CAIXA. Compromisso com o meio ambiente e soluções para um futuro sustentável.

Case Study

Assessment of nature-related impacts, risks, and dependencies: Reflections on CAIXA's participation in the TNFD LEAP approach pilot within its commercial corporate credit portfolio as of 12/31/2024

CAIXA

SUMMARY

01 EXECUTIVE SUMMARY

Nature is fundamental to the functioning of society, the economy, and financial systems. Despite this, its loss is occurring at an accelerated pace and represents a growing challenge for financial institutions. Although the main drivers of nature loss are widely documented, quantifying the impacts of business activities on nature is still an emerging area.

CAIXA, as a financial institution, is indirectly exposed to actual and potential impacts on nature through the activities of its corporate clients. Nature loss represents risks for businesses and their value chains, also affecting the institution's financial risks.

With the aim of improving the assessment of nature-related impacts, risks, and dependencies (DIROs – Dependencies, Impacts, Risks, and Opportunities) in its operations, in 2025 CAIXA carried out a pilot analysis using the TNFD LEAP approach, applied to its commercial corporate credit portfolio[1] as of 12/31/2024. This case study highlights the importance of consistent, reliable, and location-specific data, including supply chain information, for a more accurate evaluation of nature-related risks and impacts.

The complexity of nature-related issues requires the development of data aggregation methodologies that enable their integration into CAIXA's strategies and decision-making processes. Understanding the impacts, risks, and dependencies of the commercial corporate credit portfolio on nature also requires assessing how corporate clients manage their own DIROs, considering policies, actions, targets, and mitigation measures related to nature.

As next steps, CAIXA intends to deepen its systematic approach to nature by improving the collection and aggregation of relevant data and monitoring methodological developments and disclosure practices. The goal is to strengthen the management of potential risks and opportunities arising from nature-related dependencies and impacts, contributing to the sustainability

[1] The analyzed portfolio excludes operations granted by CAIXA classified under the agribusiness portfolio.

of the portfolio and alignment with international best practices, such as the recommendations made by the TNFD.

02 INTRODUCTION

Nature plays a fundamental role in the functioning of ecosystem services such as pollination, flood protection, climate regulation, and carbon sequestration, which in turn support resilient societies and economies. According to the World Economic Forum, more than half of global GDP depends, to a moderate or high degree, on nature and natural resources[2].

CAIXA recognizes the strategic importance of nature for the sustainability of its operations and for Brazilian society. Although it is not subject to the Corporate Sustainability Reporting Directive (CSRD) – the sustainability disclosure standard adopted by the European Union, CAIXA considers its guidelines as one of the references to improve its management and transparency practices in sustainability.

The CSRD highlights the need to identify and assess nature-related impacts, risks, dependencies, and opportunities, aligning with the principles of the LEAP approach from the Taskforce on Nature-related Financial Disclosures (TNFD). The LEAP approach involves the steps "Locate" (L), "Evaluate" (E), "Assess" (A), and "Prepare" (P)[3].

CAIXA is indirectly exposed to actual and potential material impacts on nature, especially through the financing of sectors and activities that directly affect the environment. These impacts can contribute to biodiversity loss and changes in ecosystems, which may result in the materialization of significant risks for the institution's credit portfolio, such as an increase in defaults in the commercial corporate credit portfolio.

Next, we present an explanatory diagram of the LEAP approach.

[2] World Economic Forum – "New Nature Economy Report" (published in 2020)

[3] Guide for Identifying and Assessing Nature-related Risks – TNFD LEAP Approach

Within the commercial corporate credit portfolio, CAIXA's exposure to potential adverse financial impacts may be related to financing economic activities vulnerable to the consequences of biodiversity loss, such as material shortages (construction, industry), reduced productivity (agriculture), or decreased value of natural areas for leisure purposes (real estate, tourism). Additionally, adverse returns may occur due to litigation or new nature-related regulations, as well as the degradation of natural barriers that help mitigate physical damage and business disruptions caused by extreme weather events. There is also the risk of reputational damage resulting from association with corporate clients publicly criticized for contributing to biodiversity loss.

The assessment of nature-related impacts, risks, and dependencies in the commercial corporate credit portfolio is an emerging topic, both for CAIXA and for the financial sector in general. Given the limitations in measuring and accessing large-scale comparable data, as well as the absence of standardized methodologies and metrics, CAIXA sought to explore ways to carry out such assessments, acknowledging the constraints and limitations of the analysis.

This case study addresses the application of the TNFD LEAP approach to CAIXA's commercial corporate credit portfolio, using data as of 12/31/2024, within the context of the pilot organized by Global Canopy, conducted between May and August 2025. The pilot focused on nature-related transition planning. Considering CAIXA's maturity stage, it served as an opportunity to begin applying the LEAP approach. The analyses were mainly concentrated on the Scoping and "Locate" phases, with initial contributions to "Evaluate" and "Assess." The "Prepare" phase will be addressed in future stages.

03 SCOPE

The LEAP approach was applied to CAIXA's commercial credit portfolio for legal entities, based on data as of 12/31/2024, as follows:

- **Analysed portfolio:**
  - Commercial credit portfolio for legal entities, considering active operations as of the reference date of December 31, 2024.

- **Selection of economic activities:**
  - The prioritization of the analysed economic activities was carried out based on information available in the ENCORE tool, which identifies sectoral impacts and dependencies on nature. Activities were selected both for their recognized potential to significantly impact nature and for their higher degree of dependence on ecosystem services. This approach allowed for the inclusion of different perspectives and resulted in a diverse set of economic activities, broadening the understanding of potential risks and opportunities arising from relevant dependencies and impacts for CAIXA's operations.

