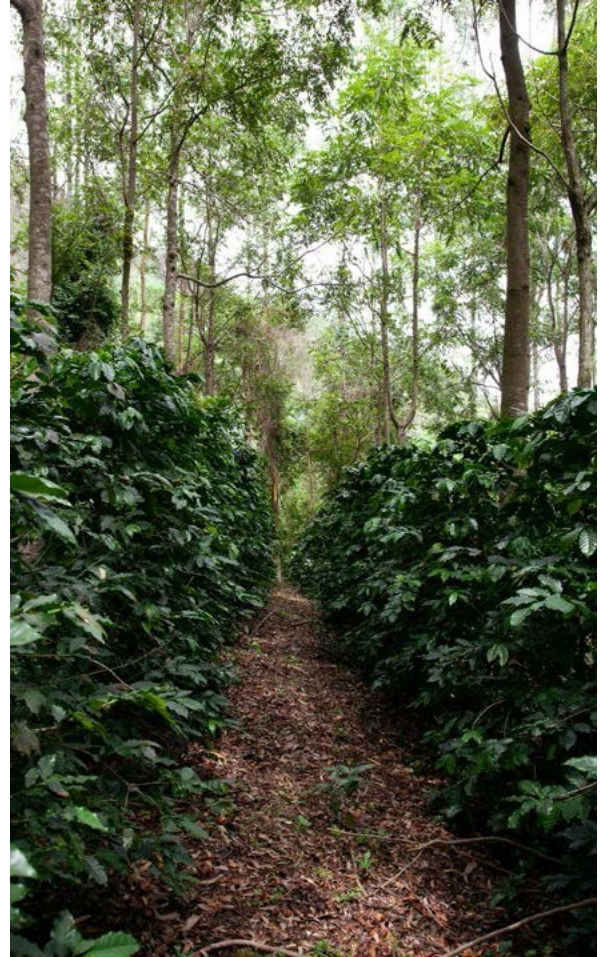
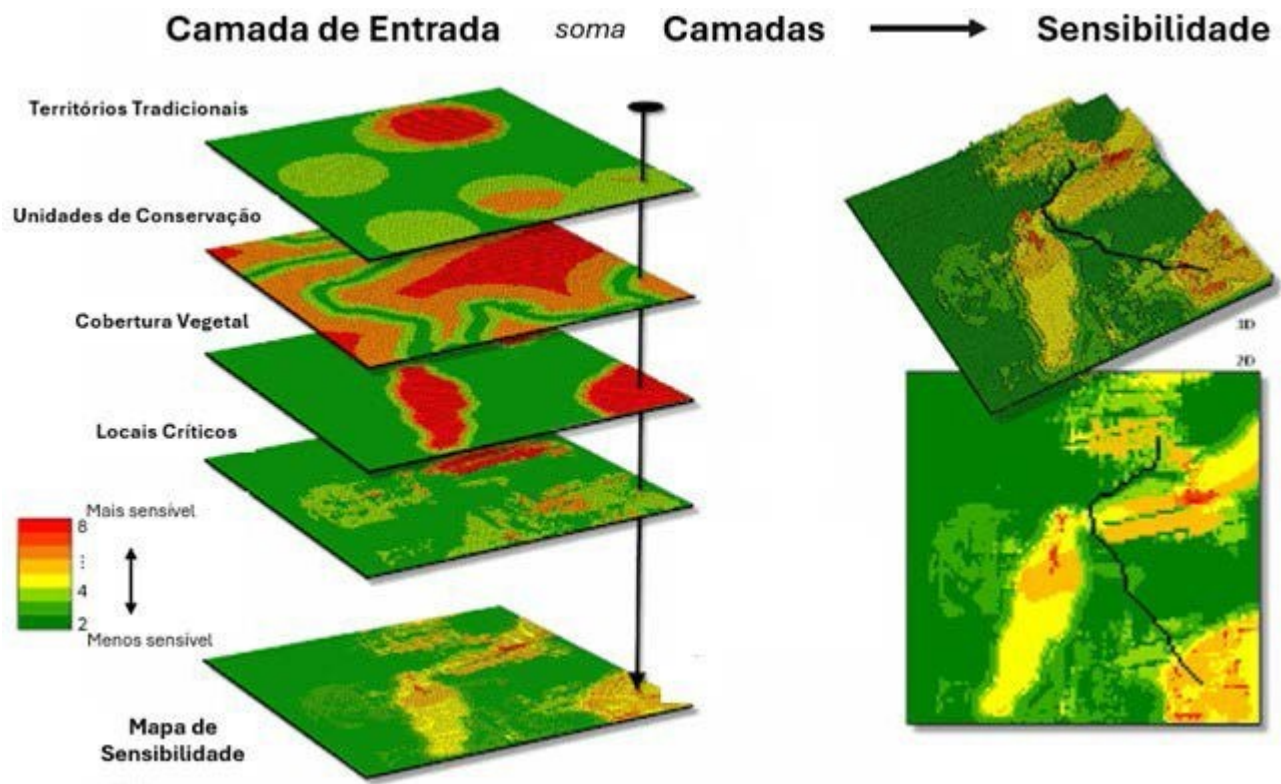


FIGURE 9. Summary of the methodology used to map sensitive sites.



Source: Prepared by Arcadis, 2024. Adapted from Map Analysis, Joseph K. Berry, 2007.

Results

From the Locate phase of the collective pilot of the CEBDS of the TNFD of the Energy and Infrastructure Sector Group coordinated by Arcadis

The Locate phase of the TNFD LEAP methodology aims to enable prioritization and focus, highlighting among the operations evaluated those that potentially present greater materiality in terms of dependencies, impacts, risks and opportunities related to nature (TNFD, 2023). Considering the collective approach of this pilot project, as presented in the methodology item, this assessment of the materiality of dependencies and impacts, related to stage L2, was anticipated and developed together with stage L1 to

better direct activities with the participating companies.

GSEI's dependencies and impacts related to nature

Based on information from ENCORE, materiality matrices were prepared for dependencies and impacts related to nature for the subsectors of companies participating in the GSEI, which will be presented in Tables 2 and 3.

The most material dependencies for the GSEI (Table 2) as a whole are:

- > climate regulation,
- > surface water, and
- > maintenance of water flow.



Regarding the most material impacts of the GSEI as a whole, as indicated by ENCORE (Table 3), the following stand out:

- > water use,
- > use of terrestrial ecosystems,

- > greenhouse gas emissions, and
- > use of aquatic ecosystems (freshwater), once again highlighting the relevance of the water and climate issue for the sector.

TABLE 2. Materiality matrix of dependencies for the GSEI subsectors analyzed, according to ENCORE.

SUB-INDUSTRIES*	DEPENDENCIES												
	Direct physical input		Allows the production process			Mitigation of direct impacts				Protection against interruptions			
	Groundwater	Surface water	Soil quality	Maintenance of water flow	Water quality	Bioremediation	Filtering	Mediation of sensory impacts	Buffering and damping of mass flows	Climate regulation	Flood and storm protection	Mass stabilization and erosion control	Pest control
Hydroelectric power production	M	MA		MA	B	MB	MB			MA	A	A	
Wind power provision										MA	M	M	
Oil and gas refining	B	B			B	MB	MB			MB	M	B	
Water services	MA	MA	M	MA	A	M	M	B	B	M	M	B	B

Key: MA – very high; A – high; M – medium; B – low; MB – very low. *Note: The term was adapted as “Subsector”, within the scope of this pilot project with GSEI.

Preparation: Arcadis, 2024.

TABLE 3. Materiality matrix of impacts for the analyzed GSEI subsectors, according to ENCORE

SUB-INDUSTRIES*	IMPACTS									
	Nuisances	Use of freshwater ecosystems	Greenhouse gas (GHG) emissions	Use of marine ecosystems	Air pollution (non-GHG)	Soil pollution	Solid waste	Use of terrestrial ecosystems	Water pollution	Water consumption
Hydroelectric power production		MA	A					MA	A	MA
Wind power provision	M	M		A		B		A	B	
Oil and gas refining			A		A	B			B	MA
Water services		A				B		A	B	A

Key: MA – very high; A – high; M – medium; B – low; MB – very low. *Note: The term was adapted as “Subsector”, within the scope of this pilot project with GSEI.

Preparation: Arcadis, 2024.

The evaluation of these materiality matrices of dependencies and impacts by the participating companies highlighted some points of disagreement with the classification proposed by ENCORE or its insufficiency, as it does not consider the size of the project (as for hydroelectric plants) and does not detail the activities by sector (as for water services). In relation to hydroelectric plants, other topics highlighted were the fact that the ENCORE classification does not consider that the impact of water use is not consumptive, being more

related to the quality than to the quantity of water, and that the impact of greenhouse gas emissions does not present great materiality in the operation phase. In the case of refineries, there was disagreement regarding ENCORE's classification of low materiality for surface water dependencies and maintenance of water flow, considered high by GSEI.

