



# **Report on Social, Environmental and Climate-related Risks and Opportunities**

Volume 3 | December 2023



**BANCO CENTRAL  
DO BRASIL**





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# Report on Social, Environmental and Climate-related Risks and Opportunities

**Annual Publication by Banco Central do Brasil (BCB)**

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## Preface

It is with great pleasure that the Banco Central do Brasil (BCB) publishes its third Report on Social, Environmental and Climate-related Risks and Opportunities. This Report strengthens the transparency of BCB's actions in its sustainability agenda as well as reinforces its commitment to confront these risks within its institutional mandate.

BCB's mission is to ensure the stability of the currency purchasing power, to foster a sound, efficient and competitive financial system, as well as to promote the economic well-being of society. Although socio-environmental responsibility has long been one of our corporate values, the issue became even more relevant when our sustainability agenda was launched in 2020. In 2022, the BCB started to coordinate its sustainability efforts holistically, taking advantage of the existing knowledge within the institution to advance at a faster pace.

Since including Sustainability in its Agenda BC# and considering the impact of climate factors on financial and price stability, the BCB has advanced in its sustainability efforts by promoting the integration of social, environmental and climate factors into the process of risk management of supervised entities (ESs). Additionally, the BCB conducted research, on the exposure of the National Financial System (SFN) to physical and transition risks. It also adjusted its supervision practices and connected its sustainability agenda to its innovation and technology.

In addition, our financial stability research<sup>1</sup> corroborated the perception that droughts and floods are relevant to the risk of ESs, particularly in longer-term horizons. It also demonstrated that the main way in which climate risks threaten financial stability is through defaults.

In effect, from the environmental and climate perspective, adaptations in a wide range of economic activities will be necessary. This transition certainly will not happen overnight and considering production and consumption dynamics, new economic sectors may emerge while others may disappear. It is BCB's responsibility to remain vigilant to monitor and control risks that could compromise its mission during the transition. It also has to consider the potential economic effects of ever more frequent extreme climate events.

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1 [Financial Stability Report \(REF\), July 2023, section 2.3.](#)

This era of awareness of climate and environmental risks also brings about important opportunities. Brazil is extremely privileged when it comes to environmental and climate variety. We have vast biomes rich in animal and plant biodiversity in addition to cutting-edge technology in the agriculture and livestock business. Supported by an advanced financial system, that is capable of swiftly and efficiently providing funding to these sectors, the transition to a low-carbon economy can undoubtedly be beneficial to Brazil's economic development.

It is clear that we need to move forward not only in the environmental perspective, but also in topics that are equally as relevant in the social agenda. BCB supports financial citizenship with the democratization of financial knowledge, widespread access to the financial system, and options for an efficient and widespread credit allocation. To achieve these goals, the BCB invests in partnerships for the dissemination of financial education. It also constantly implements new technological solutions to serve the citizen and the financial system, and promotes modernization in areas such as microcredit, credit unions, currency convertibility, new business models, payment systems and information sharing. Moreover, the BCB recognizes the importance of reducing social disparities and, within the institution, of promoting equal opportunities and fair treatment of its workforce. After all, the dignity, prosperity, and welfare of society are undoubtedly relevant parts of the equation.

Fortunately, the BCB is not alone. Since 2017, central banks worldwide have joined in a formal network, the Network for Greening the Financial System (NGFS) to promote a greener financial system. BCB joined the NGFS in March 2020, and in January 2022, became a member of its Steering Committee for a two-year term. There is a great coordinated global effort towards the identification and quantification of risks and opportunities that allow for effective action to reduce inequalities and reach a more balanced relationship between economic activity and nature. Although there is still not a well-established metric, a body of knowledge is gradually taking shape that should help us to move forward. This report already covers some initial metrics and measures, and others will surely be incorporated as a consensus on measuring and disclosing these risks evolves.

Finally, this report represents an important managerial instrument for the BCB and an accountability one to society, giving transparency to its actions. I hope that the report is useful and informative of the many challenges and opportunities around the corner, the solutions of which depend on us, individuals, organizations, and governments.

Roberto de Oliveira Campos Neto  
Governor of Banco Central do Brasil



## Executive Summary

This report presents an integrated view of BCB initiatives related to social, environmental, and climate risks and opportunities between September 2022 and June 2023<sup>2</sup>. These risks and opportunities are linked to environmental, social, and governance (ESG) factors, including the risks and opportunities associated with climate change, which may impact the BCB, the SFN and the Brazilian economy.

To face these and other challenges, the BCB counts on its Agenda BC#, a management instrument and also one used for communication between the BCB and society. The agenda is organized in six dimensions: “Inclusion”, “Competitiveness”, “Transparency”, “Education”, “Sustainability”, and “Excellence”. In this edition, the second chapter is specifically on the initiatives that make up the “Sustainability” dimension, summarized as follows in Figure 1:

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2 Specific advances outside this period are duly dated in this report.

Figure 1 – Agenda BC# – Sustainability – Active measures between Sep/2022 and Jun/2023

| <br><b>#Sustainability</b>  |          |
|--|----------|
|  | Deadline |
| <b>REGULATION</b>  |          |
| Improvements to the disclosure of information by FIs, based on TCFD recommendations  | Jun/2024 |
| Implementation of new impediments in the Rural Credit Bureau   | Jun/2024 |
| Definition of social, environmental and climate benefits in rural credit operations  | Dec/2024 |
| Creation of the Rural Credit Bureau  | ✓        |
| <b>SUPERVISION</b>   |          |
| Improvement of the Stress Test for Climate Risks - phase II  | Nov/2024 |
| Improvement of social, environmental and climate risk supervision (RSAC)   | ✓        |
| Structuring and expansion of information collection on environmental and social risks (DRSAC)  | ✓        |
| <b>POLICIES</b>  |          |
| Estimation of the effects of social-environmental risks on the economy   | Dec/2023 |
| <b>PARTNERSHIP</b>   |          |
| Implementation of MoU with the Climate Bonds Initiative (CBI)  | Sep/2026 |
| <b>INTERNAL MEASURES</b>   |          |
| Inventory of GHG emissions of the BCB and reduction and mitigation plans   | Dec/2023 |
| Reducing the environmental impact of the processing of banknotes   | Dec/2023 |
| Strengthening the culture of sustainability  | Dec/2024 |
| Inclusion of ES themes in the Money Museum   | Jul/2025 |

Among the deliveries completed since the last Report, published in December 2022, some of the most relevant are: 1) the evaluation of the sensitivity of financial institutions' credit portfolios to climate risks; 2) the development of the Rural Credit Bureau and the Publication of CMN Resolution 5,081, of June 29, 2023, which makes the process of granting rural credit even more rigorous; 3) improvement of the monitoring and the receipt of the first batch of information on socio-environmental risks (Social, Environmental and Climate Document – DRSAC)

of ESs classified in the S1<sup>3</sup> segment; 4) award in the “Best Reserve Manager” category in the Central Banking Awards 2023; and 5) establishment of an ESG subgroup in the technical group of tokenization of financial assets.

Until the end of 2023, we expect the following deliverables: 1) the estimate of the effects of socio-environmental risks on the economy and SFN; 2) the reduction of the environmental impact of the processing of banknotes; and 3) the strengthening of the sustainability culture by the Organizational Socio-Environmental Responsibility Committee (CRSO).

In this report, emphasis is given to aspects related to the management of foreign reserves and to the alignment to TCFD recommendations, now encamped by the International Sustainability Standards Board (ISSB).

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3 As established in CMN Resolution 4,553, of 2017, the S1 segment is composed of banking financial institutions that: have a size equal to or greater than 10% (ten percent) of the Gross Domestic Product (GDP); or carry out a relevant international activity, regardless of the size of the institution.

# 1

## Introduction

This report presents an integrated view of BCB initiatives related to the management of social, environmental and climate risks and opportunities between September 2022 and June 2023. In chapter 2, the report presents the current stage of the actions included in the “Sustainability” dimension of the Agenda BC#. In chapters 3-6, the structure proposed by the World Economic Forum (WEF) and by the TCFD are used. NGFS guidelines were also considered.

According to the WEF, the information can be organized into four pillars: “Governance Principles”, “Planet”, “People” and “Prosperity”. There is a specific chapter on each pillar in this report.

In “Governance Principles” there is information on the institutional purpose and organizational engagement on “Sustainability” and the risk management associated with this issue.

In the “Planet” chapter, one can find information on BCB actions regarding the management of risks to the international reserves and financial stability, with an emphasis on regulatory and supervisory actions. Internal risk management is a necessary tool for the institution to preserve both economic and financial stability, thus avoiding potential losses to society. In this chapter, the disclosure of financial information on climate risk is divided into four areas: “Governance”, “Strategy”, “Risk Management”, and “Metrics and Targets, as recommended by the TCFD.

The chapter titled “People” presents initiatives that promote financial education, such as the program “Learning Value”. The chapter also presents internal measures to promote equal opportunities for BCB employees, among others.

The chapter named “Prosperity” reports on initiatives related to financial inclusion, innovation, and the relationship with society.

Given its strategic relevance and the link to other chapters, the report starts off presenting the current stage of the initiatives in the “Sustainability” dimension of the Agenda BC#.



# 2

## Agenda BC# Sustainability

The “Sustainability” dimension in the BC# Agenda aims to promote sustainable finance, the adequate management of social, environmental and climate risks in the economy, in the SFN, and within the BCB to integrate sustainability variables in the institution’s decision-making process. The “Sustainability” dimension was launched in September 2020, and it is a dynamic instrument, with the incorporation of new initiatives as earlier measures are finalized. This chapter reports on the progress in the BCB’s sustainability agenda, highlighting measures and deadlines as follows.