- **Data and tools:**
  - The analysis used open data sources, with emphasis on the ENCORE tool, in addition to CAIXA's internal information. The approach combined sectoral analyses and, whenever necessary, qualitative assessments and expert judgment to complement potential data gaps or validate results.

It is important to note that the data and assessments available in ENCORE do not always accurately reflect the actual exposure to dependencies and impacts of the portfolio, considering the specific characteristics of Brazilian nature.

As a global tool, ENCORE often uses international references and averages[4] that may not correspond to the reality of countries like Brazil, which, for example, has a predominantly renewable energy matrix, unlike other countries, especially in Europe. Therefore, it was necessary to adapt the analyses and consider local particularities to obtain an assessment more suitable to the national context. A complementary alternative would be to enrich the database by using national sources such as MapBiomas and IBGE, which provide more detailed and contextualized information aligned with Brazilian reality. In addition, the eventual incorporation of aspects related to planetary boundaries could help enhance the consistency and relevance of the analyses, while respecting the country's socio-environmental specificities.

- **Limitations:**
  - Due to the availability and quality of data, some analyses were conducted qualitatively, acknowledging the inherent limitations of the current stage of development of methodologies and metrics for assessing biodiversity-related risks and impacts in the financial sector. It is also worth noting that there were limitations regarding the actual location of exposures, since the identification was based primarily on credit evidence linked to the company's headquarters, and not necessarily to branches or locations where resources were effectively applied. This aspect highlights that the portfolio data structure itself is still based on a model that does not fully address nature-related issues, as there is no specification of the biomes or environmental regions where resources were allocated.

It is recommended to carry out a heat map exercise as part of the "Assess" phase to support the prioritization of economic activities with greater impact or dependence on nature.

[4] The CNAE classification was used as a basis, and it was necessary to adapt it to the ISIC classification to ensure compatibility with tools such as ENCORE.

04 NATURE ASSESSMENT

4.1 Single-location assets

The sample selected for the analysis includes credit operations granted to legal entities, mostly located in urban areas and in regions within Brazilian biomes considered relevant. The definition of biome relevance was based on the volume of credit allocated to each, allowing prioritization of those with greater representation in the analysed portfolio.

Assets:

The sample of credit operations was selected based on objective prioritization criteria, according to the methodology described below:

Approximately **71%** of the commercial credit portfolio for legal entities was mapped as of 12/31/2024, covering **50 economic activities** defined by the CNAE classification, ordered according to their share in the portfolio, from largest to smallest.
For each of these activities, based on the ENCORE tool, the levels of risk related to dependency and impact on biodiversity were identified and classified as **Very High**, **High**, **Medium**, **Low**, **Very Low**, and **No Data**.

Scoring criterion based on risk.

Risk Level	Score
Very High	5
High	4
Medium	3
Low	2
Very Low	1
No Data	0

Each risk level was assigned a specific score for each dependency and impact identified in the selected activities. After assigning the scores, the points were

summed for each activity, allowing their classification according to the highest risk of dependencies and impacts.

To prioritize the analysis of the most relevant activities from the perspective of dependencies and impacts, the ordered activities were grouped into four risk classes (ranging from 1 to 4), according to the quartile distribution, with class 4 activities being the most exposed to risks and class 1 activities being the least exposed.

The final selection of the portfolio for nature assessment considered this classification, resulting in the identification of **11 economic activities** defined by the CNAE classification (condensed into 9 classes according to ENCORE) for dependencies, representing **18.78%** of the portfolio, and **10 economic activities** defined by the CNAE classification (condensed into 9 classes according to ENCORE) for impacts, representing **17.78%** of the portfolio.

Selected activities for dependencies.

ISIC Group/Class (ENCORE)	CNAEs	% AUM	Score	Risk Class
Growing of cereals (except rice), leguminous crops and oil seeds	0115600 - Soybean cultivation	0,25%	77	4
Support activities for animal production	1012103 - Slaughterhouse – pig slaughtering	0,26%	46	4
Hospital activities	8610101 - Hospital care activities, except emergency rooms and units for urgent care;	2,26%	42	4
Restaurants and mobile food service activities	5611201 - Restaurants and similar establishments	0,77%	40	4
Water collection, treatment and supply	3600601 - Water collection, treatment, and distribution	3,43%	39	4
Sea and coastal water transport	5231102 - Port Operator Activities	0,33%	39	4
Beverage serving activities	5611203 - Snack bars, tea houses, juice bars, and similar establishments	0,38%	38	4
Construction of buildings	4110700 - Real Estate Development Incorporation	10,82%	36	4
Construction of roads and railways	4211101 - Highway and Railway Construction	0,28%	36	4

		18,78%		

Selected Activities for Impacts.