Thus, among other points, the analysis of the materiality of dependencies and impacts aimed to support the group discussion in the GSEI for prioritizing the subsectors

that would be evaluated in the following stages of the pilot project (stages L3 and L4), as well as the outlining of the data that should be sent to stage L1.

This analysis, together with the group's agreed premise that all companies would be included, made it possible to select four GSEI subsectors for analysis in the Locate phase:

1. Hydroelectric power generation;
2. Wind power generation;
3. Raw water capture; and
4. Refineries.

Number of projects in each GSEI analysis subsector

In total, **436 projects** were included in the analysis, the majority

consisting of raw water capture (59%), followed by hydroelectric plants (24%), wind farms (15%) and refineries (2%) (**Table 2 and Figure 10**).

To achieve greater uniformity among the group for this collective assessment, priority was given to land and semi-water operations, with marine and linear operations being discarded.

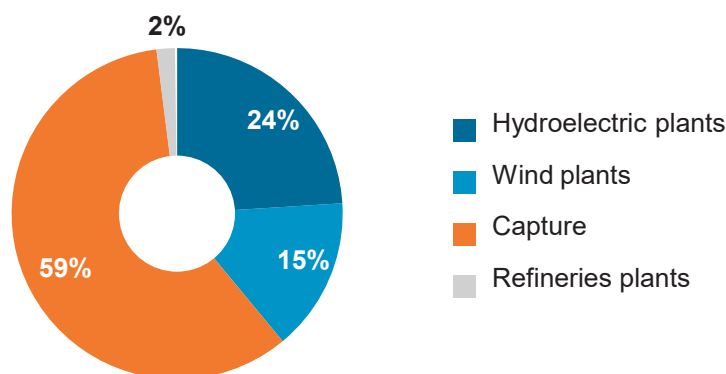
The hydroelectric power generation subsector included hydroelectric plants (UHEs), hydroelectric generating plants (CGHs) and small hydroelectric plants (PCHs), although these typologies present dependencies and impacts with different magnitudes, seeking to understand the cumulative effect of this subsector. Furthermore, hydroelectric and wind power generation operations did not include, for this pilot project, substations, transmission lines and distribution lines.

TABLE 2. Number of projects in each GSEI analysis subsector.

#	Subsectors	Projects	
		Quantity	Percentage
1	Raw water capture	257	59%
2	Hydroelectric power generation	104	24%
3	Wind power generation	65	15%
4	Refineries	10	2%
Total GSEI		436	100%

Preparation: Arcadis, 2024.

FIGURE 10. Distribution of projects by GSEI analysis subsector (in percentage).

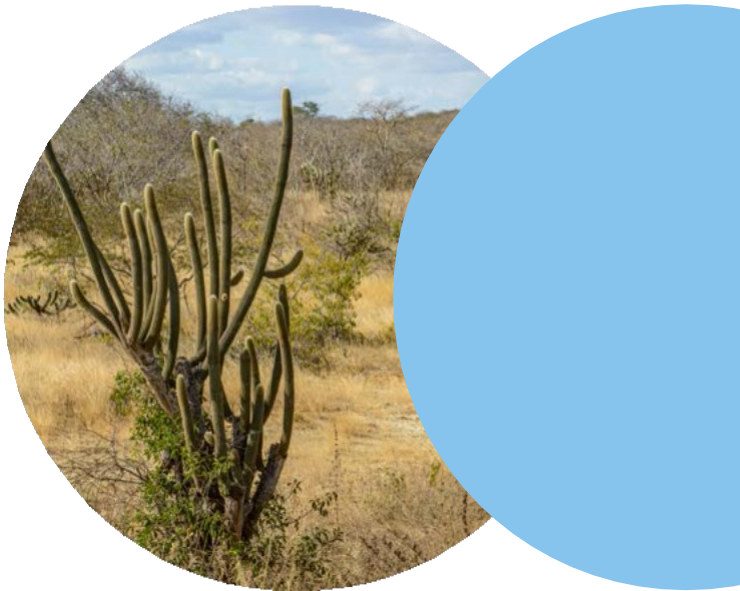


Source: Prepared by Arcadis, 2024

Brazilian biomes and the distribution of GSEI analysis projects

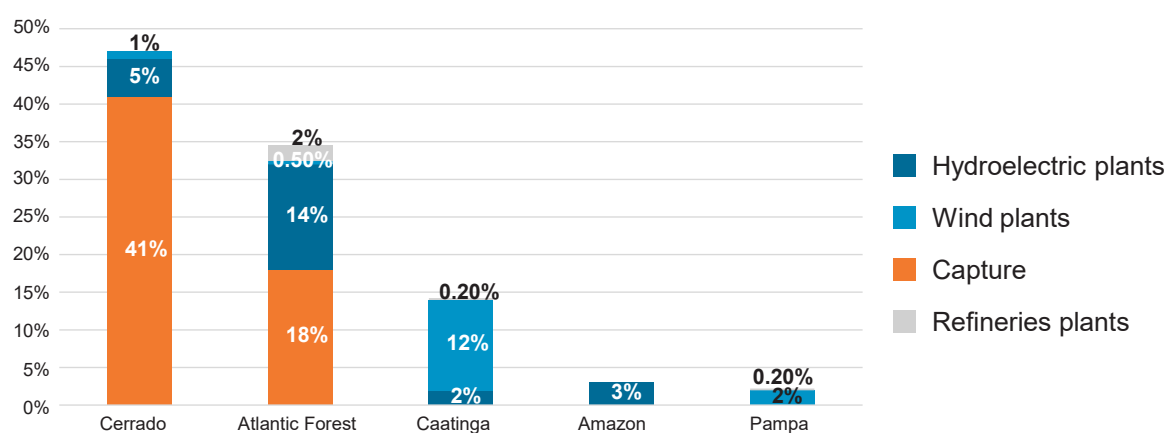
The 436 GSEI analysis projects are distributed across all Brazilian biomes, except the Pantanal. Around half of them (203 projects or 47% of the total) are located in the Cerrado, with considerable numbers in the Atlantic Forest (149 projects or 34%) and in the Caatinga (63 projects or 14%), with the representation in the Amazon (13 projects or 3%) and in the Pampa (8 projects or 2%) being considerably lower (**Figure 11**).

With a greater number of projects, **raw water captures** are those that contribute most to the greater expressiveness of the Cerrado and the Atlantic Forest, corresponding respectively to 41% and 18% of the total projects, not occurring in the Amazon and Caatinga. **Hydroelectric plants** are concentrated in the Atlantic Forest (14% of total projects), but they also occur in the Caatinga, Cerrado and Amazon, being the only GSEI subsector in the latter.



Wind farms are predominantly located in the Caatinga, accounting for 12% of all projects, and are found in smaller numbers in the other three biomes. **Refineries** are mostly located in the Atlantic Forest (2%), and also occur in the Caatinga and Pampa. It should be mentioned that the refineries are located in industrial areas, with the majority having been built decades ago, in locations considered strategic for national supply.

FIGURE 11. Distribution of GSEI projects by biome (IBGE, 2019) (in percentage).



Source: Prepared by Arcadis, 2024.

Ecoregions and spatial distribution of GSEI analysis subsectors

In order to generate another perspective for the spatial distribution of the GSEI analysis subsectors, it was found that its projects are distributed across 17 **ecoregions** (OLSON et al., 2001), but are concentrated in just three (**Figura 12**), which together total 81%:

- > Cerrado (46%),
- > Alto Paraná Atlantic forests (20%)
- > Caatinga (15%).

The classification of ecoregions considers a greater number of units than the Brazilian biomes, with 45 ecoregions in Brazil, and one of the main differences is that the areas corresponding to the Atlantic Forest and Amazon biomes are subdivided into several ecoregions, also covering stretches of adjacent biomes.

Thus, the 149 GSEI analysis projects located in the Atlantic Forest biome and the 13 in the Amazon biome are distributed in seven and six ecoregions respectively.