Initiatives in this dimension prioritize the promotion of a balanced relationship between human action and the environment as a whole. The focus of intervention is BCB’s scenarios and encompasses participants in the economic and financial environment.

The BCB also seeks to lead by example, exchange experiences with other institutions, implement international best practices in this area and align itself with the global sustainability agenda.

Figure 2 – Timeline of market and BCB actions (Regulator)



## 2.1 Regulation

### 2.1.1 Improvement of regulation on social, environmental, and climate-related risk disclosures, based on the TCFD recommendations

Disclosure requirements on social, environmental, and climate-related risks are based on the four core elements of the TCFD recommendations: governance, strategy, risk management, and metrics and targets.

Due to the complexity of climate-related issues, BCB decided to implement the TCFD recommendations in two phases:

- Phase 1, completed in September of 2021, involved disclosure requirements<sup>4</sup> on qualitative aspects related to governance, strategy, and risk management; and
- Phase 2 will address quantitative aspects focusing on metrics and targets.

On June 26, 2023, the ISSB, a new board of the International Financial Reporting Standards Foundation, issued global sustainability disclosure standards. In this context, the holistic approach currently under discussion within the Basel Committee for Banking Supervision (BCBS) should be noted. The objective is to develop a prudential treatment of climate-related financial risks, including new disclosure requirements under the Pillar 3 standard.

This new international environment concurring with BCB's efforts to obtain a better alignment of its prudential regulation to international standards led to the postponement of Phase 2, with a public consultation expected to be published by the end of 2023. The gradual implementation is an essential premise for achieving synergies and know-how by both the BCB and financial institutions.

### 2.1.2 Improvements in monitoring rural credit operations with advancements in the FiBraS Project

The first phase of the Brazilian Sustainable Finance Project (FiBraS) had started in October 2018, and ended in March 2020. It aimed at improving structuring conditions for the development of the green finance market in Brazil. FiBraS was originally conceived with a focus on specific supervision aspects, with the goal of ensuring the implementation of standards related to financial institutions' social-environmental risk management in their credit concession operations.

With the support of consulting offered by FiBraS, the BCB was able to advance in building capacity in subjects linked to social, environmental and climate risks. The project gave BCB access to important tools to improve regulation and the monitoring of rural credit operations, employing geospatial data in the process.

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4 [Resolution BCB nº 139](#) and [Instruction BCB nº 153](#), both published on September 15, 2021.

Additionally, in June 2023, the National Monetary Council (CMN) approved a regulation<sup>5</sup> making the verification process more rigorous and objective when granting rural credit. This regulation will enter into force in the second semester of 2023 and the first semester of 2024.

### **2.1.3 System of Authorization and Consultations to Rural Credit Operations (CACR)**

With the System of Authorization and Consultations to Rural Credit Operations (CACR), established in Resolution BCB 204, of March 22, 2022, borrowers have the possibility of granting access to their operations registered in the Rural Credit Operations System (Sicor). This expands the ability to verify compliance with social, environmental, and climatic criteria established by fund providers, including those external to the financial system.

It is expected that these new rules bring more transparency as to the leverage of rural credit operations, especially for potential large financiers that are not financial institutions. This may help to mitigate over-indebtedness and contribute to the provision of better terms for rural producers, according to the risk of their operations. [More information here \(in Portuguese\)](#).

### **2.1.4 BCB and Ibama will share databases**

The BCB and the Brazilian Institute of Environment and Renewable Natural Resources (Ibama) established a Technical Cooperation Agreement (ACT) which enables the exchange of information on rural credit operations and Proagro and various databases managed by the environmental authority.

The agreement is part of the set of measures planned for the development of the Rural Credit Bureau. Sharing information will support Ibama's actions to prevent and crack down on environmental crimes.

This agreement will also bring greater effectiveness to rural credit supervisory actions, based on the crossing-checking of information contained in the databases.

### **2.1.5 Accounting of investments in carbon credits and other sustainability assets**

The BCB amends the chart of accounts of the Accounting Standard for Institutions Regulated by the Central Bank (Cosif), through BCB [Instruction 325](#), of November 21, 2022, allocating a specific account to sustainability assets. Sustainability assets are those related to social, environmental and climate sustainability mechanisms.

The aim of the measure is to give greater transparency in the use of these assets by financial institutions, as well as to resolve any possible uncertainties and standardize the accounting record, so that the BCB can monitor the sustainability assets held by these institutions in their investment portfolios, accompany the evolution of the market and, when necessary, adopt measures in a timely manner.

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5 Resolution CMN 5,081, of June, 2023



### **2.1.6 Guidelines linked to the regulatory framework for the gold market, with indirect mitigation effects on deforestation associated with illegal mining**

The BCB published guidelines (BCB Instruction 406, of July 31, 2023) on procedures to be adopted by licensed institutions when purchasing gold. These guidelines result from a joint initiative of the regulatory and supervisory areas<sup>6</sup>. The instructions promote the end of both the presumption of legality of the acquired gold and the presumption of good faith of the acquiring legal entity and indirectly conduce to the mitigation of deforestation associated with illegal mining.

## **2.2 Supervision**

### **2.2.1 Improvement of Social, Environmental, and Climate-related Risks (RSAC) under the Risk and Control Assessment System (SRC)**

The assessment of RSAC in the banking system gained greater relevance by introducing supervision evaluations dedicated exclusively to this topic. As such, specific criteria and procedures were added to BCB's methodology for conducting banking supervision, the SRC<sup>7</sup>. From February 2023, the assessment of the levels of RSAC incurred by ESs and the quality of the controls implemented to mitigate them began to be examined more in-depth. Consequently, the RSAC was defined as a specific risk under the risk and control matrix of banking-supervised institutions that specifically fell into segments S1, S2, and a portion of S3.

It is worth mentioning that supervisory expectations regarding compliance with the regulation in place and good RSAC responsibility and management practices were both published in the [Supervision Practice Guide \(GPS\)](#), available on the BC website (in Portuguese).

### **2.2.2 Specific evaluations**

Specific assessments of RSAC were carried out following a transversal approach, in which ESs were previously selected based on their higher level of exposure to the risks examined and/or their greater systemic relevance. In this sense, the effective implementation of evaluation procedures and the adequate management of RSAC were verified in the granting of credit operations to counterparties from more exposed sectors, the level of adherence to the RSAC management structure set in the regulation, and the degree of maturity of social, environmental and climate responsibility policies (PRSAC), and their consequent implementation.

Additionally, the ongoing evolutionary process of the Social, Environmental, and Climate Risk Matrix (MRSAC) employed as an input for planning supervisory actions continued, as well as the broader use of internal and external databases to provide greater assertiveness in selecting the vital issues to be analyzed.

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6 Department of Conduct Supervision (Decon), Credit Unions and Non-banking Financial Institutions Supervision Department (Desuc), Banking Supervision Department (Desup), Financial System Regulation Department (Denor) and Prudential and Foreign Exchange Regulation Department (Dereg).

7 SRC is available in the Supervision Manual.

### 2.2.3 Social, Environmental and Climate Document (DRSAC)

The collection of data on social, environmental and climate risks in financial institutions' exposures has already begun. DRSAC received the first batch of data in February 2023. The submission schedule is staggered. Initially, data from the most complex institutions (segment S1) were received. The remittance schedule in the Document 2030 Normative Base (DRSAC) can be accessed [at this link \(in Portuguese\)](#).

The institutions' risk analysis process is being designed and the records are being validated. Based on the experiences of the first batch, the layout of the 2030 document - sent by the Financial Institutions (FIs) in accordance with information requested by the BCB - was improved, to better reflect both the different evaluation policies and to simplify sending. This curation effort is essential for optimizing the document structure and for the information produced from the data to be consistent.

The DRSAC will help evaluate the procedures adopted by financial institutions and the development of supervisory instruments at the BCB, especially in the evolution of the MRSAC. The incorporation of the assessment of securities exposures (TVM) in MRSAC is one of the main short-term objectives. Another goal to be achieved is the comparison of sectoral risk assessment, not only between institutions but also between the industry and MRSAC.

### 2.2.4 Mapping the prudential and regulatory aspects of the gold financial asset market

The BCB conducts studies to analyze the operational procedures adopted in the first acquisition of raw gold in regions close to gold mines, by institutions authorized by the BCB.

The work consists of evaluating the adequacy of management and governance practices, with emphasis on risk management aspects (including socio-environmental and climate risk), internal controls and the level of compliance with specific legislation on the gold market and current regulations. The respective assessment also extends to the first acquisition process, identifying policies, operating strategies, control mechanisms, risks and adherence to laws and regulations, including the institutions' relationship with their service points.

In the future, improvements can be made to the supervision process, the regulatory framework, and best practices for institutions in the sector.

The Prudential Supervision actions carried out by the Credit Unions and Non-Banking Institutions Supervision Department - Desuc have the support of other BCB's Departments and the National Mining Agency, the autonomous agency responsible for regulating and supervising mining activities in Brazil.

### 2.2.5 Climate stress tests – Heavy rains, extreme droughts and mapping the exposure of the NFS credit portfolio to transition risk

The BCB carried out the second exercise to assess the sensitivity of financial institutions' credit portfolios to physical risk, considering extreme climate scenarios. In the first exercise, published in the Financial Stability Report (REF) of November 2022, an assessment of extreme droughts was carried out. The second exercise analyzed the risk of intense rainfall. To this end, the BCB used rainfall projections developed by the National Institute for Space Research (INPE) for 2030 and 2050, together with credit data of the financial system from the Credit Information System - SCR. The result and details of the methodology used were published in REF.<sup>8</sup>

The recent studies aim to disseminate the topic and promote a greater understanding of climate risk in the NFS. Therefore, the analyses and results presented should be considered exploratory and interpreted with caution. Despite uncertainties regarding quantitative results, the analyses promote a greater understanding of possible transmission channels and exposures to climate physical risk.