ISIC Group/Class (ENCORE)	CNAEs	% AUM	Score	Risk Class
Growing of cereals (except rice), leguminous crops and oil seeds	0115600 - Soybean Cultivation	0,25%	0,25%	4
Sewerage	3701100 - Sewage Network Management	0,26%	1,30%	4
Support activities for animal production	1012103 - Slaughterhouse – Pig Slaughtering	2,26%	0,26%	4
Waste treatment and disposal	3821100 - Treatment and Disposal of Non-Hazardous Waste	0,77%	0,83%	4
Construction of buildings	4110700 - Real Estate Development Incorporation	3,43%	10,82%	4
Construction of roads and railways	4211101 - Highway and Railway Construction	0,33%	0,28%	4
Sea and coastal water transport	5231102 - Port Operator Activities	0,38%	0,33%	4
Water collection, treatment and supply	3600601 - Water Collection, Treatment, and Distribution	10,82%	3,43%	4
Spinning, weaving and finishing of textiles	1412601 - Manufacture of Clothing Items, Except Underwear and Custom-Made Garments	0,28%	0,27%	4
		17,78%		

Finally, considering the large volume of the portfolio, an additional prioritization criterion was adopted: the selection of the **five largest credit exposures** for each of the activities identified as most relevant. This procedure aims to focus the analysis on the most representative assets, allowing for a more accurate assessment regarding the biome where they are located and supporting potential engagement actions for the biomes with the highest concentration of CAIXA's exposures.

Geographies:

Brazil, considering CAIXA's nationwide scope of operations.

Location Interface with Biodiversity and Nature ("*Locate*")

The assessment considered, for each selected exposure, the nature-related risk as provided by the ENCORE tool, the risk of biome degradation[5] where the exposure is concentrated, and the physical risk information obtained through CAIXA's internal risk system.
Thus, the analysis integrated different data sources and methodologies, enabling a more comprehensive approach to the potential impacts and dependencies of operations in relation to nature. The use of these tools allowed for the prioritization of assets located in the most relevant biomes, as well as the identification of exposures more susceptible to physical and environmental risks, even in the face of possible limitations in the geographic accuracy of the available data.

Table 01: Illustrative Example of Risk Scoring for Single-Location Assets in Relation to Biome Sensitivity

The table illustrates, as an example, the application of the risk scoring methodology used for the selected exposures, considering the asset's location in relation to the predominant biome and the biodiversity and physical risks identified by the ENCORE tool and CAIXA's internal risk system. This process enables a comparative assessment of each asset's exposure to sensitive areas, supporting the prioritization of monitoring and engagement actions according to the level of associated environmental risk.

Asset	Economic Activity	Biome	Risk Class Dependency (ENCORE)	Environmental Risk (CAIXA System)	Physical Risk – Weather Hazards (CAIXA System)
Asset A	Growing of cereals	Atlantic Forest	4	🔴	🔴
Asset B	Growing of cereals	Amazon Rainforest	4	🔴	🔴
Asset C	Growing of cereals	Cerrado (Brazilian Savanna)	4	⚫	⚫
Asset D	Growing of cereals	Atlantic Forest	4	⚫	⚫

[5] Based on information found in MapBiomas.

Colour representing the risk	High	Medium	Low	Irrelevant	Data not available

The analysis revealed that, for both dependencies and impacts, the exposures of the selected sample are primarily concentrated in the **Atlantic Forest** and **Cerrado** biomes, recognized for their high environmental sensitivity and importance for biodiversity conservation in Brazil. It was observed that these exposures intersect with at least one of the risk criteria considered, whether related to nature-related risk identified by ENCORE, the risk of degradation of the predominant biome, or susceptibility to physical events identified by CAIXA's internal risk system. This finding reinforces the need for special attention to these assets in CAIXA's socio-environmental risk management and engagement strategies, particularly in regions where there is a higher concentration of operations within these biomes.

Initial contributions to understanding impacts, risks, and dependencies, based on the "Locate" phase and preliminary elements of the "Evaluate" and "Analyse" phases.

In this phase, the analysis focused on identifying the most impacted biomes and the main credit exposures associated with biodiversity, based on information provided by the ENCORE tools and CAIXA's internal risk system. The concentration of exposures in the **Atlantic Forest** and **Cerrado** biomes made it possible to map the regions and environmental contexts of greatest sensitivity within the analyzed portfolio.

This information provides a fundamental basis for understanding the risks and dependencies to which operations are exposed, enabling the direction of future actions in engagement, monitoring, and socio-environmental management, particularly in the biomes and activities where CAIXA's exposure is most significant.

Table 02: Illustrative example of identifying biomes, stakeholders, and active NGOs associated with single-location assets

Biome	Possible Stakeholders	Main Active NGOs
Atlantic Forest	Urban residents, neighbourhood associations, municipal	SOS Mata Atlântica, Fundação Grupo Boticário, WWF Brasil, Fundo Casa Socioambiental

	agencies, ecotourism companies	
Cerrado	Rural producers, traditional communities, environmental agencies, agribusiness companies	Instituto Sociedade, População e Natureza (ISPN), Rede Cerrado, WWF Brasil, Fundo Casa Socioambiental
Amazon Rainforest	Local communities, government agencies, forest management companies, Indigenous peoples	WWF Brasil, Instituto Socioambiental (ISA), Greenpeace Brasil, Fundação Vitória Amazônica, Fundação Amazônia Sustentável (FAS), Fundo Casa Socioambiental
Pampas	Cattle ranchers, rural associations, state agencies, universities	Instituto Curicaca, WWF Brasil, Fundo Casa Socioambiental
Pantanal	Fisherfolk, farmers, tourism agencies, riverside communities	SOS Pantanal, Instituto Homem Pantaneiro, WWF Brasil, Fundo Casa Socioambiental
Caatinga	Family farmers, cooperatives, state agencies, local universities	Associação Caatinga, Fundação Biodiversitas, Instituto de Pesquisa e Conservação da Biodiversidade, Núcleo de Bioprospecção e Conservação da Caatinga, Fundo Casa Socioambiental

Based on data available on the MapBiomas platform, material impacts were identified related to changes in land use, vegetation cover, and native species, especially in assets located in the Amazon, Cerrado, and Atlantic Forest biomes — regions that concentrate the largest exposures within the analyzed sample of the commercial corporate credit portfolio.