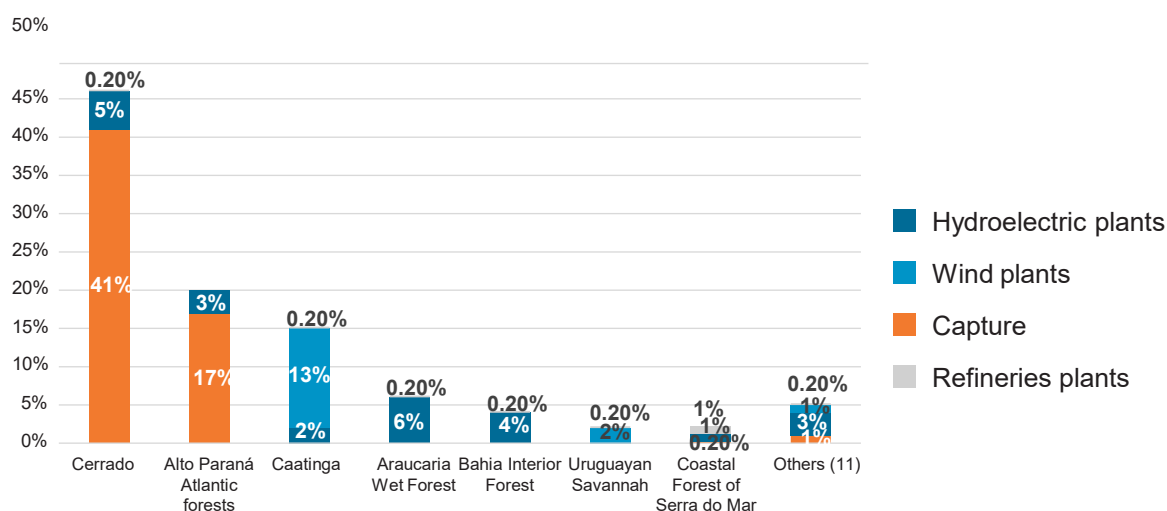
The Caatinga, Cerrado and Pampa biomes are, overall, more similar to the Caatinga, Cerrado and Uruguayan Savannah ecoregions respectively, the latter of which is also present in Uruguay.

Once again, **raw water capture** is the largest contributor to the most representative ecoregions, Cerrado and Alto Paraná Atlantic forests, corresponding to 41% and 17% of the total number of projects, respectively, and occurring to a lesser extent in two other ecoregions.

The **hydroelectric plants** are distributed across 13 ecoregions, the main ones being: Araucaria Moist Forests, also known as Mixed Ombrophilous Forest (6% of total developments); Cerrado (5%); and Interior Forest of Bahia (4%).

Similarly to the biomes, the **wind farms** are predominantly located in the Caatinga ecoregion, accounting for 13% of the projects. In turn, the **refineries** are distributed in seven ecoregions, most of them in the Serra do Mar Coastal Forest (1% of the total).

FIGURE 12. Distribution of GSEI enterprises by ecoregion (OLSON et al., 2001) (in percent).



Source: Prepared by Arcadis, 2024.

The subwatersheds and location of the GSEI subsectors

To assess the location of the GSEI subsectors, it was found that the projects are distributed in 41 **subwatersheds** (ANA, 2017), with the Alto Paraguai (41%) and Grande (14%) subwatersheds standing out (Figure 13). In more than half of them (54%), there are only one or two projects.

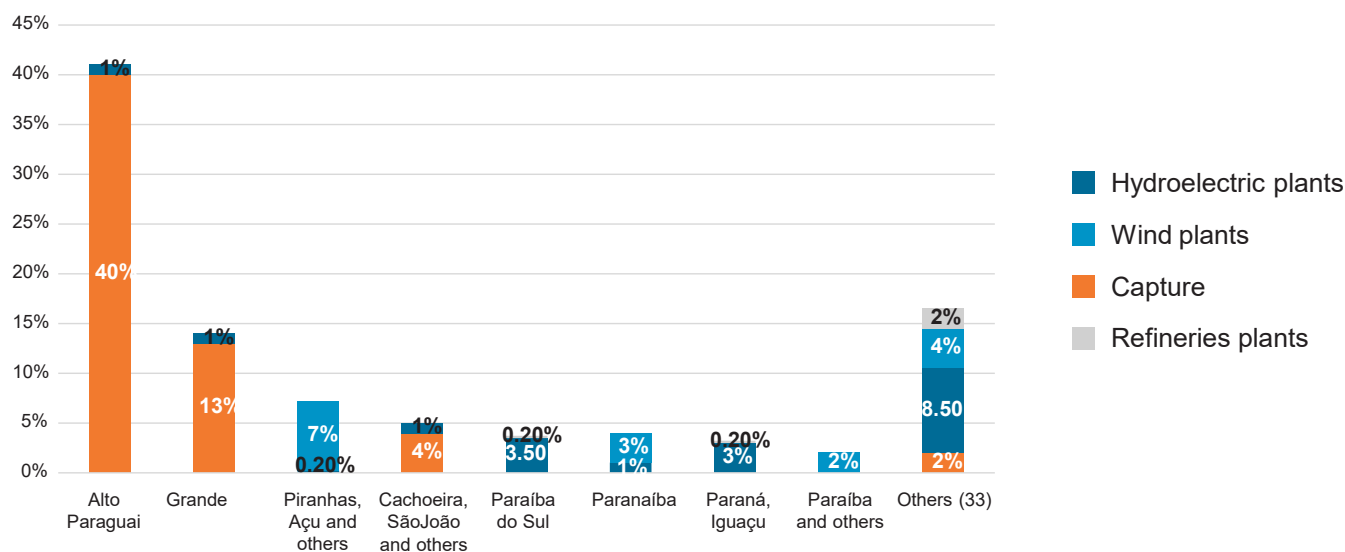
Once again, **raw water capture** is the biggest contributor to the most representative subwatersheds, with 40% and 13% of the projects, respectively, in the Alto Paraguai and Grande subwatersheds, while it also occurs in three other subwatersheds, but to a lesser extent.

Hydroelectric plants cover the largest number of subwatersheds (32), the main ones being the Paraíba do Sul (3% of all projects), Paraná/Iguaçu (3%) and Doce (2%). **Wind farms** are found in nine subwatersheds, mainly in Piranhas, Açú and others (7% of all projects).



Finally, **refineries** are found in nine subwatersheds, only one of which has two projects (Paraná, Tietê and others, with 0.5% of all projects).

FIGURE 13. Distribution of GSEI enterprises by subwatersheds (ANA, 2017)(in percent)



Source: Prepared by Arcadis, 2024.

FIGURE 14. Heatmaps of biomes (IBGE, 2019), ecoregions (OLSON et al., 2001) and hydrographic subwatersheds (ANA, 2017) for developments in the GSEI analysis subsectors. The darker shades represent the higher densities of projects.



Source: Prepared by Arcadis, 2024.

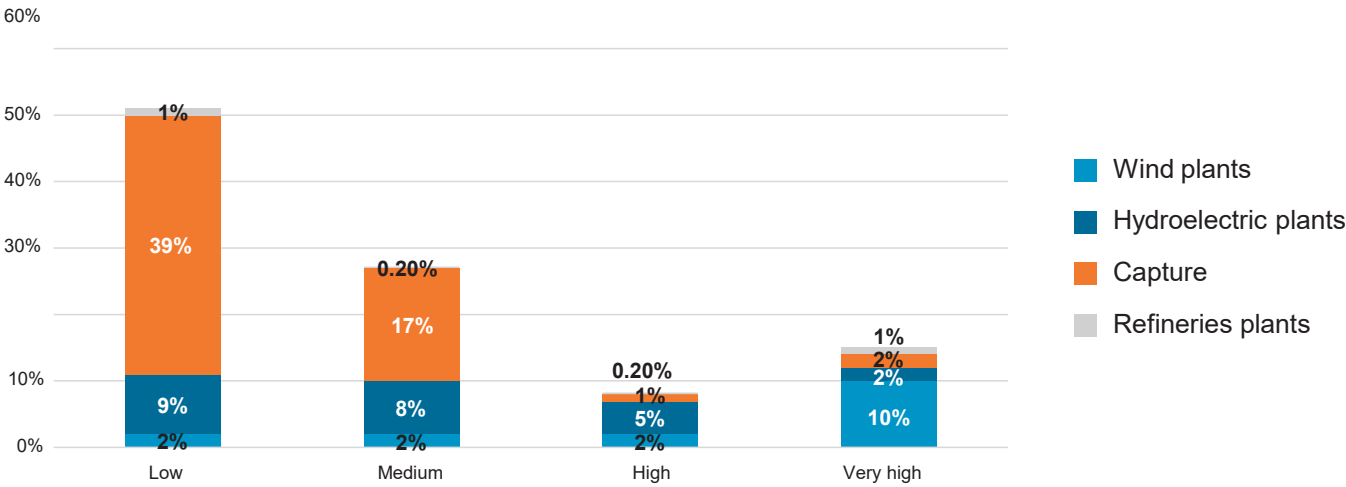
Distribution of GSEI related to ecologically sensitive locations - L4 stage

Related to stage L4, the mapping of **ecologically sensitive locations** considered four sensitivity classes for Brazil, as follows:

“very high” (19%), ‘high’ (20%), ‘medium’ (33%) and ‘low’ (29%).

The projects in the subsectors analyzed by the GSEI are distributed as follows (**Figure 15**): 15% in the “very high” class, 8% in the “high” class, 27% in the “medium” class and 51% in the “low” class.

FIGURE 15. Distribution of GSEI analysis projects by ecological sensitivity class (in percentages).



Source: Prepared by Arcadis, 2024.