Regarding the results of the sensitivity analysis to the risk of extreme drought<sup>9</sup>, the percentage of the portfolio in municipalities with a high risk of severe drought would increase from 16% to 19% in the 2030 and 2050 scenarios. The greatest relative exposure would be in the S2 segment<sup>10</sup>, with 40% of the portfolio, and in the Southeast region. Among water-intensive activities, the greatest exposure of the SFN is in the agriculture and energy sectors. Sectors such as soybean trade, agricultural supplies and beef cattle are also among the most vulnerable, with great exposure to the SFN. Finally, 15% of the portfolios' income would be compromised by the evolution of the risk of municipalities vulnerable to extreme drought.

The results of the sensitivity analysis to the risk of heavy rains<sup>11</sup> show that the percentage of the portfolio in municipalities with a high risk of heavy rainfall would increase from 0% (currently there are no municipalities with this level of risk) to 16% in 2030 and 33% in 2050. Although the exposure of institutions to high-risk municipalities is distributed relatively evenly among all segments of financial institutions, the S3 segment<sup>12</sup> presents the highest relative exposure to physical risk (35% of the credit portfolio) and, in general, the greatest exposure to risk is in the Northeast region.

The results of mapping the exposure of the NFS credit portfolio to transition risk<sup>13</sup> show that around 8% of the portfolio is intended for borrowers who may be affected by transition risk, with more than 70% of this exposure in the Beef cattle ranching, Freight transport by road and Soybean farming.

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8 REF, July 2023, Section II, item 2.2.

9 REF, November 2022.

10 Multiple banks, commercial banks, investment banks, exchange banks and savings banks, with a size of less than 10% (ten per cent) and equal to or greater than 1% (one per cent) of GDP; and other institutions with a size equal to or greater than 1% (one per cent) of GDP.

11 REF, May 2023.

12 Institutions with a size of less than 1% (one per cent) and equal to or greater than 0.1% (one-tenth of a per cent) of GDP.

13 REF, November 2022.

Smaller institutions (segments S4 and S5<sup>14</sup>) have proportionally greater exposure and, in corporate credit, 84% of exposures subject to transition risk are in medium and large companies.

Given the complexity of the topic, the dynamicity of the emergence of new methodologies and the availability of new databases, we expect to conduct new studies in the future that incorporate new methodologies and address different aspects of climate risk.

## 2.2.6 Financial Stability Survey (FSS): Climate-related Risks

CMN Resolutions 4,943, 4,944 and 4,945, all of September 15, 2021, and BCB Resolutions 139, of September 15, 2021, and 151, of October 6, 2021, establish a new regulatory framework for managing and monitoring climate-related risks within the SFN. These regulatory measures, accompanied by micro-prudential supervision actions, seek to reduce the potential impacts of events associated with climate-related risks within the SFN and are aligned with the BCB's sustainability agenda. As of 2023, within the macro-prudential monitoring framework, a module on issues regarding climate-related risks and their effects on the financial system was introduced in the FSS. This follow-up will take place annually, in the first quarter of each year.

According to FSS respondents, the physical climate-related events with the greatest impact on financial institutions' assets are droughts and floods, both in the short term (up to five years) and in the long term (more than five years). Transitional climate-related risks are classified by respondents as presenting a low impact on assets. However, financial institutions believe that companies intensive in greenhouse gas emissions could suffer significant market value losses as a result of events regarding transitional climate-related risks. These losses may affect financial stability.

Climate-related risks, both physical and transitional, may impact the financial system stability, especially by increasing delinquency, due to a reduced ability of borrowers to honor their debts. The materialization of climate-related risks reduces earnings from borrowers by causing physical structural damage or requiring changes in business processes or market structure to comply with regulations. In 2022, few financial institutions were affected by the materialization of climate-related risk. However, approximately two-thirds of respondents are adopting measures to mitigate the impacts arising from these risks, among which are the reduction of the environmental impact of the financial institution (source of the risk) and the reduction of exposure to climate-related risks in their several institutional relationships (transmitter of the risk), through the following actions: 1) risk analysis of the operation (with counterparties); 2) decarbonization (environmental impact); 3) ESG (internal management and use of human and environmental resources); and 4) regulatory compliance.

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14 S4: Institutions with a size of less than 0.1% of GDP (one-tenth of a per cent) and S5: Institutions with a size of less than 0.1% of GDP and which are not multiple banks, commercial banks, investment banks, exchange banks, savings banks, and development agencies.



FIs suggest that regulators define and implement regulations, monitor climate-related risks, and dialogue with ESs to define long-term strategies. The suggestions include: 1) coordination with authorities from the Legislative and Executive branches to define management, best practices, and financing aimed at developing a culture of transition to low-carbon economies; 2) implementation of requirements and control standards regarding climate-related risks; 3) the creation of incentives for the active involvement of financial institutions, considering them as channels for transmitting these requirements and controls to the rest of the economy; 4) creation of a database with records of impacts on companies resulting from climate events affecting financial institutions; and 5) constant dialogue with institutions to define a long-term strategy for the SFN. The nature of these suggestions indicates that climate-related risk management within the SFN is at an early stage of structuring, demonstrating the need for continuous and collaborative work amongst financial institutions and regulators to improve the approach to climate-related risks.

### 2.2.7 Rural Credit Bureau

The construction of the Rural Credit Bureau continues, aiming to ensure compliance of rural credit operations with current legal and infra-legal standards, with the signing of ACTs with the National Institute of Colonization and Agrarian Reform (Incra) and Ibama for sharing databases, which will allow even greater effectiveness in the supervision of rural credit and Proagro.

Simultaneously, BCB joined the MAIS Network, of the Integrated and Safe Environmental Program - *Programa Brasil MAIS*, which enables data exchange with the Ministry of Justice and Public Security (MJSP). High-resolution satellite images and other resources will be applied to monitoring rural credit.

## 2.3 Policies

### 2.3.1 BCB wins award for Best International Reserves Manager, with emphasis on sustainability

The BCB won the award in the “Best Reserve Manager” category at the Central Banking Awards 2023. The award recognizes the BCB’s excellence in managing more than USD 300 billion in international reserves, amid the challenging scenario of recent years around the world, marked by the Covid-19 pandemic. The innovations and prudence adopted in the management of reserves support financial stability in Brazil.

The inclusion of sustainability criteria and the diversification of assets were evaluated positively among other changes in the investment process.

Another innovation praised was the formalization of sustainability as a mandatory criterion in the process of evaluating counterparties. It is important to note that the BCB’s reserve management team has been investing in green bonds for almost 10 years.

## 2.3.2 Estimation of the effects of social, environmental, and climate-related risks on the economy and within the SFN

### 2.3.2.1 Macroeconomic impacts of climate events and policies for the transition to a low-carbon economy

This action aims to develop structured macroeconomic models to address climate-related issues, focusing on the creation of macroeconomic scenarios as input for financial stability stress tests. The following steps were planned:

- a. to adapt Dynamic Stochastic General Equilibrium (DSGE) models for the Brazilian economy;
- b. to build aggregate indicators to better capture specific effects on macroeconomic, regional, and sectoral variables; and
- c. to take part in NGFS working groups.

Step (a) is at an advanced stage of adapting the BCB's DSGE model (Samba) to the Brazilian economy in order to take into account the effects of climate change on companies' productivity due to greenhouse gas emissions. The model under development includes the use of fossil and renewable energy as alternative production inputs; models the emissions of polluting gases from fossil fuel burning for energy production and other production processes, addressing the impacts of the accumulation of these emissions (via changes in the frequency and severity of climate events) on productivity, supply, demand, and prices; consumers and investors' decisions; and government policies for the transition to a low-carbon economy (carbon market). Interactions with the NGFS, step (c), have taken place to clarify doubts about historical data and scenarios being used to estimate and condition the projections of the domestic climate-related model under development.

### 2.3.2.2 Economic and financial effects of the Mariana disaster

The aim of this project is to measure the economic and financial effects, including economic activity, payment flows in the production chain, and local consumption, resulting from the 2015 Mariana disaster, which led to water contamination in riverside municipalities. The project was sponsored by the Inter-American Development Bank (IDB), with the hiring of David Kaeser, professor in the Department of Resource Economics at the University of Massachusetts Amherst, as a mentor for criticism and improvements. The project has been divided into the following steps:

- a. payments flow database preparation;
- b. definition of treatment and control groups;
- c. models adjustments;
- d. analysis of the results;
- e. working paper preparation;
- f. incorporation of adjustments and suggestions; and
- g. working paper publication.

Steps (a) to (f) have already been concluded. The value of clean water has been assessed based on the disaster's effects and its major environmental and social

repercussions, and negative externalities have also been quantified for the supply chain of companies in the municipalities bordering the Rio Doce (affected by the dam failure) using a differences-in-differences strategy with data from the Brazilian Payments System, including electronic transfers to settle business-to-business transactions. The transmission channels through which the dam failure affected the local economy have also been analyzed, as well as how and to what extent the water contamination impoverished the affected riverside municipalities. The decline in consumption and the destruction of wealth stood out, with notable effects on the GDP of the affected riverside municipalities, which are more dependent on agriculture.