The identification of priority biomes, stakeholders, and key NGOs operating in each region help guide actions for engagement, monitoring, and socio-environmental management, strengthening CAIXA's role in nature conservation and in mitigating risks associated with its assets.

05 ANALYSIS OF COMMERCIAL CORPORATE CREDIT PORTFOLIO ASSETS AS OF 12/31/2024

In CAIXA's context, the analysis considered the selected sample of the commercial corporate credit portfolio as of December 31, 2024, comprising activities with the highest exposure to nature-related dependencies and impacts. The most relevant segments were assessed in terms of dependence on ecosystem services and impact on nature, according to ISIC (ENCORE) and CNAE classifications.

- **Activities with the greatest dependence on ecosystem services:**
  - Soybean cultivation
  - Slaughterhouse – pig slaughtering
  - Hospital activities
  - Restaurants and similar establishments
  - Water collection, treatment, and distribution
  - Port Operator Activities
  - Snack bars, tea houses, juice bars, and similar establishments
  - Real estate development and building construction
  - Highway and railway construction

- **Activities with the greatest impact on nature:**
  - Soybean cultivation
  - Sewage network management
  - Slaughterhouse – pig slaughtering
  - Waste treatment and disposal
  - Real estate development and building construction
  - Highway and railway construction
  - Port operations and waterway transport
  - Water collection, treatment, and distribution

- Textile industry (spinning, weaving, and fabric finishing)

Considering the analyses carried out, the data regarding the exposure of the assessed activities in relation to biodiversity and nature will be presented in specific tables for each segment, separating information on dependencies and impacts into distinct sections. The assessment considered:

- The risk levels identified for each activity, highlighting not only the most relevant risks based on ENCORE data but also the risk assessment performed by CAIXA's risk system, when available. For each activity, both in relation to dependencies and impacts, the results will be organized into tables consisting of four columns: **company name**, **level of dependency or impact risk** (according to the section), **risks classified as very high according to ENCORE**, and the **assessment from CAIXA's Risk System**, when applicable.

- The type of asset assessed refers to exposures from commercial credit to legal entities, considering all commercial credit products granted to CAIXA's corporate clients as of 12/31/2024, for the activities mentioned at the beginning of this section. Exposure to nature-related issues varies according to the economic activity analyzed; for example, credit operations aimed at urban infrastructure tend to present lower criticality regarding nature when compared to those directed at extractive or agro-industrial activities.

This approach allows for a structured detailing of the interface between CAIXA's commercial credit portfolio for legal entities and biodiversity and nature, facilitating the targeting of socio-environmental management actions.

The information was consolidated by economic activity, classified according to the fiscal CNAE and ordered by credit exposure value, from highest to lowest. The analysis made it possible to identify which activities in the portfolio present the greatest potential for dependencies and impacts on nature, based on ENCORE data. The results show that, among the activities assessed, there are credit exposures associated with activities that have significant impacts on ecologically sensitive areas.

Activities with the greatest dependence on ecosystem services

The dependencies of economic activities in relation to nature were assessed based on the main ecosystem services identified by ENCORE for activities classified according to the fiscal CNAE. Among the dependencies analysed, the following stand out:

Dependencies	
Biomass provisioning	Genetic material
Water supply	Solid waste and remediation
Soil and sediment retention	Water purification
Soil quality regulation	Other regulating & maintenance services - Dilution by atmosphere and ecosystems
Biological control	Air filtration
Flood mitigation	Global climate regulation
Local (micro and meso) climate regulation	Nursery population and habitat maintenance
Noise attenuation	Other regulating & maintenance services - Remediation of sensory impacts
Pollination	Storm mitigation
Rainfall pattern mitigation	Recreational related services
Visual amenity services	Education, scientific and research services
Spiritual, artistic and symbolic services	

These dependencies were considered to identify how economic activities rely on different ecosystem services for their operations and sustainability.

Economic activity: Soybean cultivation

The first activity analysed is soybean cultivation. The table highlights information such as the company assessed, the level of nature-related dependency risk, the main dependencies identified for the activity, and, when available, CAIXA's Environmental Risk System assessment.

This approach provides a consolidated view of the main risk and dependency factors associated with soybean cultivation, making it easier to identify critical points for sustainable management and decision-making.

Company	Risk Class Dependency (ENCORE)	Main dependencies (ENCORE)	Environmental Risk (CAIXA System)
Company A	4	Biomass provisioning, Genetic material, Soil and sediment retention, Water purification, Soil quality regulation and Global climate regulation	●
Company B			●
Company C			●
Company D			●
Company E			●

Economic activity: Slaughterhouse – pig slaughtering

The activity analysed is slaughterhouse – pig slaughtering. The table highlights information such as the company assessed, the risk of dependencies on nature, the main dependencies identified for the activity, and, when available, CAIXA System's assessment of environmental risk. This approach makes it possible to highlight the main risk and dependency factors associated with the pig slaughtering sector, contributing to sustainable management and more informed decision-making.