This data shows that 23% of the GSEI operations evaluated are located in areas of “very high” or “high” sensitivity, which represent 39% of the Brazilian territory according to the mapping carried out. In principle, these are the operations that will be covered in greater depth in the Estimate phase, and changes may be made if the assessment indicates that this is necessary. They are mainly located in the Caatinga (12%) and Atlantic Forest (7%) biomes.

On the other hand, around half (51%) of the operations assessed are in areas of lower sensitivity, which correspond to 29% of the country. It's worth mentioning that some of the GSEI projects are located in areas used for industrial activity, i.e. in environments that are already quite altered and have projects in several other sectors.

FIGURE 16. Heatmap of ecologically sensitive locations for developments in the GSEI analysis subsectors. The darker shades represent areas of greater sensitivity, while the green triangles indicate the GSEI developments.



Source: Prepared by Arcadis, 2024

Hydroelectric Power Generation Subsector

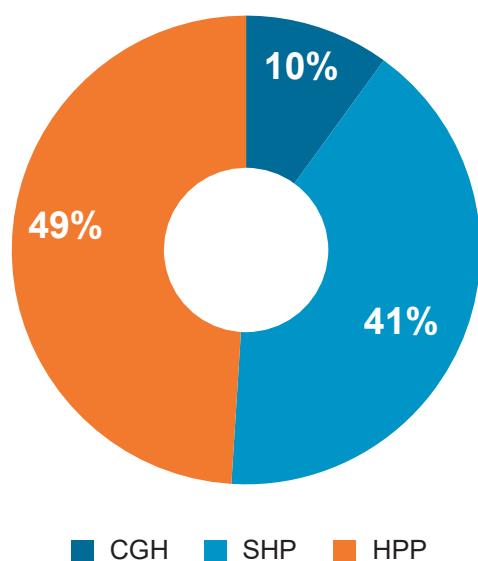
Although it is not the GSEI's main subsector in terms of the number of projects, hydroelectric power generation is the subsector that includes the largest number of companies in the group and the one that is the most spatially distributed in Brazil. In addition, hydroelectric power generation projects can be divided into different types, according to their size and installed capacity. The results for this subsector alone are presented below.

TPOLOGY

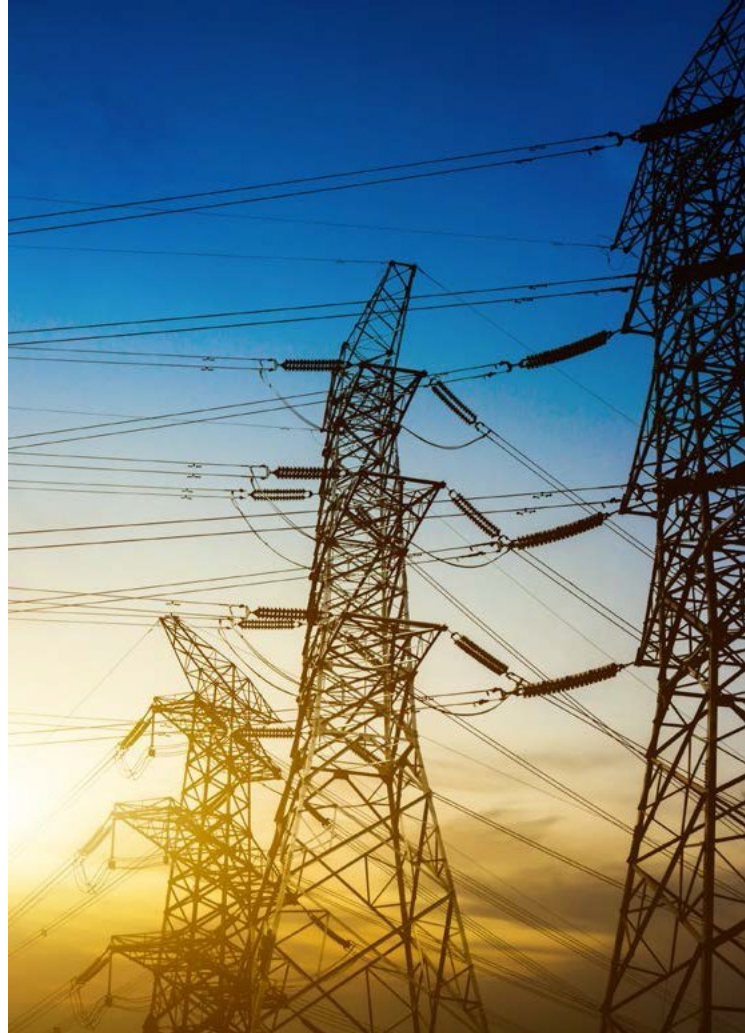
The 104 projects in this subsector are distributed as follows in terms of type (Figure 17):

- > 49% are hydroelectric power plants (HPPs),
- > 41% are small hydroelectric plants (SHPs); and
- > 10% are hydroelectric generating stations (CGHs).

FIGURE 17. Distribution of GSEI hydroelectric plants by typology (in percentages).



Source: Prepared by Arcadis, 2024



BIOMES

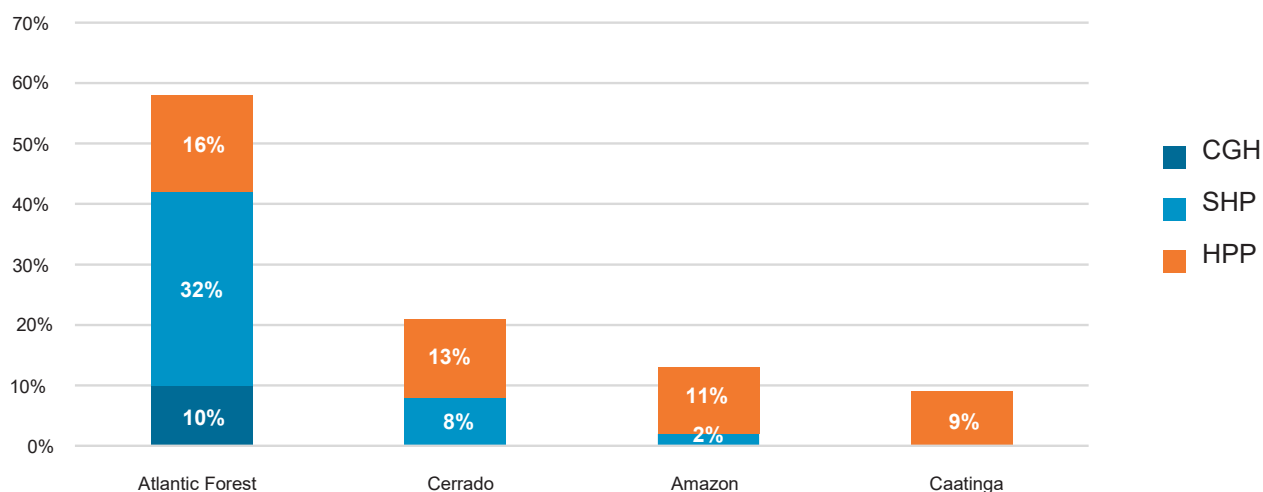
In terms of **biomes** (IBGE, 2019), **hydroelectric plants** are concentrated in the Atlantic Forest (58%), distributed as follows in the other biomes: Cerrado (21%), Amazon (13%) and Caatinga (9%), absent in the Pampa and Pantanal (**Figure 18**).

SHPs contribute to the greater representation of the Atlantic Forest biome in this subsector (32% of hydroelectric plants), and are also numerous in the Cerrado (8%).

On the other hand, **HPPs** are more evenly distributed across these four biomes, being more abundant in the Atlantic Forest (16% of hydroelectric plants) and less so in the Caatinga (9%).

The **CGHs**, with the smallest number of projects, all occur in the Atlantic Forest (10% of hydroelectric plants).

FIGURE 18. Distribution of GSEI hydroelectric plants by biome (IBGE, 2019) and typology (in percent).