The text was presented at seminars, with the aim of being reviewed and receiving suggestions on the empirical findings and the validity of the empirical strategy, and additional analyses were carried out with the aim of being improved and adjusted according to the recommendations presented by the IDB mentor and seminar participants. The work, released in August 2023, is available in [Working Paper series 583](#).

#### 2.3.2.3 Effect of frost on companies' production chain

The aim of this work is to use empirical models to assess the magnitude and propagation of local shocks resulting from extreme climate events by employing real-time data on payments and loans. The project is being developed in partnership with researchers from the Massachusetts Institute of Technology (MIT) and follows the same steps of the previous project, presented in item 2.3.2.2.

Four frost episodes occurred from June 29 to August 2, 2021. The severity of frosts was outside the range of forecasts at the time of sowing, with models predicting this type of event to only occur once-in-50 to once-in-100-years. This type of event can be considered as a negative supply shock with spatial variation in exposure due to crop sowing patterns, heterogeneous crop sensitivity to temperature, and heterogeneous crop sensitivity to perceived low temperatures. These shocks will be used to analyze potential economic and financial implications in the inter-company supply network.

The project is currently in the phase of data collection, compilation, and preprocessing, with the need to adjust databases from bank slips, electronic transfers (TED), and instant payments (Pix) at the payment level from the client-company to the supplier-company over time.

#### 2.3.2.4 Estimated effects of extreme events on companies' financial flows

This work aims to calculate the effects related to the occurrence of a certain extreme event and its impact on companies' receivables. The project was organized following the same implementation steps of the projects described in items 2.3.2.2 and 2.3.2.3. This project is a generalization of the frost study, aiming to estimate the effects of different climate events on companies' cash flow. It adopts a model similar to that of Custódio, Ferreira, Garcia-Appendini, Lam (2020), [Economic Costs of Climate Change](#), but uses payment flow data from bank slips, TED, and Pix.

Programs are being developed to extract climate data available on the INPE website, on the Information and Analysis System for the Impacts of Climate Change (Adapta Brasil) of the Ministry of Science, Technology, and Innovation; and the NGFS, structured in a database. At the same time, data being prepared for the project described in 2.3.2.3 will be used in this work.

## 2.4 Partnerships and international engagement

The BCB has maintained strong international ties with central banks, international organizations, multilateral forums, and other institutions, enabling the development and improvement of capabilities, practices, and important tools for regulation and supervision related to social, environmental and climate risks in the SFN. In 2023, the BCB hosted the 11th Governors Meeting from Central Banks of Portuguese Speaking Countries (BCPLP), a biannual event to promote the exchange of experiences amongst BCPLP. At the meeting, the BCB, in an effort to streamline the dialogue, centred the agenda on central banks' agendas on sustainability. Issues such as the development of an economy resilient to extreme natural events and committed to reducing the level of carbon emissions, the promotion of sustainable economic activities and the protection of the most vulnerable social groups were discussed.

### 2.4.1 Developments of the Memorandum of Understanding with the Climate Bonds Initiative (CBI)

The CBI is an international non-profit organization that supports and fosters the development of long-term capital markets to accelerate the transition to a low-carbon global economy through green financial instruments. Its work is divided into three fronts: (i) promoting green bond markets internationally; (ii) coordinating the definition of criteria for asset eligibility; and (iii) producing market analysis and intelligence.

The BCB and the CBI signed a memorandum of understanding in September 2020. Last year, this partnership enabled: (i) the BCB's participation in international CBI events, to disseminate the actions of the Sustainability Pillar of the BC# Agenda; (ii) technical meetings; and (iii) the reception, by the BC, of information and reports produced by the CBI.

## 2.5 Internal measures

### 2.5.1 Inclusion of the socio-environmental theme in the Money Museum

The sustainability theme is one of the principles that should guide the development of the exhibition of the new Money Museum. Sustainability must be a separate content, or a transversal one, to be presented throughout the exhibition. It must also be a practice of the museum itself and an invitation for its visitors to engage in sustainable practices. Thus, the inclusion of the topic of socio-environmental



responsibility represents an opportunity for the BCB to expand its interaction with society, being yet another element that integrates with the content of the new Money Museum. The measure to create the museum was divided into two stages:

- 1) Validation of the sustainability theme in the museum by BCB's Board;
- 2) The inauguration of the Museum with sustainability content.

The elaboration of the sustainability content will be carried out under the Decentralized Execution Term (TED) 07/2019, celebrated between the Ministry of Justice and Public Security, through the Fund for the Defense of Diffused Rights (FDD) and the BCB to develop the first museum of economy in South America ("Education" dimension in the Agenda BC#). The project has an expected duration of 5 years. The cost for renovation and new museography of the Money Museum is projected to be R\$20.4 million.

# 3

## Governance

This chapter includes the leadership, strategy and control mechanisms adopted by the BCB to assess, direct and monitor management on sustainability issues. The information is organized into three sections. The first section presents information on BCB's purpose; the second explores its structure and engagement; and the third deals with integrated corporate risk management, detailing strategic and operational risks.

### 3.1 Purpose

The objective of the BCB is to be recognized for the effective fulfillment of its mission and for promoting inclusion, transparency, sustainability, and competitiveness in the SFN and for incentivizing financial education.

With regard to its mission, the BCB contributes to sustainable development on the social, environmental, and economic fronts. It evaluates and monitors risks associated with climate change and their impacts on the SFN and on the economy.

In its Institutional Strategic Plan (PEI-BCB), the BCB emphasises risks associated with ESG factors in its declaration of the vision of the future and in the strategic objective "to promote sustainable finance and contribute to the reduction of socio-environmental and climate risks in the economy and the financial system."

The BCB takes the 2030 Agenda for Sustainable Development into account in its strategic planning and the preparation of this report. In this vein, the convergence between the points of PEI-BCB and the Sustainable Development Goals (SDGs) are verified, and the conclusion is that the BCB contributes, directly or indirectly, to the achievement of 9 of the 17 SDGs, and more directly SDGs 4, 8 and 17.

The "Aprender Valor" Program, for example, contributes to attaining SDG 4, which involves the promotion of learning opportunities throughout life for all.

SDG 8 consists of promoting sustained, inclusive, and sustainable economic growth; full and productive employment; and decent work for all. Pix is an example of a BCB action that contributes to achieving goal 8.10, which involves the encouragement of the expansion of access to banking and financial services for all.

Through the actions in the “Sustainability” Dimension of the Agenda BC#, the BCB also contributes to attaining SDG 17 of enhancing global macroeconomic stability including through policy coordination and policy coherence.

Figure 3 – BCB Initiatives towards the SDGs

### Examples of BCB initiatives that contribute to achieving the SDGs



#### Quality education

**Target:** by 2030, substantially increase the number of youth and adults who have relevant skills, including **technical and vocational skills, for employment, decent jobs and entrepreneurship.**



#### Decent work and Economic growth

**Target:** Strengthen the capacity of domestic financial institutions to encourage and expand **access to banking, insurance and financial services** for all.



## 3.2 Structure and engagement

The BCB is managed by its Board of Governors and has an Executive Secretariat, an Attorney General’s Office, Departments and Administrative Units. The BCB’s highest decision-making body is the Board of Governors, made up of the governors

and deputy governors. In parallel, there are three committees at the Board of Governors level:

- The Monetary Policy Committee (Copom), which defines the target of the economy's basic interest rate (the Selic interest rate) and publishes the Inflation Report;
- The Financial Stability Committee (Comef), which establishes guidelines for maintaining financial stability and preventing the materialization of systemic risk, i.e., the risk of a halt on essential financial services to families and companies, with significant damages to the Brazilian economy; and
- The Governance, Risks and Controls Committee (GRC), which defines guidelines related to corporate governance, strategy and risk management, and internal controls.

In 2017, the BCB implemented its own Socio-Environmental Responsibility Policy (PRSA) and created the governance structure for its implementation and monitoring: the CRSO, which is responsible for coordinating our internal socio-environmental actions as well as consolidating our good practices and exchange of experiences, with the aim of improving our sustainable agenda.

In December 2021, as part of the PRSA review, Ecos was created, through BCB Resolution 169, of December 2, 2021. It is an advisory committee, with regular reporting to the GRC, with the objective of coordinating the initiatives, projects, and activities carried out by the different areas of the BCB in the "Sustainability" dimension of the Agenda BC#. Ecos also aims to harmonize and disseminate information on internal and external initiatives to the BCB for all areas of the institution, since the theme is broad and growing, and touches on subjects from different areas.

In order to support Ecos, the Sustainability and International Portfolio Investors Unit was given the added responsibility, in December 2022, of articulating the interdepartmental work to develop a transversal intelligence and facilitate internal and external communication on sustainability.

The BCB participates in several forums and international organizations, with emphasis on its participation in the BCBS, the Financial Stability Board (FSB), the NGFS and the G-20, which have specific groups to discuss climate issues and their possible impacts on the financial system. The BCB also supports the TCFD, whose responsibilities will be encamped by the ISSB from 2024.