Company	Risk Class Dependency (ENCORE)	Main dependencies (ENCORE)	Environmental Risk (CAIXA System)
Company A	4	Water supply, Water purification and Education, scientific and research services	●
Company B			●
Company C			●
Company D			●
Company E			●

Economic activity: Hospital activities

The analysed activity is hospital activities. The table highlights information such as the evaluated company, the risk of dependencies on nature, the main dependencies identified for the activity, and, when available, CAIXA's system assessment for environmental risk. This analysis reveals the main risk and dependency factors associated with hospital activity, contributing to the identification of critical points and the development of strategies that promote resilience and sustainability in healthcare operations.

Company	Risk Class Dependency (ENCORE)	Main dependencies (ENCORE)	Environmental Risk (CAIXA System)
Company A	4	Water purification, Flood mitigation, Storm mitigation, Rainfall pattern mitigation, Visual amenity services and Spiritual, artistic and symbolic services	●
Company B			●
Company C			●
Company D			●
Company E			●

Economic activity: Restaurants and similar establishments

The analysed activity is restaurants and similar establishments. The table highlights information such as the evaluated company, the risk of dependencies on nature, and the main dependencies identified for the sector. This analysis contributes to identifying the risk and dependency factors that may impact the sustainability of food service operations.

Company	Risk Class Dependency (ENCORE)	Main dependencies (ENCORE)	Environmental Risk (CAIXA System)
Company A	4	Water purification, Recreational related services, Visual amenity services and Spiritual, artistic and symbolic services	●
Company B			●
Company C			●
Company D			●

Company E			●

Economic activity: Water collection, treatment, and distribution

The analysed activity is water collection, treatment, and distribution. The table highlights information such as the evaluated company, the risk of dependencies on nature, and the main dependencies identified for the activity. This analysis allows the identification of key risk and dependency factors that may impact the sustainability and resilience of water supply operations.

Company	Risk Class Dependency (ENCORE)	Main dependencies (ENCORE)	Environmental Risk (CAIXA System)
Company A	4	Solid waste and remediation, Water purification and Rainfall pattern mitigation	●
Company B			●
Company C			●
Company D			●
Company E			●

So far, no specific assessments related to nature risk have been identified for this sector within the systems currently used by CAIXA. This finding reinforces the opportunity for continuous improvement in integrating environmental criteria into the institution's risk analysis and management tools.

Economic activity: Port Operator Activities

The analysed activity is port operator activities. The table highlights information such as the evaluated company, the risk of dependencies on nature, and the main dependencies identified for the activity. This analysis helps identify the risk and dependency factors that may influence the sustainability and resilience of port operations.

Company	Risk Class Dependency (ENCORE)	Main dependencies (ENCORE)	Environmental Risk (CAIXA System)
Company A	4	Flood mitigation, Storm mitigation, Recreational related services and Visual amenity services	●
Company B			●
Company C			●
Company D			●
Company E			●

It was observed that, in the assessments currently available in CAIXA's system, the risk levels assigned to the port sector differ from the results obtained through the ENCORE tool. This variation reinforces the importance of considering multiple sources of information and complementary approaches, contributing to a more comprehensive understanding aligned with the different methodological frameworks available regarding environmental risks associated with the sector.

Economic activity: Snack bars, tea houses, juice bars, and similar establishments

The analysed activity is snack bars, tea houses, juice bars, and similar establishments. The table highlights information such as the evaluated company, the risk of dependencies on nature, and the main dependencies identified for the activity. This analysis contributes to identifying the risk and dependency factors that may impact the sustainability of quick-service food and beverage operations.

Company	Risk Class Dependency (ENCORE)	Main dependencies (ENCORE)	Environmental Risk (CAIXA System)
Company A	4	Water purification, Recreational related services, Visual amenity services and Spiritual, artistic and symbolic services	●
Company B			●
Company C			●

Company D			
Company E			

Economic activity: Real estate development and building construction

The analysed activity is real estate development and building construction. The table highlights information such as the evaluated company, the risk of dependencies on nature, and the main dependencies identified for the activity. This analysis contributes to identifying the risk and dependency factors that may impact the sustainability and resilience of construction operations.

Company	Risk Class Dependency (ENCORE)	Main dependencies (ENCORE)	Environmental Risk (CAIXA System)
Company A	4	Soil and sediment retention and Rainfall pattern mitigation	
Company B			
Company C			
Company D			
Company E			

It is observed that, in the analyses currently available, the risk levels assigned to construction activities may vary across different sources, such as CAIXA's system and the ENCORE tool. This difference highlights the importance of adopting an integrated approach that considers multiple methodologies and data sources, in order to broaden the understanding of nature-related risks and support more robust decision-making.

Economic activity: Highway and railway construction

The analysed activity is highway and railway construction, which concludes the analysis of activities regarding dependencies on nature. The table includes information such as the evaluated company, the risk of dependencies, and the main dependencies identified for the activity. This final analysis contributes to identifying the risk and dependency factors that may

impact the sustainability and resilience of land transport infrastructure activities.

Company	Risk Class Dependency (ENCORE)	Main dependencies (ENCORE)	Environmental Risk (CAIXA System)
Company A	4	Soil and sediment retention, Flood mitigation, Storm mitigation and Rainfall pattern mitigation	●
Company B			●
Company C			●
Company D			●
Company E			●

Activities with the greatest impact on nature

Similarly to dependencies, the impacts of economic activities on nature were assessed based on the main risk factors identified by ENCORE for activities classified according to the fiscal CNAE. Among the analysed impacts, the following stand out:

Impacts	
Area of land use	Area of freshwater use
Area of seabed use	Emissions of GHG
Emissions of non-GHG emissions	Disturbances (e.g. noise/light)
Emissions of toxic soil and water pollutants	Emissions of nutrient soil and water pollutants
Generation of release and solid waste	Volume of water use
Other biotic resource extraction	Other abiotic resource extraction
Introduction of invasive species	

Each of these factors was defined based on raw environmental data and modelled information provided by ENCORE for economic activities classified under the fiscal CNAE. For example, water usage volume and land use area can be considered to assess pressure on ecosystems, while pollutant emissions

and the introduction of invasive species can be analysed to determine potential negative impacts on nature.