Source: Prepared by Arcadis, 2024

ECOREGIONS

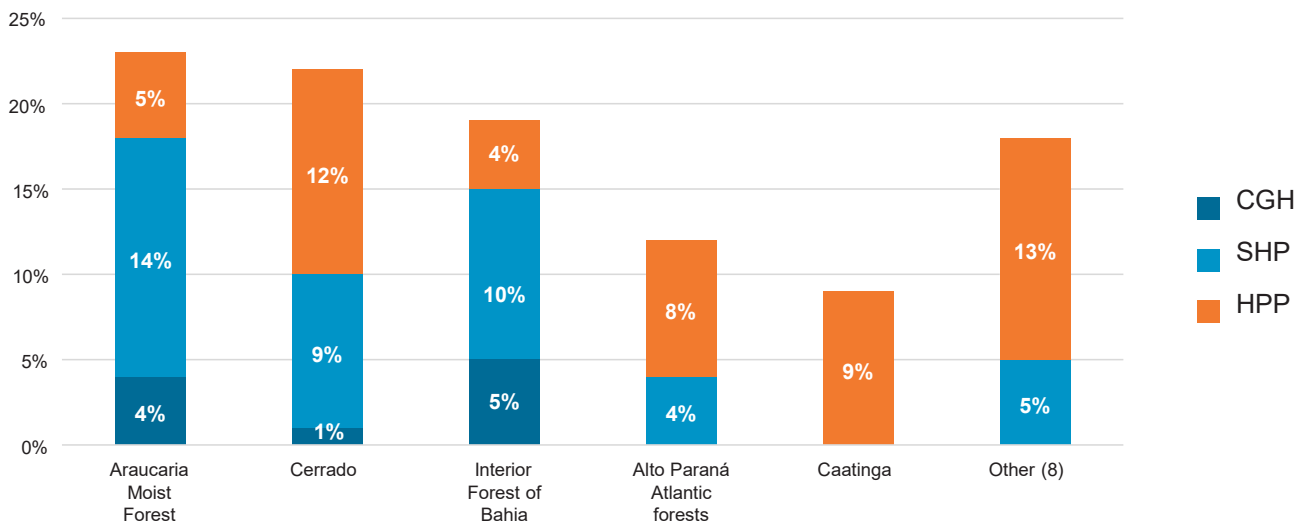
Hydroelectric plants are found in 13 **ecoregions** (OLSON et al., 2001), mainly in: *Araucaria Moist Forest* (23%), *Cerrado* (21%) and *Interior Forest of Bahia* (18%) (Figure 19).

SHPs account for a large proportion of the *Araucaria Moist Forest* ecoregion (14% of hydroelectric plants) and *Interior Forest of Bahia* (10%).

HPPs, on the other hand, are more abundant in the *Cerrado* ecoregion (12% of hydroelectric plants), the *Caatinga* (9%) and the *Alto Paraná Atlantic forests* (8%). With fewer projects, CGHs are found predominantly in the *Interior Forest of Bahia* (5% of hydroelectric plants) and *Araucaria Moist Forest* (4%) ecoregions.



FIGURE 19. Distribution of GSEI hydroelectric plants by ecoregion (OLSON *et al.*, 2001) and typology (in percentages).



Source: Prepared by Arcadis, 2024.

SUBWATERSHEDS

The GSEI's **hydroelectric plants** are located in 31 subwatersheds (ANA, 2017), with more than half of them distributed in just six (Figure 20):

- > Paraíba do Sul (14%);
- > Paraná/Iguaçu (12%);
- > Doce (8%);
- > Paraná, Paranapanema, Amambai and others (7%);
- > Taquari (7%);
- > Grande (6%).

SHPs correspond to the largest concentration of hydroelectric plants in a single subwatershed (Paraíba do Sul), with 12% of hydroelectric plants, and are also significant in the Paraná/Iguaçu (6%) and Taquari (6%) subwatershed, also occurring in 12 other subwatershed (18%).

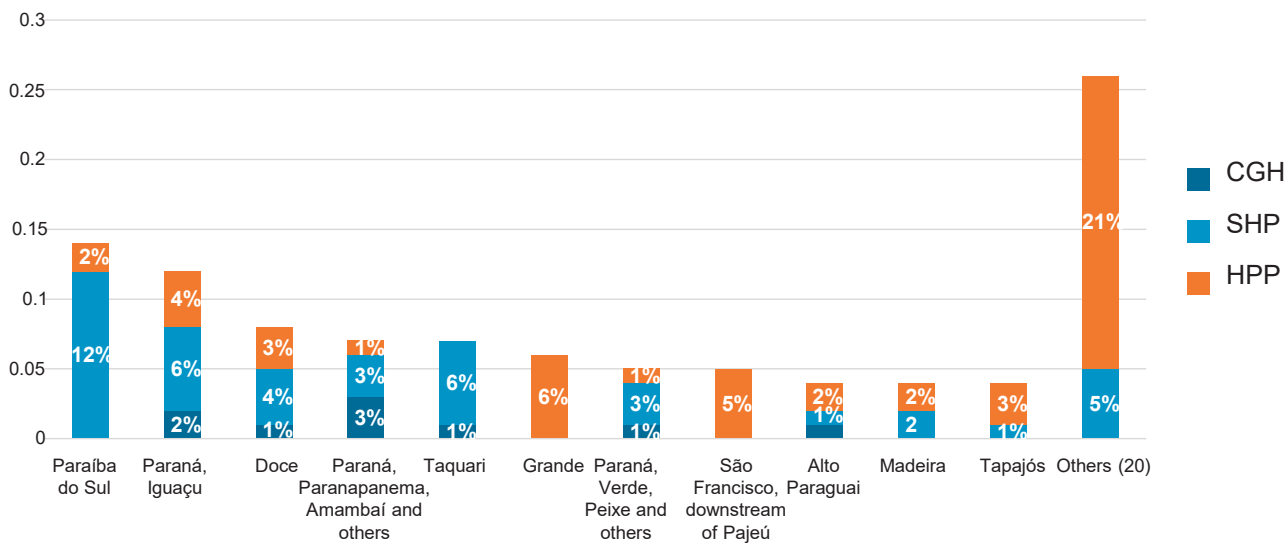
HPPs are distributed in 27 subwatersheds, mainly in the Grande (6% of the hydroelectric plants); São Francisco, downstream of

Pajeú (5% of the hydroelectric plants); and Paraná/Iguaçu (4%).

The **CGHs** are in a smaller number of subwatersheds (7), mainly in the Paraná, Paranapanema, Amambai and others (3% of the hydroelectric plants) and Paraná/Iguaçu (2%).



FIGURE 20. Distribution of GSEI hydroelectric plants by subwatershed (ANA, 2017) and typology (in percent).



Source: Prepared by Arcadis, 2024.

FIGURE 21. Heatmaps of biomes (IBGE, 2019), ecoregions (OLSON *et al.*, 2001) and hydrographic subwatersheds (ANA, 2017) for the GSEI hydroelectric plants. The darker shades represent the higher densities of projects.



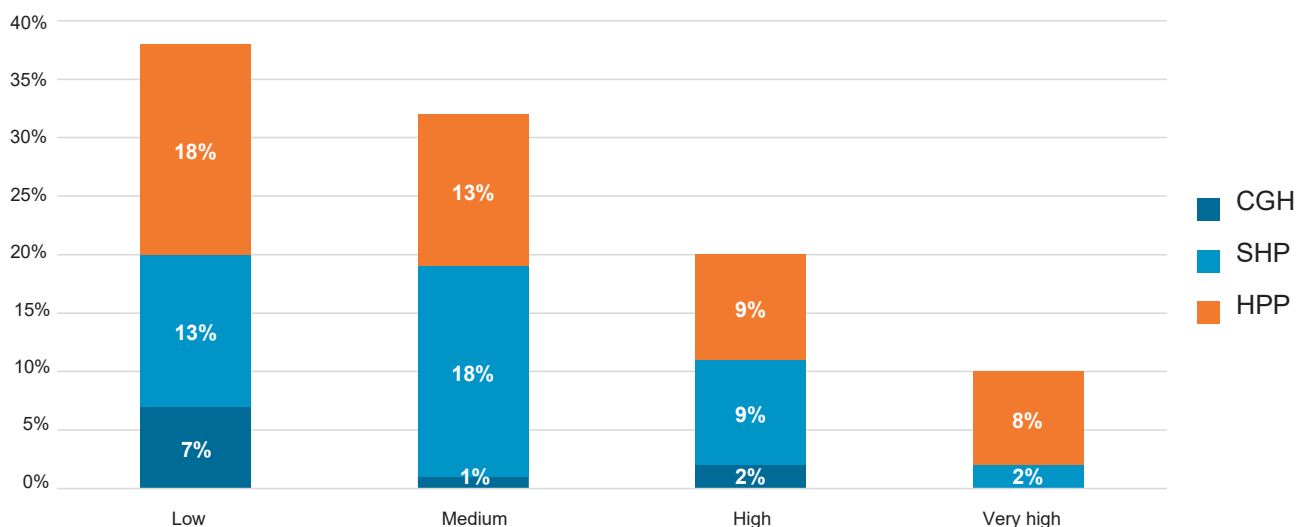
Source: Prepared by Arcadis, 2024.

ECOLOGICALLY SENSITIVE LOCATIONS

With regard to **ecologically sensitive locations**, the hydroelectric plants are distributed as follows: 10% in the “very high” class, 20% in the “high” class,

33% in the “medium” class and 38% in the “low” class (**Figure 22**). The “very high” class is made up of 8% of HPPs and 2% of SHPs, while the “high” class is made up of 9% of HPPs, 9% of SHPs and 2% of CGHs.

FIGURE 22. Distribution of GSEI hydroelectric plant types by ecological sensitivity class (in percentages).



Source: Prepared by Arcadis, 2024.