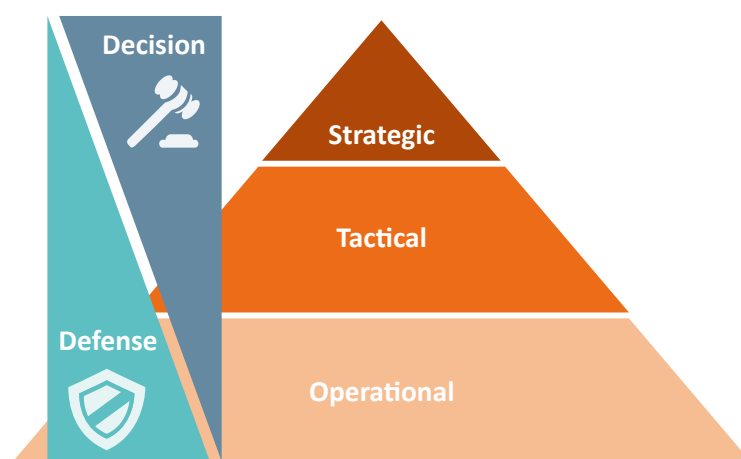
It is incumbent upon the Deputy Governor for International Affairs and Corporate Risk Management to represent the BCB at the NGFS plenary, currently as a member of the Steering Committee, with a mandate from 2022 to 2024, and to promote the coordination of the efforts of the areas of the BCB related to sustainable finance and climate risk. In 2020, the BCB announced a set of actions that make up the "Sustainability" dimension in the Agenda BC#, comprising internal corporate actions and actions aimed at the SFN. These actions and their development were highlighted in chapter 2 of this Report.

### 3.3 Integrated Risk Management

BCB has a robust and well-established corporate risk management structure, with models based on best international practices. By adopting the Enterprise Risk Management approach, risk management seeks to comprehensively assess BCB's risk exposure, considering not only the different types of risks incurred but also the interaction between them.

As provided for in the Integrated Risk Management Policy, the information produced within the scope of the corporate risk management process, using a specific methodology, supports decision-making and seeks to strengthen the defense of the organization's processes, by identifying, assessing, and controlling risks, and mitigating possible losses. In doing so, the process delivers value creation, by supporting strategic decisions, and also value protection.

Figure 4 – Risk Management at BCB



The previous figure displays the relevance of both risk management approaches (defense and decision) across BCB's organizational structure. At the strategic level, the use of risk information is highlighted as an input for decision-making by senior management, such as resource allocation and strategic actions development.

Once a decision is made, risk management at the operational level enables the implementation of that decision in a controlled manner, after the adoption of additional risk mitigation measures, when necessary. At the tactical level of the organization, the data produced by risk management serves as a complementary approach between decision and defense.

Social, environmental and climate risks are part of BCB's Integrated Risk Management Policy and are also embedded in the models used for different types of risk, reaching all institutional processes. Therefore, those types of risk can be managed and are considered in the decision-making process.

#### 3.3.1 Strategic Risks

In order to ensure the achievement of institutional objectives, it is necessary to manage the risks related to BCB's strategy. Consequently, the so-called strategic

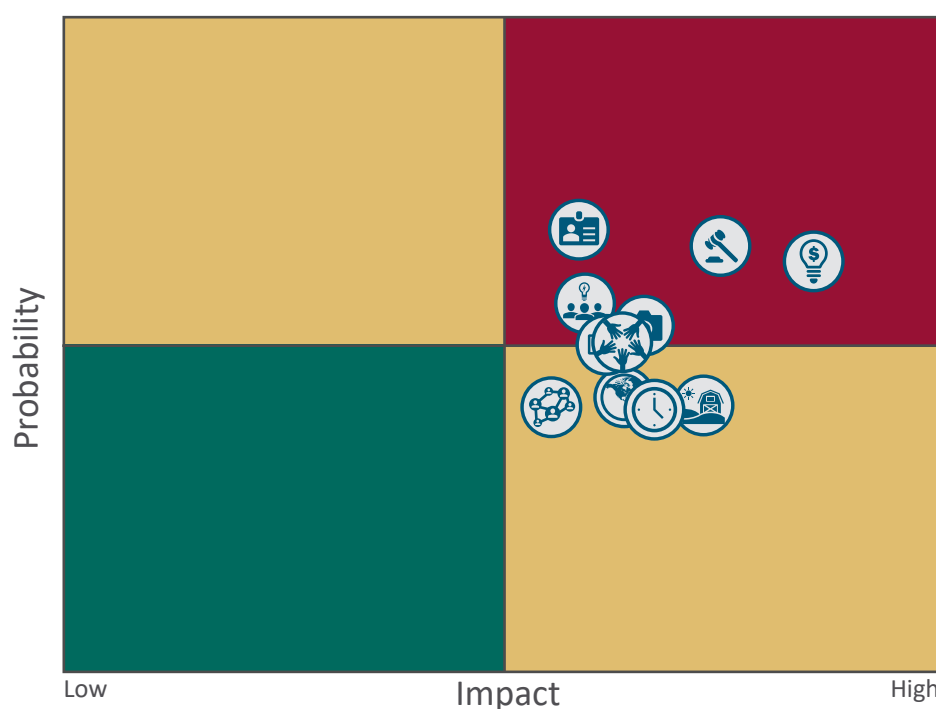
risks correspond to the measurement of uncertainty related to potential external and internal events that may affect the fulfillment of BCB's institutional mission or its strategic.

In addition to measuring impacts, by analyzing the magnitude of the possible effects for the strategic objectives, another element considered is the probability of occurrence of each risk.

The identification and measurement of strategic risks are carried out through the consensus perception model<sup>15</sup>, and followed by expert judgment<sup>16</sup>, whose outcomes are displayed on the BCB's strategic risk matrix. Finally, the analysis of BCB's strategic risk matrix and the criticality of each risk make it possible to identify top strategic risks and define priority for risk response.

Following it is possible to find the illustration of the 2023 strategic risk matrix referring to the strategic objective "Promote sustainable finances and contribute to the reduction of socio-environmental and climatic risks within the economy and the Financial System" and risks of other strategic objectives related to the topic. The description of the risks comes along with the main measures to mitigate them.

**Figure 5 – Strategic Risk Matrix, 2023**



15 Consensus perception model: a model developed by BCB and composed of rounds for risk assessment with the participation of BCB experts until consensus is reached on the relevance of risks and their measurements.

16 Expert judgment: validation by the members of GRC of the risks mapped in the consensus perception model, and possible reassessment.



#### A. Inflation rise due to environmental issues



Risk of rising inflation caused by events related to climate and environmental issues. These events can be caused by physical risks, such as extreme weather events or associated with gradual changes in the climate, like an increase in food prices due to crop failures and an increase in the cost of energy. Or even events related to transition risks, due to societal changes resulting from a transition to a low-carbon economy.

The BCB's actions in this area refer to estimating the effects of socio-environmental risks on the economy and the financial system, through the adaptation of macroeconomic models to simulate events of this type and the assessment of the economic and financial effects of socio-environmental risks.

#### B. Legal risk



Risk of judicial and extrajudicial litigation involving social, environmental and climate issues, related to: (i) the role of the BCB as monetary authority or as regulator and supervisor of the SFN, including the extension of its legal mandate; or (ii) the role of regulated entities, when such disputes are of systemic relevance.

This risk is mitigated by proactive action within the scope of BC# Agenda, dimension “Sustainability”, and through monitoring and preventive action with judicial bodies and control bodies, for the permanent development of BC# Agenda.

#### C. Lack of human and financial resources for new studies on this topic



Risks arising from the lack of human and financial resources at the BCB to follow discussions in international organizations that establish new regulatory standards, recommendations, guidance, etc. on sustainability in the financial market. Furthermore, the topic demands new projects that need to face restrictions on the number of people prepared and available at the BCB to engage in such initiatives.

The BCB has been trying to mitigate the risks facing its human resources in a broad way, whether to attract new employees through public competitions or to retain career people with knowledge and experience. In any case, the construction of the “Sustainability” dimension in the BC# Agenda demonstrates the prioritization given to this topic in the BCB’s scope of action.

#### D. Image risk



Risk of not achieving BCB's vision of being recognized for promoting sustainability in the SFN. Furthermore, there is a risk of international perception of Brazil's lack of effective action on climate change.

The performance of BCB in its corporate actions to achieve its mission, regarding social, environmental, and climate-related risks and opportunities, seeking transparency with the disclosure of its BC# Sustainability agenda and the publication of Report on Social, Environmental and Climate Risks and Opportunities, mitigates the image risk.

In addition, among other actions, the inclusion of the social and environmental theme in the BCB Money Museum and the role of the CRSO and the Ecos Committee also act as a vehicle for mitigating image risks.

#### E. Understanding the concepts related to sustainability



Risks linked to misperception or lack of complete understanding of the new concepts that BC# Sustainability agenda requires. Additionally, there is a risk of failure to timely define a classification system for sustainable assets, creating a uniform taxonomy of the topic.

The review of BC's Social and Environmental Responsibility Policy, the promotion of a culture of sustainability by the Organizational, Social and Environmental Responsibility Committee and the Ecos and the development of this Report on Social, Environmental and Climate Risks and Opportunities are initiatives to improve the understanding of BCB's internal and external agents on the topic of sustainability.

#### F. Failure to coordinate actions



Risk of failure to coordinate institutional actions in response to social, environmental, and climate-related risks for the Brazilian economy. Possible consequences of this risk are uncertainties related to compliance with standards and agreements on climate between countries, which, in turn, may impact the flow of investments to Brazil.

To address this risk, BCB highlighted within the BC# Agenda the "Sustainability" dimension to promote transparency and effectiveness in actions within its scope of action, to facilitate coordination between economic agents, and to mitigate risks of achieving the Institution's mission.

### G. Higher cost or restraint in energy supply



A possible change in the rainfall regime may affect the production of electricity in the country, increasing its domestic prices. This risk refers to conjunctural issues of high energy prices associated with supply shocks and can cause negative impacts on the national economy. Furthermore, the energy transition towards “greener” sources may lead to an increase in its cost.

The adaptation of macroeconomic models for the simulation of events of this type and the assessment of the economic and financial effects of socio-environmental risks also act to mitigate the effects of this risk in a way that responses can be designed in advance.