Economic activity: Soybean cultivation

The first analysed activity is soybean cultivation. The table highlights information such as the evaluated company, the level of risk of impacts on nature, the main impacts identified for the activity, and, when available, CAIXA's system assessment for environmental risk.

This approach provides a consolidated view of the main risk/impact factors associated with the soybean cultivation sector, making it easier to identify critical points for sustainable management and decision-making.

Company	Risk Class Impact (ENCORE)	Main impacts (ENCORE)	Environmental Risk (CAIXA System)
Company A	4	Area of land use, Emissions of non-GHG emissions, Emissions of toxic soil and water pollutants, Emissions of nutrient soil and water pollutants, Generation of release and solid waste, Volume of water use and Introduction of invasive species	
Company B			
Company C			
Company D			
Company E			

Economic activity: Sewage network management

The analysed activity is sewage network management. The table highlights information such as the evaluated company, the main impact factors identified for the activity, and the risk level associated with each of them. This analysis helps identify the main impacts that sewage collection and treatment activities may have on nature, especially regarding pollutant emissions, water resource use, and waste generation.

Company	Risk Class Impact (ENCORE)	Main impacts (ENCORE)	Environmental Risk (CAIXA System)
Company A	4	Emissions of GHG, Disturbances (e.g. noise/light), Emissions of toxic	

Company B		soil and water pollutants, Emissions of nutrient soil and water pollutants and Introduction of invasive species	
Company C			
Company D			
Company E			

Economic activity: Slaughterhouse – pig slaughtering

The analysed activity is slaughterhouse – pig slaughtering. The table includes information such as the evaluated company, the main impact factors identified for the activity, and the risk level associated with each of them. This analysis allows the identification of the main impacts of pig slaughtering activities on nature, especially regarding intensive water use, waste generation, pollutant emissions, and effluent management.

Company	Risk Class Impact (ENCORE)	Main impacts (ENCORE)	Environmental Risk (CAIXA System)
Company A	4	Area of land use, Emissions of GHG, Emissions of toxic soil and water pollutants, Emissions of nutrient soil and water pollutants, Generation of release and solid waste and Volume of water use	
Company B			
Company C			
Company D			
Company E			

Economic activity: Waste treatment and disposal

The analysed activity is waste treatment and disposal. The table presents information such as the evaluated company, the main impact factors identified for the activity, and the risk level associated with each of them. This analysis makes it possible to identify the main impacts of waste treatment and disposal activities on nature, with emphasis on the generation and

release of solid waste, pollutant emissions, use of natural resources, and potential environmental disturbances.

Company	Risk Class Impact (ENCORE)	Main impacts (ENCORE)	Environmental Risk (CAIXA System)
Company A	4	Emissions of GHG, Disturbances (e.g. noise/light), Emissions of toxic soil and water pollutants and Emissions of nutrient soil and water pollutants	
Company B			
Company C			
Company D			
Company E			

Economic activity: Real estate development and building construction

The activity analysed is real estate development and building construction. The table presents information such as the company assessed, the main impact factors identified for the sector, and the risk level associated with each of them. This analysis makes it possible to identify the main impacts of real estate development and building construction activities on nature, especially those related to land-use change, consumption of natural resources, waste generation, pollutant emissions, and potential environmental disturbances.

Company	Risk Class Impact (ENCORE)	Main impacts (ENCORE)	Environmental Risk (CAIXA System)
Company A	4	Emissions of GHG, Disturbances (e.g. noise/light) and Emissions of toxic soil and water pollutants	
Company B			
Company C			
Company D			
Company E			

It is observed that, in the currently available impact assessments, the risk levels assigned to the construction sector may vary across different sources, such as CAIXA's system and the ENCORE tool. This difference highlights the importance of adopting an analytical approach that integrates multiple sources of information, contributing to a more comprehensive and contextualized understanding of nature-related impacts associated with the sector.

Economic activity: Construction of highways and railways

The activity analysed is the construction of highways and railways. The table displays information such as the company assessed, the main impact factors identified for the activity, and the risk level associated with each of them. This analysis makes it possible to identify the main impacts of highway and railway construction activities on nature, especially regarding land-use change, habitat fragmentation, consumption of natural resources, waste generation, pollutant emissions, and environmental disturbances such as noise and light.

Company	Risk Class Impact (ENCORE)	Main impacts (ENCORE)	Environmental Risk (CAIXA System)
Company A	4	Disturbances (e.g. noise/light) and Emissions of toxic soil and water pollutants	●
Company B			●
Company C			●
Company D			●
Company E			●

Economic activity: Port operations and waterway transport

The activity analysed is port operations and waterway transport. The table presents information such as the company assessed, the main impact factors identified for the activity, and the risk level associated with each of them. This analysis makes it possible to identify the main impacts of port operations and waterway transport activities on nature, especially those related to changes in aquatic and coastal ecosystems, risk of contamination by pollutants,

introduction of invasive species, waste generation, and environmental disturbances caused by vessel traffic.