Final notes

The results of the pilot application for the GSEI

This evaluation represents an important contribution to understanding the dependencies and impacts related to the nature of the GSEI, from a collective perspective for companies in the sector. The results presented here do not necessarily reflect the scenario of the Brazilian energy and infrastructure sector as a whole, since a small number of companies took part in this pilot project.

Due to the collective approach of the project, the prioritization of GSEI's subsectors and activities was based on assumptions defined by the group, which do not necessarily reflect all the assumptions present in the TNFD sector guides, which advocate prioritizing dependencies and impacts related to the most material nature, while also considering the inclusion of those that best represented the group's portfolio as a whole.

also considering the inclusion of those that best represented the group's portfolio as a whole. Thus, the companies' participation in the development was of great importance for decision-making and the construction of the results of this phase.

As seen in the results, the GSEI sub-sectors analyzed in the Find phase were: hydroelectric power generation, wind power generation, raw water capture and refineries. A total of 436 developments were considered, and according to the map of ecologically sensitive locations drawn up for the GSEI, 15% are located in the "very high" ecological sensitivity class and 8% in the "high" class.

It should be noted that ENCORE, recommended by the TNFD, was considered insufficient for assessing the materiality of the dependencies and impacts of the group's subsectors, as it presents a generalist approach, especially for the hydroelectric power generation, refining

and water utilities subsectors, not detailing the types of projects in each one and disregarding regional specificities.

In the case of the hydroelectric power generation sub-sector, the different types of hydroelectric plants are mentioned (e.g. HPPs, SHPs and CGHs), and for the water utilities subsector, sewage collection and treatment, sewage treatment units, the treated water distribution network, among others. It is therefore felt that ENCORE can serve as an initial subsidy for this evaluation, but that it should be revised and/or refined with the evaluation of the companies, considering the national context.

With regard to stage L3 (*Interface with Nature*), it was found that although the joint approach of biomes and ecoregions is more intuitive and complementary, and therefore contributes to understanding the spatial distribution of undertakings in Brazilian territory, **the assessment using sub-basins proved to be more relevant for this purpose, as it has a greater number of units than the other bases, and also considering the significant dependence and impacts of the sector group related to water resources.**

With regard to stage L4 (*Interface with Sensitive Locations*), it should be noted that *Aqueduct*, recommended by the TNFD, also proved not to be the most suitable for defining ecologically sensitive locations for the GSEI in Brazil. As it is a global database, it does not best reflect the particularities of Brazilian territory, and there are other national databases that are potentially more assertive, such as the Water Security Index (WSI) proposed by the ANA³.

A more detailed analysis of the hydroelectric power generation subsector made it possible to verify that hydroelectric plants are relatively well distributed throughout Brazilian territory, with no specific locations particularly impacted by them. It is worth mentioning that the Amazon biome was particularly under-represented in this sub-sector, and the inclusion of other companies could change the conclusions of the assessment. It should again be noted that this analysis considered different types of hydroelectric plants with different magnitudes of dependencies and impacts (HPPs, SHPs and CGHs).

Due to the different magnitudes of dependencies and impacts related to the nature of the GSEI sub-sectors, it is considered that separate assessments for the energy and infrastructure sectors would probably lead to more assertive results, better reflecting the risks and opportunities for each. In this sense, the sensitivity of ecosystems could also be differentiated according to the magnitude of the dependencies and impacts of each subsector and even of each project.

Scenario of sectoral lessons learned by the Energy and Infrastructure Group

LESSONS LEARNED

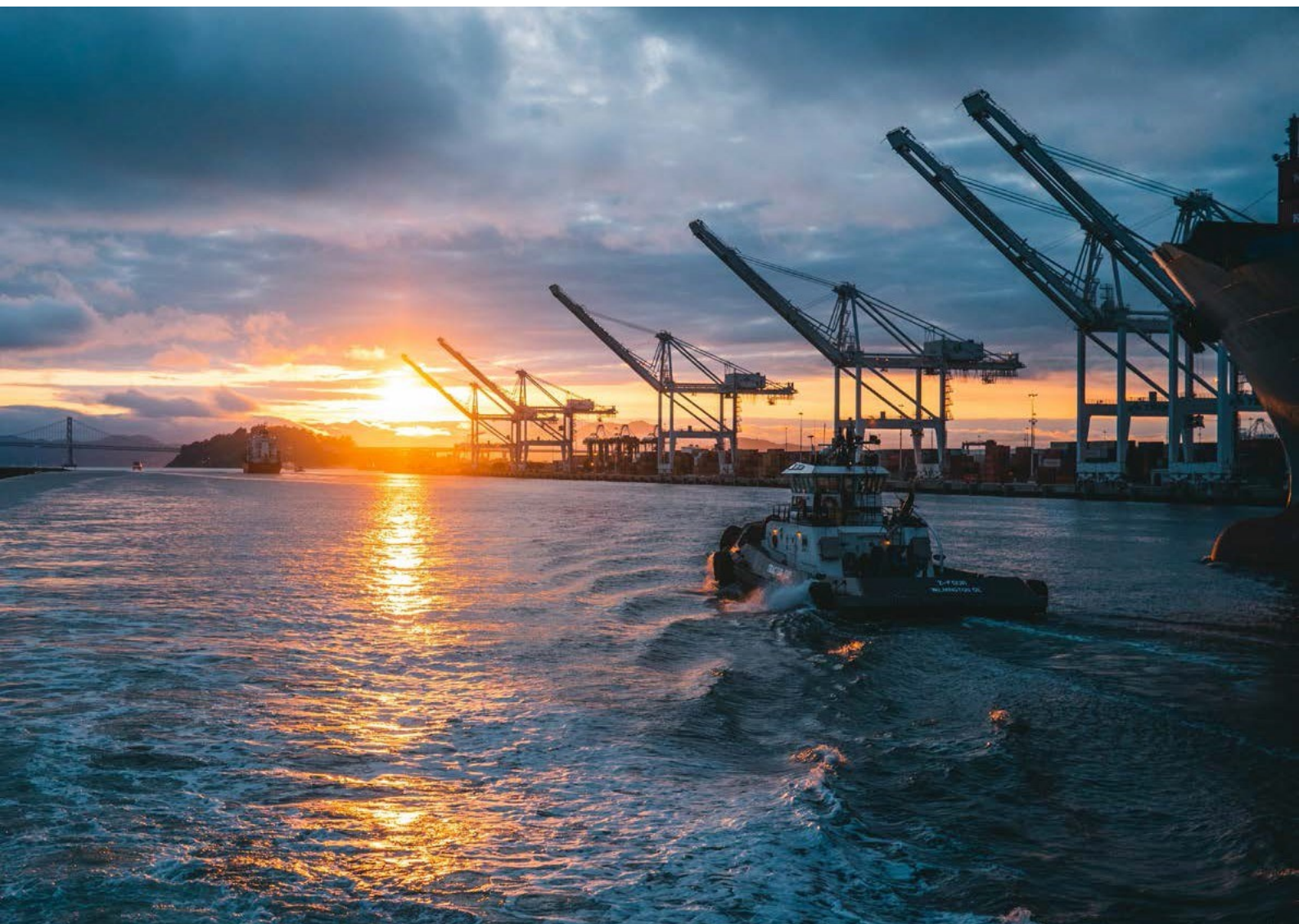
The pilot application of the Locate phase of the LEAP methodology allowed us to understand the main calibrations needed in the TNFD recommendations for the application of the framework by companies in the energy and infrastructure sector in a megadiverse country like Brazil

³ PNSH (ana.gov.br)

helping to elucidate the main challenges for the sector.

It is believed that, with the experiences provided by the pilot and disseminated through this guide, as well as the debates promoted by the group in the community of practice environment, the project can direct participating organizations to leverage their positive nature journey by reporting impacts and dependencies on biodiversity through TNFD, as well as supporting other companies' understanding of what it takes to adopt the framework.

Thus, based on the analyses presented and the lessons learned through a knowledge sharing space with a focus on the Brazilian reality, we present below the lessons learned considering three scenarios: (i) Community of practices from the CEBDS collective pilot, (ii) From the project's Energy and Infrastructure Sector Case and (iii) Good practices for the Energy and Infrastructure sector. These scenarios are presented considering factors such as: governance, fundamental methodological premises, data, local reality and opportunities and challenges.