### H. Impact of climate change on the economy



Risk of climate change that could impact Brazilian agricultural production and, consequently, generate a relevant shock to the national economy.

The improvement in the management of social, environmental, and climate risks in the financial system and the creation of the Rural Credit Bureau are aimed at mitigating this risk and demonstrate BCB’s care in relation to this issue.

### I. Delay in deliveries



Risk of delays in delivering the outcomes of BCB’s sustainability agenda, agreed with society.

The publicity of BC# Sustainability agenda, as well as the establishment of goals and deadlines for each announced action, determine BCB commitment to mitigating those risks. The publication of the RIS presents among its objectives to provide more detailed information on the progress of actions.

## J. Adherence to international practices



Risk of being seen as a central bank that does not adhere to the recommendations of international organizations on social, environmental, and climate-related risks. The occurrence of this risk may impact investor confidence in the country.

Brazil is committed to implementing the recommendations established by the FSB and the BCBS, and actively takes part in working groups focused on debates on possible impacts of climate change on the financial sector.

By signing a formal expression of support for the recommendations of the TCFD and by joining the NGFS, the BCB also publicly establishes its commitment to the best international transparency practices in sustainability.

## K. Internal coordination



Risks linked to BCB's internal procedures to plan, organize, control, and deliver the results of the BC# Sustainability agenda. Furthermore, there is a risk of non-compliance with health or safety standards by BCB.

The appointment of the Deputy Governor of International Affairs and Corporate Risk Management to coordinate the efforts of BCB units related to green finance and climate risks promotes adequate internal governance of institutional processes. In addition, we highlight the inclusion of social, environmental, and climate risks in the institution's Integrated Risk Management Policy and the review of internal PRSA.

### 3.3.2 Operational risks

Among the operational risks, those related to possible environmental impacts on internal work processes stand out in this report:

- Improper disposal of banknotes after the sanitation process. In response to this risk, since 2017, the material has been used as an energy input in cement manufacturing, through co-processing. The current goal is the full disposal of waste for co-processing by 2023;
- Floods at BCB buildings caused by extreme environmental conditions affecting the maintenance of operations. BCB's business continuity plans consider this scenario to avoid compromising critical internal processes;
- Lack of water at BCB facilities affecting the maintenance of operations. BCB's business continuity plans also consider this scenario to avoid compromising critical internal processes.

# 4

## Planet

This chapter is dedicated to climate and environmental risks and opportunities and is divided into five sections. The first one presents information relative to the management of international reserves, addressing the management of risks associated with climate change and their economic and financial impacts, as recommended by the TCFD. The second section is dedicated to the regulation and supervision of the SFN. The third section presents the monitoring of green and sustainable bonds issued in the international market. The fourth section addresses the BCB's engagement in international initiatives relative to official climate change statistics. Finally, the fifth section covers the institution's administrative aspects, including the management of water, energy, materials, and waste.

### 4.1 Climate changes and financial impacts

Building consensus on the best way to measure the financial risks associated with climate change is an evolving process, and the disclosure of financial information in this section contributes to the effort to reach a common understanding regarding how to measure it.

With regard to BC initiatives related to risk management associated with climate change and its economic and financial impacts, the information presented in this section is divided into four pillars: Governance, Strategy, Risk Management, and Metrics.

#### 4.1.1 Governance

The Balance Sheet of the BCB is presented in schematic form in the figure below. The federal government securities portfolio (Assets in Local Currency) is composed only of securities issued by the Brazilian National Treasury and will not be analyzed in this edition of the report. On the balance sheet, it can be seen that international reserves represent a significant part of the BCB's assets. These reserves are invested in several assets in the main international financial markets and the climate risk metrics presented below refer to these investments.

**Figure 6 – Balance Sheet of the BCB**

| Assets                                | Liabilities and Equity                   |
|---------------------------------------|--|
| Assets in foreign currencies<br>1,862 | Liabilities in foreign currencies<br>263 |
| Assets in local currency<br>2,242     | Liabilities in local currency<br>3,437   |
|                                       | Currency in circulation<br>342           |
|                                       | Equity<br>61                             |
| Total Assets<br>4,104                 | Total Liabilities and Equity<br>4,104    |

(R\$ billion, Dec 31 2022)

It is the responsibility of the GRC to establish the strategic objectives and the risk and return profile of the country's international reserves.

Concerning the management of the investments, the governance structure of the reserves is supported by the BCB's Integrated Risk Management Policy. The investments are made according to guidelines established by the GRC, which defines the risk profile and expected return through a detailed and replicable reference portfolio, operational limits for deviations from the reference portfolio and criteria for measuring results. Among the strategic allocation criteria, parameters related to environmental and climate risks are gradually being introduced in the decision-making process.

#### 4.1.2 Strategy

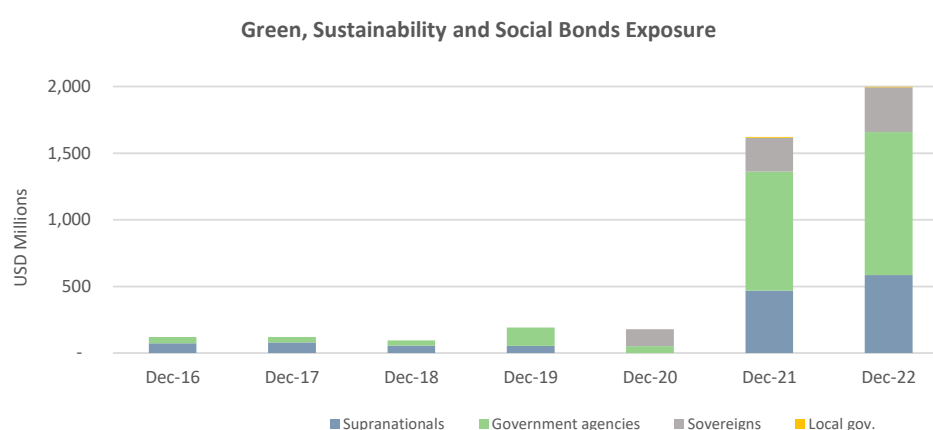
Investments of the International Reserves follow a conservative profile and seek to hedge the country's gross external debt, with the objective of reducing the country's exposure to exchange rate fluctuations, and also embedding in its allocation counter-cyclical characteristics. International reserves are allocated with the support of portfolio risk-return optimization techniques, observing the criteria of safety, liquidity, and profitability, prioritized in that order.

There are still no consolidated methodologies and metrics in literature and the international market as best practices for climate risk assessment to building investment portfolios. On the other hand, an effort is underway for investors and public institutions to monitor and disclose the climate risks of their financial positions based on existing standards, in order to contribute to achieving a consensus on the best form of measurement. Optimization exercises for a strategic allocation of international reserves consider various asset classes, including those associated with sustainable labeled bonds (like green bonds). In addition, indices of exposure to climate risks of the portfolio are considered in the decision-making process. The BCB, therefore, has gradually introduced operations with bonds with these features in its reserve's portfolio, taking into account constraints related to liquidity, profitability, and risk that are also applied to other assets.



As can be seen in the following figure, the BCB has increased the share of sustainable labeled bonds in the reserve's investments. Initially, the acquisition of green bonds was made by means of fixed income securities issued by government agencies, supranational and central governments in the scope of the active management of the international reserve investments. In 2021, a strategic allocation in green bonds was defined for the benchmark portfolio, considering the risk and return profile of the overall asset classes composition. Recently, sustainability and social bonds were included in the portfolio. Graph 1 shows the allocation of reserves in sustainable labeled bonds at year-end since 2016, where the relevant change caused by the strategic allocation can be seen.

**Graph 1 – Sustainable labeled bonds in international reserves**



Source: BCB, Dec 2022

### 4.1.3 Risk Management

The analysis of the risks associated with the investment process is key for understanding financial returns and for adjusting the benchmark portfolio to the investment objectives of the reserves.

The different risks taken in the investment of the international reserves are monitored daily by the BCB. In addition to financial risks, such as market, credit, and liquidity risks, the records of eventual operational incidents are also monitored, as well as metrics associated with greenhouse gas emissions that are constructed based on CO<sub>2</sub> equivalent emissions (CO<sub>2</sub>e).

The monitoring of CO<sub>2</sub>e metrics aims to assess the impact of different investment strategies on the portfolio's carbon profile. The international reserves portfolio is mostly invested in sovereign bonds and, although there is exposure to the U.S. stock market, there is no acquisition of corporate shares. Thus, the monitoring of indices and metrics associated with the portfolio is predominantly influenced by indicators associated with countries rather than companies.

### 4.1.4 Metrics

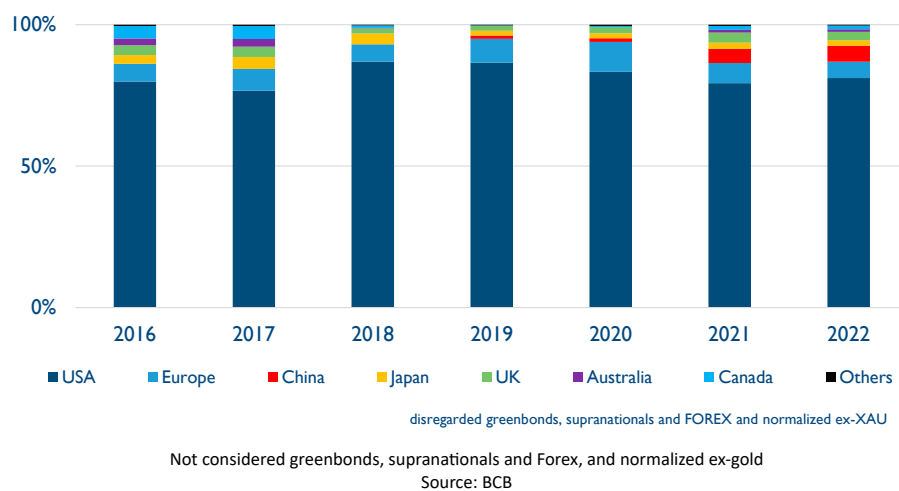
In managing the portfolio of international reserves, the BCB tracks metrics related to climate risks, related to greenhouse gas emissions, energy profile, and implicit temperature rise.