Company	Risk Class Impact (ENCORE)	Main impacts (ENCORE)	Environmental Risk (CAIXA System)
Company A	4	Emissions of GHG, Disturbances (e.g. noise/light), Emissions of toxic soil and water pollutants and Introduction of invasive species	●
Company B			●
Company C			●
Company D			●
Company E			●

It is observed that, in the currently available assessments, the risk levels assigned to the port operations sector may vary across different sources, such as CAIXA's system and the ENCORE tool. This difference reinforces the importance of considering complementary approaches and multiple sources of information, in order to broaden the understanding of nature-related risks associated with the sector and support the continuous evolution of analysis methodologies.

Economic activity: Water abstraction, treatment, and distribution

The activity analysed is water abstraction, treatment, and distribution. The table presents information such as the company assessed, the main impact factors identified for the activity, and the risk level associated with each of them. This analysis makes it possible to identify the main impacts of water abstraction, treatment, and distribution activities on nature, especially regarding changes in water bodies, consumption of natural resources, waste generation, discharge of effluents, and potential environmental disturbances.

Company	Risk Class Impact (ENCORE)	Main impacts (ENCORE)	Environmental Risk (CAIXA System)
Company A	4	Area of land use and Area of freshwater use	●
Company B			●

Company C			●
Company D			●
Company E			●

So far, no specific assessments related to environmental risk for this activity have been identified in the systems currently used by CAIXA. This finding reinforces the opportunity to broaden the scope of analyses, contributing to the continuous improvement of methodologies for assessing and managing nature-related risks.

Economic activity: Textile industry (spinning, weaving, and fabric finishing)

Finally, the last activity analysed is the textile industry, which encompasses spinning, weaving, and fabric finishing processes. The table includes information such as the company assessed, the main impact factors identified for the activity, and the risk level associated with each of them. This analysis makes it possible to identify the main impacts of textile activities on nature, particularly regarding intensive water use, generation of effluents and waste, energy consumption, use of chemical products, and potential alterations in ecosystems resulting from industrial operations.

Company	Risk Class Impact (ENCORE)	Main impacts (ENCORE)	Environmental Risk (CAIXA System)
Company A	4	Emissions of non-GHG emissions, Disturbances (e.g. noise/light), Emissions of toxic soil and water pollutants, Emissions of nutrient soil and water pollutants, Generation of release and solid waste and Volume of water use	●
Company B			●
Company C			●
Company D			●
Company E			●

The analyses carried out made it possible to identify the main nature-related dependencies and impacts in the activities assessed, highlighting that segments such as port operations, water abstraction and distribution, and the textile industry maintain a significant relationship with ecosystem services,

especially regarding water use and quality, waste generation, and environmental changes. It was observed that while some of these activities already have specific assessments available in CAIXA's systems, others still present opportunities for deeper analysis. This scenario reinforces the importance of integrating different sources and methodologies, promoting an increasingly comprehensive understanding aligned with best practices on nature-related risks and dependencies associated with each economic sector.

06 FINDINGS AND NEXT STEPS

For financial institutions such as CAIXA, financing activities are directly related to nature-related impacts and dependencies through the sectors and activities financed, the location of these activities (especially in sensitive areas such as conservation units and key biodiversity areas), and the way in which financing is carried out.

The pilot analysis identified potential improvements in the database regarding the characteristics of operations and the assessments of exposure to environmental and physical risks measured by CAIXA's system. Consistent and reliable measurements are essential to better understand the impacts and dependencies of CAIXA-financed operations on nature, considering the concept of double materiality, that is, the "inside-out" perspective, as well as the potential risks and opportunities arising from dependencies and impacts resulting from nature loss for the portfolio ("outside-in" perspective), thus enabling more effective management of the commercial corporate credit portfolio.

Obtaining comprehensive, standardized, and specific information on the location, impacts, dependencies, and nature-related risks of financed entities and assets is essential, yet still insufficient in the current context, particularly regarding the actual application of resources, which at present are mostly linked to the corporate headquarters of companies financed by CAIXA.

Below, we highlight some aspects identified regarding the location analysis performed.

- We recognize that nature-related data is multidimensional and location-specific. Currently, the disclosure of this information is limited and often fragmented across various platforms, which makes data collection challenging. The pilot project for a unified database, launched in February 2025 and coordinated by the TNFD, with results expected to be presented at COP30, may help address this issue.

- The available data generally covers only the companies' direct operations, while the disclosure of information related to the supply chain is essential for a more comprehensive assessment — especially in activities that depend on raw material extraction. Therefore, adopting criteria for supplier selection becomes a crucial aspect for identifying impacts throughout the production chain, as having suppliers that report their own nature-related impacts enables a more effective identification of the effects generated by the supply chain as a whole.

- It is expected that regulations and voluntary disclosure frameworks will improve the availability, reliability, and consistency of data, as well as foster the development of standardized methodologies and metrics. This will enable a better understanding and management of potential risks and opportunities arising from environmental dependencies and impacts at CAIXA, aligning our practices with global commitments and market requirements.

Another point identified is that an analysis limited to sectoral data and aggregated company information does not allow for a detailed identification of the efforts and strategies adopted to address and mitigate nature-related risks, dependencies, impacts, and opportunities (DIROs). This assessment would be more effective if it considered specific aspects of these counterparties' impacts on nature, such as the use of sustainability reports from these clients that clarify such impacts and opportunities.