Factors	CEBDS Collective Pilot Community of Practice	From the Energy and Infrastructure Sectoral Case	Good practices for the Brazilian energy and infrastructure sector
Governance	Has a well-structured governance in which all technical decisions regarding the piloting of the TNFD are made by the Technical Committee (TC) and the companies jointly in a process of co-creation. The TC is made up of CEBDS and three technical consulting firms associated with CEBDS that have expertise in TNFD. Each of the consultancies technically coordinates a macro sectoral group: land use, energy and infrastructure, finance and development.	The work was guided by the technical consultancy, but open to and encouraging the active involvement of the companies, seeking to create an environment of co-creation. The main way the project was carried out was by holding monthly collective meetings (between one and two), remotely, involving representatives from the six participating companies. Each company was asked to elect an internal focal point to be the main contact with the consultancy team, and it was recommended that there should be at least two participants directly involved in the pilot project, to ensure that all the companies were represented at the meetings. The meetings were mainly aimed at: aligning and discussing the LEAP methodology and the tools and databases recommended by TNFD; making strategic and technical decisions collectively; providing guidance to the companies on sending geospatial data for the consultancy to carry out its analyses; and sharing experiences by the companies. In addition to the meetings, digital forms were used to collect information and opinions from the companies, as well as one-to-one meetings, via email or virtual meetings, when requested by the company.	For companies in the Brazilian Energy and Infrastructure sector that aim to report their dependencies, impacts, risks and opportunities related to nature, it is important to make an effort to establish:> Good governance > The support and involvement of top management; > Clearly defined internal processes; > An internal team specially dedicated to this purpose; > Integrated action between sectors to collect the information and data needed for analysis; > Standardized and constantly updated databases of direct operations and the value chain.

Factors	CEBDS Collective Pilot Community of Practice	From the Energy and Infrastructure Sectoral Case	Good practices for the Brazilian energy and infrastructure sector
Methodological premises	Three premises were defined: > Use of two common tools for all 3 sectoral groups that make up the project, namely: ENCORE (Natural Capital Finance Alliance) + High Impact Commodity List and Materiality Screening Tool (SBTN); > Standardization of data layers to be used; > Serial publication of the results obtained by sector.	The main premises collectively stipulated for the GSEI in the context of the pilot project were: > Inclusion only of the direct operations of the participating companies, considered by the group to have the greatest materiality of dependencies and impacts, to the detriment of value chains; > Inclusion of the operations of all the companies participating in the sector group, based not only on the materiality assessment, but also on their representation within the companies' portfolio of activities; > To achieve greater uniformity among the group for this collective assessment, priority was given to land and semi-water operations, with marine and linear operations being discarded.	The LEAP approach is a recommendation of the TNFD and, although it is an important reference for assessing dependencies, impacts, risks and opportunities related to nature, it should not be seen as a rigid procedure and should be adapted, when deemed relevant, to the context of the organization, with changes and limitations being duly documented and justified in the pursuit of continuous improvement. In this sense, in addition to the tools and databases indicated by the TNFD, the use of other sources or instruments that better reflect the reality of where the organization is located, whether at national or regional level, is encouraged. It is important that the evaluation of the LEAP approach, in all its phases, is based on the best available information, preferably primary data generated by the organization, but supplemented with secondary data whenever necessary.

Factors	CEBDS Collective Pilot Community of Practice	From the Energy and Infrastructure Sectoral Case	Good practices for the Brazilian energy and infrastructure sector
Data	Obtaining geolocated data is essential for pilot management. In this context, it is extremely important that the company is aware of this need, and other areas within the company may be involved to access this data.	To standardize the data of the participating companies and facilitate analysis in a GIS environment, specifications were established for the geospatial files of the operations to be provided by the companies, in terms of format (shapefile), geometry (polygons) and reference system (SIRGAS 2000 datum), although this standard was not followed by all the companies.	It is important that standardized databases for direct operations and the value chain are established and constantly updated. Companies should assess which types of geospatial data best apply to their analysis, taking into account the different types and sizes of operations, as well as the availability of this data. Whenever possible, it is recommended that geospatial files be as standardized as possible, not only in terms of the reference system, format and geometry, but also the nomenclature (file name) and structures of the operation to be included.
Local reality	The application and adaptation of international frameworks to the reality of Brazil, a megadiverse country, presents various difficulties and challenges. It is therefore necessary to adapt them so that they are relevant and effective in the Brazilian context.	For the most part, the tools and databases recommended by the TNFD have a very broad or global scope and, in this sense, it was found that the application of some of them in the context of the GSEI in Brazil presented limitations, being insufficient in some situations, such as for the prioritization of analysis sub-sectors (such as ENCORE) or sensitive locations (such as Aqueduct).	As already mentioned, in addition to the tools and databases indicated by the TNFD, we encourage the search for other sources or instruments that better reflect the reality of where the organization is located, whether at a national or regional level. Brazil has several sources of nature-related data that should be better explored and disseminated to carry out the Locate phase of the TNFD.

Factors	CEBDS Collective Pilot Community of Practice	From the Energy and Infrastructure Sectoral Case	Good practices for the Brazilian energy and infrastructure sector
Local reality		Furthermore, considering that the GSEI's operations are widely distributed throughout Brazil, a megadiverse country with great regional heterogeneity, the mapping of ecologically sensitive locations for the group sought to delimit levels of sensitivity that would actually enable prioritization within the scope of this pilot project, and should not be used outside the context in which it was produced.	Databases and tools with a global scope may not reflect the reality in Brazil in sufficient detail, such as ENCORE, and in these cases it is considered that they can be used as a guiding resource for assessment, but that they should be improved by companies taking into account the regional or national context, as well as the size of the activity. The sharing of experiences by companies generates benefits for the energy and infrastructure sector as a whole, which becomes more aligned in its assessments, contributing to greater methodological standardization.
Opportunities and challenges	There are countless challenges considering operations in a megadiverse country.	The collective approach of this pilot project provided the participating companies with a greater understanding of the LEAP approach, as well as sharing experiences and perceptions between the organizations, not only in relation to the TNFD methodology, but also on other biodiversity-related topics. Similarly, the discussions within the Technical Committee, as well as with the sectoral groups, were unique opportunities that made it possible to bring together various organizations to jointly evaluate the tools and databases recommended by the TNFD.	Although it is not yet a compulsory demand, several organizations have been anticipating it, seeking greater understanding in the reporting of dependencies, impacts, risks and opportunities related to nature. In this scenario, it can be seen that this issue is still not a priority for many organizations, and technical and budgetary justifications are needed not only for the first steps to be taken, but also for the first steps to be taken.

Factors	CEBDS Collective Pilot Community of Practice	From the Energy and Infrastructure Sectoral Case	Good practices for the Brazilian energy and infrastructure sector
Opportunities and challenges		The evaluation carried out for the GSEI resulted in an initial definition of the priority direct operations of the participating companies, the evaluation and validation of which will continue in the following phases of the LEAP approach, providing an unprecedented collective scenario of the sector and, specifically for the electricity generation sub-sector, also a cumulative view. As with the Locate phase, the main challenges relate to the need to adapt the LEAP methodology to the collective approach conducted in this pilot project.	are taken, but also for the LEAP approach to be fully realized. It is therefore considered that this pilot project demonstrates an effort, both collective and individual, by the energy and infrastructure sector to improve environmental performance.

MAIN CHALLENGES AND NEXT STEPS

As already identified, although the Find phase can present considerable challenges in terms of data collection and analysis, it is essential for establishing a solid foundation that will allow progress to be made to subsequent stages.

Therefore, given that companies will only be able to apply the following phases of the TNFD if the results of the Find phase are sufficiently robust and reliable for their operations, it is essential to understand the main challenges for reporting in this phase and, based on this understanding, the paths to be followed and the main adjustments to the recommended tools.