Given the absence of a consensus over a single metric for evaluating the investments of the international reserves with respect to climate risk and sustainability issues and aiming to increase transparency and contribute to the discussion on the topic, this report uses alternative measurements in an exploratory way.

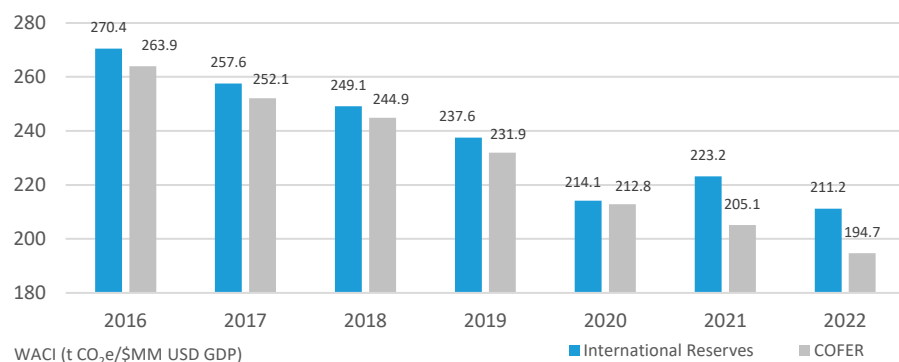
Graph 2 below shows the evolution of the allocation by country in the scope of investment of international reserves at the end of each year. Throughout the period, the USD is the currency with the largest participation in the investment of international reserves, primarily due to the strategy of hedging foreign liabilities, where the North American dollar is the dominant currency in Brazil's gross foreign debt.

The BCB tracks internationally used measures such as the weighted average carbon intensity (WACI). The combination of country allocation with CO<sub>2</sub>e emission data normalized by GDP leads to the composition of the metric that is shown in Graph 3.

**Graph 2 – Country allocation of Brazilian international reserves**



**Graph 3 – Weighted average of the carbon intensity of international reserves**



Source: BCB, with data from IEA – International Energy Agency, Moody's Data Buffet, and IMF

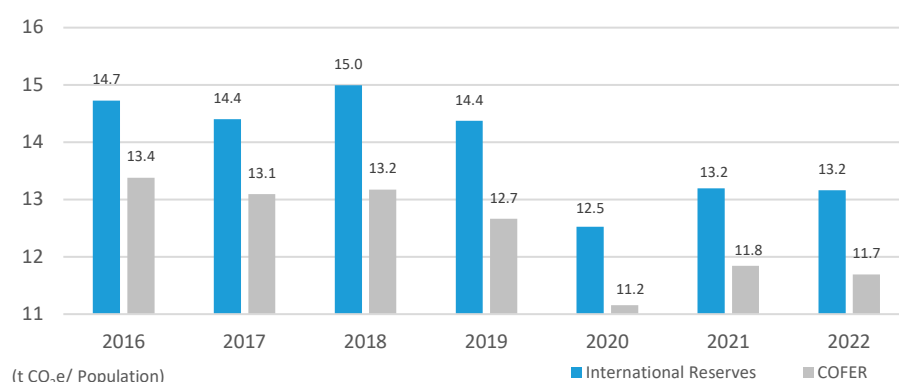
As can be noted in Graph 3, the international reserves portfolio's WACI 2022 value is slightly lower than in 2021, mainly due to the decrease in the carbon intensity, normalized by GDP, of the United States (the country with the largest share in the portfolio).<sup>17</sup>

Graph 3 also presents, for comparison purposes, the WACI of a theoretical portfolio of central banks composed of the distribution of currencies of the globally aggregated international reserves, as presented on the International Monetary Fund (IMF) website (COFER – Currency Composition of Official Foreign Exchange Reserve). Over the period 2016 to 2022, the downward trend in the WACI value of the analyzed portfolios basically reflects the drop in countries' carbon emissions normalized by GDP.

Another metric for evaluation refers to CO<sub>2</sub>e emissions per capita, which allows tracking the intensity of emissions in relation to the country's population. The current global average per capita emission is 6.5 t CO<sub>2</sub>e per person.

Similar to the WACI metric, Graph 4 presents the weighted average given by combining the allocation across countries with CO<sub>2</sub>e emissions data now normalized by population, i.e., emissions per capita.

**Graph 4 – Weighted average CO2 emissions per capita**



Source: BCB, with data from IEA – International Energy Agency, Moody's Data Buffet, and IMF

One of the main sources of greenhouse gas emissions is power generation. Using data from the International Energy Agency (IEA) on the composition of the energy matrix of countries, it is possible to compose the profile of energy generation associated with the allocation of international reserves in different currencies. This composition allows one to follow how the international reserves are distributed among the various sources of energy generation produced by the countries

The IEA discusses two scenarios for the evolution of the power generation profile and its adherence to the commitment established by the Paris Agreement. This commitment is that the increase in global temperature should not exceed two degrees Celsius this century in relation to the temperatures of the pre-industrial period.

<sup>17</sup> According to table 2.1 of the most recent [International Reserves Management Report \(in Portuguese\)](#).

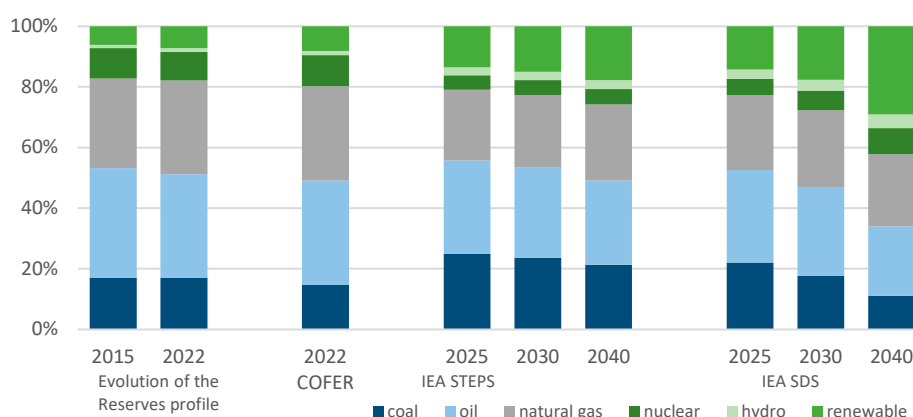
The IEA does not seek to make projections of what will happen, but rather to explore different possible scenarios: one scenario reflecting the policy intentions and targets announced to date and another based on the full achievement of sustainable energy targets. These are the Stated Policies Scenario (STEPS) and the Sustainable Development Scenario (SDS), respectively.

The Stated Policies Scenario (STEPS) reflects not only existing policies but also already announced intentions and plans and their impacts on climate.

The Sustainable Development Scenario (SDS) proposes an evolution of the policy profile in line with the Paris Agreement goals of “keeping the global average temperature increase below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels”. Achieving this goal requires a level of net-zero emissions (balance of emissions produced with removals by carbon capture and sequestration) in the second half of this century.

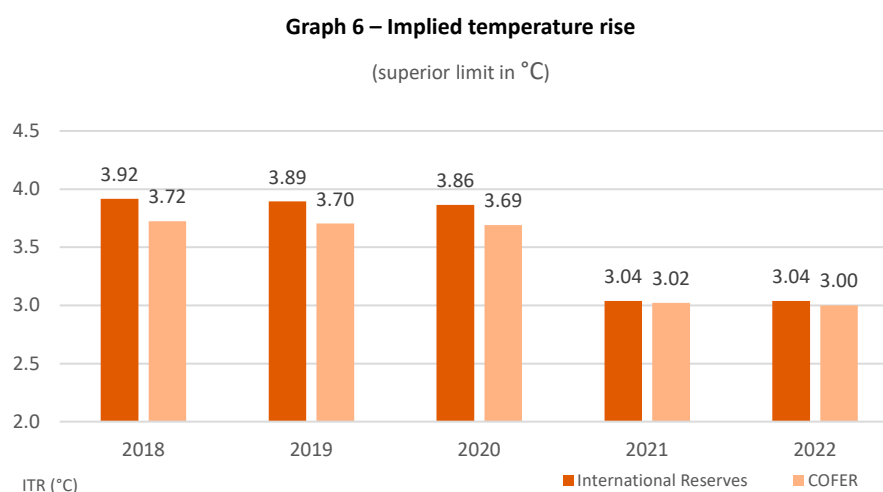
Graph 5 illustrates the profile of sources of energy generation weighted by the share of international reserves in the countries that make up their investments. The profile is affected by changes in the allocation of the assets that make up the reserves and also by the profile of the energy matrix of the countries. The graph also presents the figures for the scenarios STEPS and SDS.

**Graph 5 – Energy generation profile**



Source: BCB, with data from IEA - International Energy Agency

Graph 6 presents the Implied Temperature Rise (ITR) associated with investments from international reserves. The ITR provides a measure that indicates the alignment of a country, an institution, or an investment portfolio with global climate objectives by comparing, for example, the values calculated for a portfolio to the Paris Agreement temperature rise limits.