For companies that have more than one location interacting with nature, it is necessary to examine their policies, actions, and targets related to nature. For assets located in sensitive areas, such as highly threatened biomes, the existence of mitigation measures should be considered, whether voluntary or required by regulation, such as environmental impact assessments or similar instruments. Another important point for the financial institution to consider

is the availability of credit lines aimed at the regeneration and recovery of degraded areas in these biomes.

This approach contributes to a broader and more consistent view of nature-related management, aligning with market best practices and the commitments assumed by CAIXA.

With regard to the aggregation of nature-related data, the analysis revealed that this is a complex but necessary process for organizations to carry out LEAP assessments and use the results in decision-making.

Regarding metrics applied to the nature context, it is observed that there is still no consolidated metric equivalent to GHG emissions used in climate data. Consolidating all nature-related information into a single indicator or metric is neither practical nor effective, and this consideration will be valuable in the TNFD implementation process at CAIXA, which will be supported by a specialized company.

Regarding the methodology for identifying activities most exposed to dependency risks and nature-related impacts, it was concluded that the data provided by the ENCORE platform, although not fully adapted to the Brazilian context, can serve as a reference for developing nature scorecards. These instruments allow, at the very least, highlighting the most relevant risks, dependencies, and impacts for each economic sector, as presented throughout this document.

Understanding the aspects mentioned above reinforces the importance of adopting robust methodologies adapted to CAIXA's and Brazil's reality, ensuring a more accurate analysis aligned with market best practices.

Implementation of the LEAP approach

Despite the challenges related to data availability, the insights obtained from applying the LEAP approach to a small sample of the commercial corporate credit portfolio as of 12/31/2024 represent a starting point for developing a systematic methodology to integrate nature into decision-making processes.

This exercise allowed us to reach the following conclusions:

- Conducting a scoping exercise can be highly beneficial, especially when directing the focus toward activities, assets, and regions where critical nature-related issues are most recurrent and where data availability is greater — such as in the biomes where CAIXA has the highest exposure. This analysis should not be limited to risk mitigation measures but should also encompass business opportunities related to the regeneration of these biomes through specific credit lines.

- When assessing companies, it is recommended to focus efforts on activities whose direct operations involve critical nature-related issues, such as soybean cultivation and activities related to livestock and animal husbandry support, as well as civil construction, which is the institution's core business. These activities represent CAIXA's greatest exposures and also show higher dependency on and impact on nature.

- Based on the analysis of the commercial corporate credit portfolio as of 12/31/2024, it is observed that the available information is limited to the linkage with the headquarters of the companies financed by CAIXA. It is therefore recommended that the location where the resources are applied should also be made available for consultation. This measure would facilitate the identification of the actual impacts on nature and improve the analysis of potential risks and opportunities arising from environmental dependencies and impacts, contributing to a more accurate and efficient assessment by CAIXA.

- Finally, as part of the continuous strengthening of nature management, CAIXA has been structuring a systematic approach focused on activities with greater exposure to environmental risks and dependencies. The gradual expansion of the number of activities covered may consider selection criteria that complementarily integrate data from the ENCORE tool and the results of engagement actions conducted by the Vice-Presidency of Sustainability and Citizenship in the biomes where the institution concentrates its exposures. This evolution will contribute to further enhancing decision-making processes and reinforcing CAIXA's commitment to sustainability.

Initiatives already adopted by CAIXA

In this section, we consider it relevant to highlight the actions and initiatives already adopted by CAIXA that directly impact its relationship with nature.

CAIXA already conducts socio-environmental assessments of financed projects, especially in sensitive activities such as infrastructure, energy, and mining, requiring environmental impact studies and compliance with current legislation.

In addition, CAIXA participates in national and international forums and working groups focused on sustainability and nature, such as the United Nations Environment Programme Finance Initiative (UNEP FI), seeking to align its practices with the best market standards.

We emphasize that, even with the adoption of socio-environmental criteria in its credit and investment processes — considering potential risks and opportunities arising from dependencies and impacts related to nature — CAIXA continuously seeks to improve its analysis and reporting methodologies. The official adherence to the TNFD in September 2025 represents an important milestone in this process, strengthening the integration of nature into strategic decisions and contributing to the evolution of the institution's socio-environmental management practices.

Next Steps

The loss of nature is a systemic issue and therefore requires an integrated response from the whole of society. We believe that, as a financial institution and investor, one of the most effective actions to address our nature-related risks, dependencies, impacts, and opportunities (DIROs) is engagement not only with companies and asset managers in our portfolio but also with all stakeholders in each biome to which we are exposed.

- CAIXA will continue participating in multilateral initiatives and engagement forums on nature, such as the United Nations Environment Programme Finance Initiative (UNEP FI) and other working groups focused on sustainability in the financial sector, promoting dialogue and the exchange of experiences with other institutions.

- Increase engagement actions to deepen CAIXA's understanding of companies' initiatives to address nature loss, improve data disclosure through the adoption of new recommendations such as the TNFD, and thus gradually strengthen internal policies and practices related to the topic.

Finally, CAIXA will continue monitoring the evolution of available data and methodologies, aiming to gradually expand its nature-related assessments to different asset classes, credit, and investments. This trajectory reinforces the institution's commitment to sustainability and its transformative role in Brazilian society.

As part of this commitment, CAIXA is already officially an 'Adopter' of the TNFD and is aligned with the initiative's recommendations. The institution plans to publish its first report in 2027, referring to the 2026 fiscal year, and is developing a nature-related transition plan with defined steps and targets for the coming years.

07 REFERENCES

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08 DISCLAIMER

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