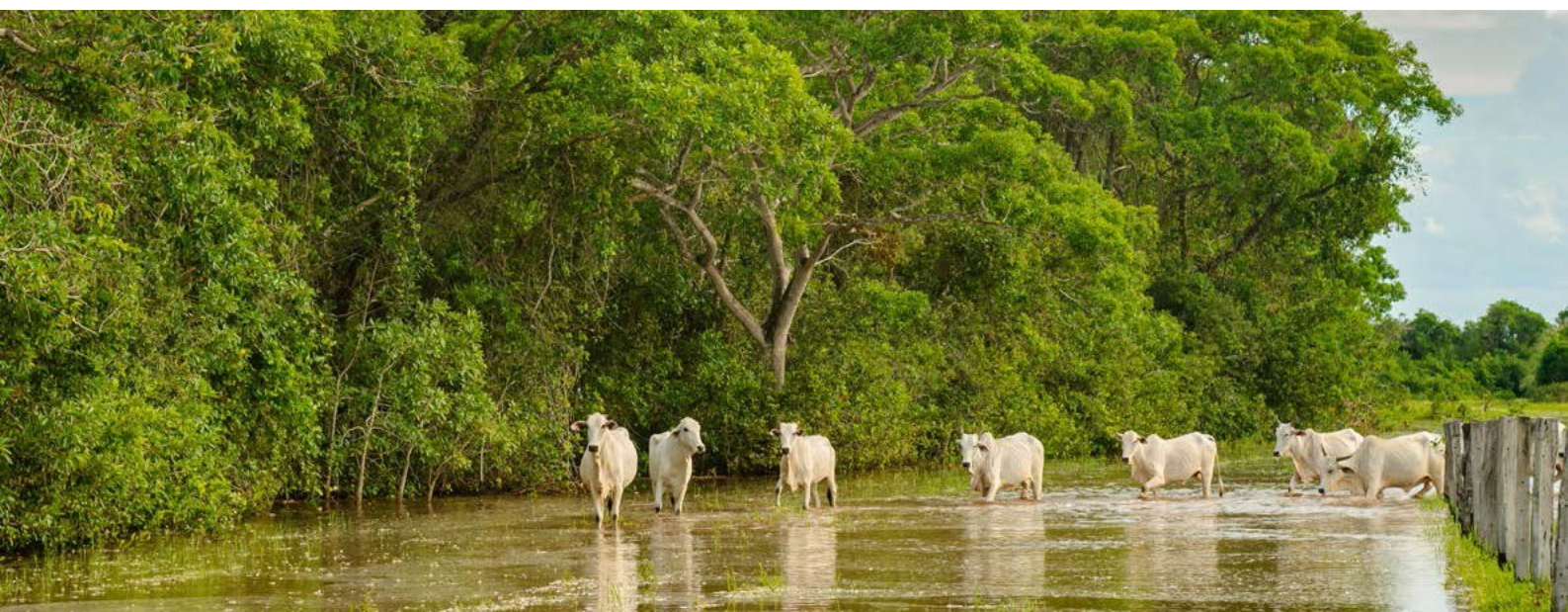
For the GSEI, the main challenges in this first phase of the pilot project are related to the need to adapt the LEAP methodology due to the collective approach adopted and the heterogeneity of the group's operations, which imply different types of dependencies and impacts with greater materiality. Considering also the other objectives of this project, such as involving the participating companies and providing them with a greater understanding of the LEAP methodology, the selection of operations to be evaluated in greater depth in the next phase (Estimate) also needs to be based on the greater representativeness of the operations in the companies' portfolios, not adopting as the main criterion the greater materiality of the dependencies and impacts of the operations and, at the same time, seeking greater uniformity for the group in this first evaluation, excluding, for example, marine and linear operations.

Another challenge was mapping the sensitive locations, mainly due to the combination of the following factors: Brazil is a megadiverse and extremely heterogeneous country, the GSEI's operations are widely distributed in it and the different GSEI operations cover a considerable variety of types of dependencies and impacts with greater materiality. Thus, although the main purpose of the Locate phase is to carry out a first prioritization, identifying the most material operations or sectors in relation to nature located in the most ecologically sensitive locations, the large number of variables that the three aspects mentioned above bring makes it difficult to establish prioritization criteria that can be applied to the group as a whole, as well as calibrating these criteria.

In this sense, it is important to note that, in the Estimate phase, the results of the Locate phase need to be evaluated in greater detail and, if necessary, may be reconsidered, with the exclusion or inclusion of new operations, also considering the area of influence. Thus, the main objective of the next phase is to deepen the understanding of the dependencies and potentially material impacts on nature, for the operations selected and located in areas of very high and/or high sensitivity.

It is important to note that, in the Estimate phase, the results of the Locate phase need to be evaluated in greater detail and, if necessary, may be reconsidered, with the exclusion or inclusion of new operations, also considering the area of influence.

To this end, environmental assets, ecosystem services and related impact-inducing factors should be assessed. In this next phase, quantitative data is relevant to determine the scale of dependencies and impacts, which will guide the third phase of the LEAP approach, Assess, which considers risks and opportunities.



Special session:

Impact statements from companies participating in the Energy and Infrastructure Sector Group and TNFD

Copel

Vanessa Barreto da Silva

Environmental Analyst

Copel's participation in the collective pilot was a great opportunity to strengthen and improve some practices that we had already adopted, but which could now be enriched with the application of TNFD.

Before the pilot project, we already worked with location analysis, assessment and management, but this collective experience allowed us to review our actions and procedures from the TNFD perspective, making our analyses and reports more robust, ensuring that our company's view of biodiversity and ecosystem services is aligned with the best practices we see on the market.

The direct contact with specialists and the exchange of experiences with other companies were fundamental to learning about the challenges and opportunities associated with using the methodologies and tools used during the pilot project. We would also highlight as very positive the opportunity to contribute to future versions of the TNFD, which may be more adherent to the Brazilian reality on the subject of biodiversity.



At the end of this first pilot, focused on phase “L” (Locate), we are prepared and motivated to explore the next stages of the LEAP methodology.

Iguá Saneamento

Vanessa Garrucho White,
Strategic Sustainability Specialist

Participating in the collective pilot was a very enriching experience, because with the involvement of different industries, there was a significant exchange of knowledge, from which we had the opportunity to evaluate some issues from another perspective.

The initiative brought greater clarity to the process and we were able to learn from it:

- > Leverage the company's biodiversity initiatives;
- > Become more mature in the LEAP stages;
- > Knowing and applying specific tools for measuring dependencies and impacts on nature, even with some limitations of the tool itself. (Encore);
- > Identifying sensitive locations - criteria for selection (weights) and predefining the area of influence, as the framework has not been prepared for mega-diverse countries;
- > Realize the importance of using available databases and georeferencing to map sensitive locations; import
- > Emphasize the importance of starting the process in phases (assets) due to the complexity of the analyses;
- > Understand, from the exchange with other segments, that "the pains" are the



despite the different types of industrialists. For example, whether or not to enter the value chain;

- > Gain a better understanding of the areas in which Iguá operates, such as biomes and sub-basins, and from this, be able to analyze our interactions with nature in greater depth.

With the results of this pilot, Iguá demonstrated to the other areas the relevance of the topic and how much data we already monitor. When people understand the purpose of this data, they start to get involved in a more integrated way, which helps to improve processes, making them more robust and consistent.

For the next steps, Iguá plans to disseminate the theme internally through in-house training and the unfolding of the next stages from the pilot involving the operational units for engagement purposes. In a second phase, Iguá intends to include the topic in the ESG Supply Plan.

Neoenergia

Lys Piovezan Tardin,

Corporate Sustainability and Climate Change Manager

For Neoenergia, which aims to guarantee a net positive impact on biodiversity at its facilities by 2030 and which has advanced actions on this agenda, it was an honor to contribute to this issue with our sector and the infrastructure sector.

Neoenergia's intermediate goal is to measure its impacts on biodiversity in 20% of its generation assets and in all new projects by 2025. Participating in the construction of the TNFD Pilot Project with CEBDS allowed us to revisit our process, enrich our actions and understand that we are aligned with the expectations of the sector and with the applicability of the LEAP methodology proposed for the TNFD.



During the construction of this stage ("Locate"), we had the opportunity to evaluate the definition of solutions together, since we share many challenges and operate in a diverse country like Brazil.

We are ready to contribute to the next stages of this work and ensure that the sector's actions are recognized in relation to the Biodiversity portfolio in Brazil.

Eletrobras

Moara Morasche,

Climate Strategy and Biodiversity Specialist

Having taken part in the CEBDS pilot helped us understand the complexity of the TNFD and helped us face the challenge of starting to apply the framework fully in our company. We recommend spending time on this initial phase because it requires a lot of data that will guide the following stages and contribute to more robust results at the end of this process.



Norte Energia

Bruno Gonçalves Bahiana, Socio-environmental and Indigenous Component Superintendent

Norte Energia, concessionaire of the Belo Monte Hydroelectric Power Plant, recognizes the importance of joining forces in favor of such a representative and sensitive issue as biodiversity and, for this reason, we are at the forefront of initiatives related to the management of risks, dependencies and opportunities of natural capital.

Our participation in this pilot project reflects Norte Energia's commitment to the sustainability agenda in the Amazon and is a great opportunity to learn and exchange knowledge with organizations from different segments and levels of maturity in relation to TNFD.

The corporate sustainability initiatives we have implemented - such as our participation in the running of this pilot



project - are in line with this recognition, and we also understand that collaboration between different players is essential for promoting practices that add value to the environment and the society that depends on it.

Emily McKenzie

Technical Director, Taskforce for Nature-related Financial Disclosures (TNFD)

TNFD consultation groups, such as the one coordinated by CEBDS in Brazil, are supporting companies in their regions with the assessment of nature-related dependencies, impacts, risks and opportunities. These groups are fostering collaboration between stakeholders and providing a platform for dialog and sharing experiences.

The case studies help demonstrate the application of TNFD recommendations and the LEAP approach in different geographies and industries, helping others to learn and drive change in their sectors.



The CEBDS cases offer valuable insights into how to operationalize the framework in a megadiverse country like Brazil, where corporate actions can be essential in contributing to the conservation of global biodiversity.

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Technical sheet of the CEBDS Nature-related Disclosure Project: TNFD case Finance and Development Sector Group

Project Manager - Executive



Technical Coordinator of the Energy and Infrastructure Sector Group



CEBDS Institutional Partner in the Nature-related Disclosure project: locate phase of the TNFD



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