The rating agency and ratings provider, Moody's, offers an indicator that reflects the impact of ESG considerations on the rating of an issuer or transaction. The ESG Credit Impact Score (CIS) is an output of the rating process that relates the impact of ESG considerations on the rating of an issuer or transaction.

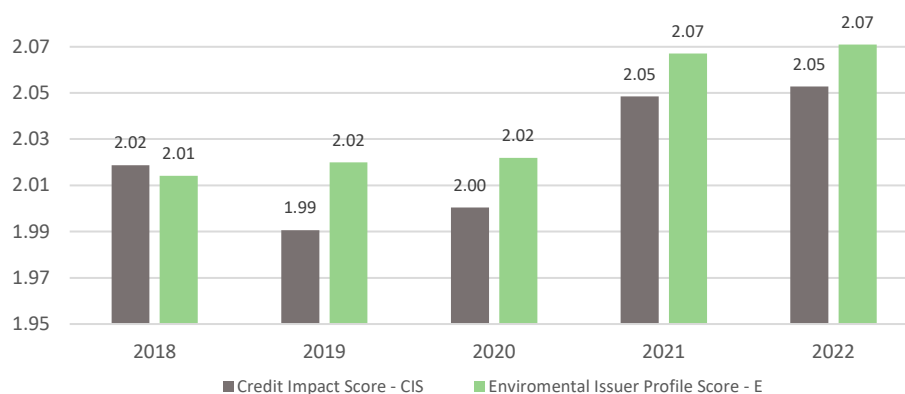
CIS features a score assessed on an asymmetric five-point scale:

- 1) positive (overall positive influence of ESG attributes on the rating is material),
- 2) neutral to low (overall influence of ESG attributes on the rating is non-material),
- 3) moderately negative (the overall negative influence of ESG attributes on the rating is more pronounced than the previous),
- 4) highly negative (the overall negative influence of ESG attributes on the rating is more pronounced than the previous),
- 5) extremely negative (the overall negative influence of ESG attributes on the rating is more pronounced than the previous).

It is important to clarify that since ratings incorporate all credit factors that are considered relevant in assessing relative credit strength (and the ESG is only one of these factors), there is no direct relationship between a credit rating and a CIS. A high credit rating does not necessarily imply a positive CIS, nor does a low rating imply a negative CIS.

Graph 7 presents the evaluation of the average CIS indicator for investments in international reserves. The average of the environmental factor of this indicator (Environmental Issuer Profile Score) is also shown. According to this indicator, the International Reserves Investments are classified as CIS-2 and E-2.

Graph 7 – ESG Moody's Scores (CIS and E)



Source: BCB, with data from Moody's Investors service

## 4.2 Regulation and Supervision

The BCB regulates and supervises the SFN. Climate-related events are followed by changes to the main economic variables in the horizon relevant for monetary policy, in addition to bringing significant risks to the SFN.

Climate-related shocks, such as droughts (and resulting wildfires), floods, and extreme temperatures put the SFN stability at risk through several channels, but mainly because of greater default rates and a decrease in the value of collaterals. These shocks potentially affect relative prices in the economy, which in turn can alter the demand for liquidity and the value of physical goods and collateral, in addition to bringing a high financial burden for society as a whole. At the BCB, the Comef and the Copom assess these risks in their decision-making processes.

The risks associated with climate-related events, considered relevant by the BCB, were considered in the improvement of the regulatory framework and the supervisory practices in actions coordinated by the regulation and supervision areas.

The BCB, aligned with other central banks and following best practices recommended by international standard setters, has developed a series of measures and regulations aimed at tackling socio-environmental issues over the last years<sup>18</sup>. Given the evolution of the subject, which points to structural changes in the economy, the BCB has prepared to address the ensuing challenges, incorporating the treatment of risks and opportunities related to social, environmental, and climate-related issues in a more precise way both in the regulation and supervisory practices.

The supervision of financial institutions has been carried out by monitoring the process of implementing these regulations, providing guidance, and giving appropriate treatment to the irregularities observed. Supervision has been based

<sup>18</sup> For more information regarding the regulations issued in 2021 and 2022, please refer to: [RIS 2021](#) and [RIS 2022](#).



on the monitoring of financial institutions' exposure to RSACs and has been continuously improved.

The BCB has monitored and evaluated as relevant the positive perception of investors towards more sustainable economic and social standards as well as the addressing of risks associated with climate change. The BCB takes part in the discussions on the subject that are underway involving other central banks and financial regulators in the international fora<sup>19</sup>. This monitoring is a continuous effort, with the objective to keep the Brazilian regulation and supervision aligned with international standards and best practices.

With respect to social, environmental, and climate-related risk management, the BCB has assessed the preparedness of institutions allocated to S1 and S2 segments to abide by the corresponding requirements<sup>20</sup>. This work consisted of a stock-taking on their management practices of social, environmental, and climate-related risks inherent to loan granting. An exploratory work of similar characteristics was conducted for institutions allocated to S3 and S4 segments.

Improvement to MRSAC (Social, Environmental, and Climate Risk Matrix) is underway, by developing the qualification process associated with the activity sector of the borrower, using relevant information publicly available.

In 2023, the BCB started using indicators to monitor social, environmental, and climate-related risks in the SFN. These indicators will be perfected over the next years.

The BCB has been working on quantitative disclosure requirements related to social, environmental, and climate-related issues aligned with international standards, including metrics and targets. The new regulation is expected to be subject to a public consultation by end-2023.

### 4.3 Monitoring of sustainable bond issuances

The BCB, committed to promoting a more sustainable and resilient economy, monitors the issuance of sustainable bonds in the foreign market. The issuance of green and sustainable bonds in the capital market has the potential to direct investments to projects that generate positive impacts on the environment and society.

There was a slowdown in the use of this financial instrument by issuers in 2023. In the first semester, the number of issuances and financial volume was even lower

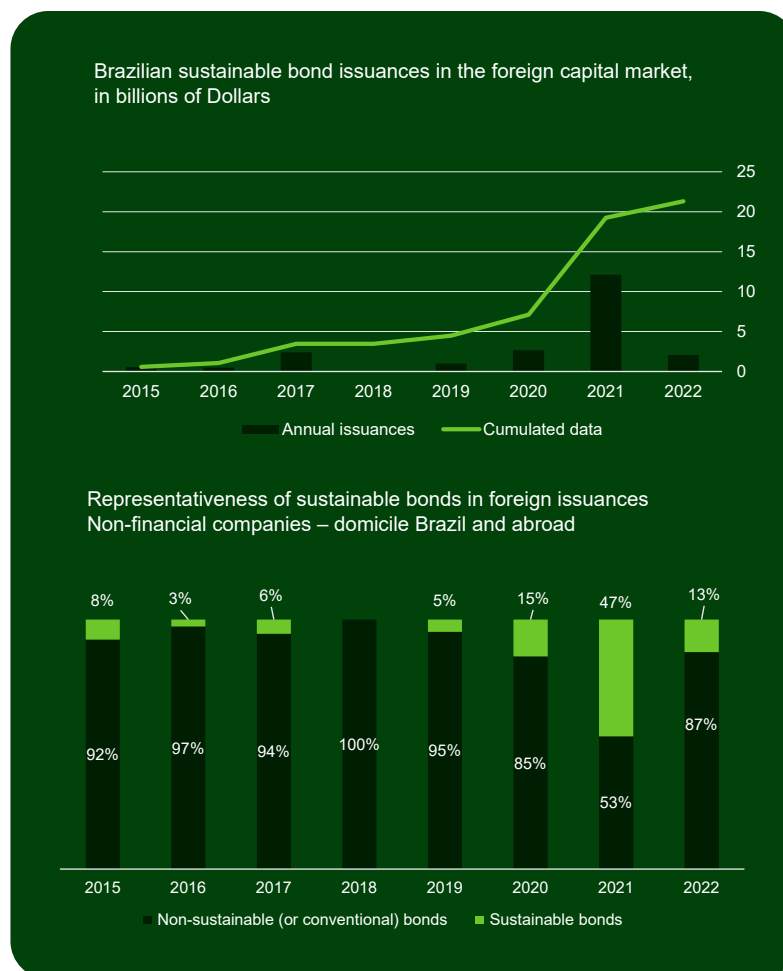
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19 The BCB is a member of international organizations, such as the BCBS, the FSB, the NGFS and the G-20, which have specific groups to discuss climate issues and their possible impacts on the financial system.

20 [Resolution CMN 4,553, of January 30, 2017](#), establishes the segmentation of all financial institutions and other institutions licensed by the BC for the purposes of a proportional implementation of prudential regulation. S1 comprises most complex institutions and those with a relevant international activity while S2 comprises large institutions without a relevant international activity.

than that of the previous year, 2022, characterized by an environment of more restrictive monetary policy, with higher interest rates, which resulted in a financial volume issued less than 10% compared to 2021, a record year in issuances. The first issuance of sustainable bonds by Brazilian issuers took place in 2015, with a significant increase in 2020 and 2021, in line with global issuances.

**Figure 7 – Brazilian issuances in the foreign market and representativeness of sustainable bonds**



Despite the recent decline in issuances, Brazil is one of the top three issuers of sustainable bonds in Latin America. The evolution of the Latin American and global sustainable bonds market occurred despite the nascent development of national taxonomies. In the year before the boom in global emissions, only 1/4 of the taxonomies that currently exist had been published. Until then, the principles of the CBI and the International Capital Market Association (ICMA) served as a reference (and still do) for issuances. The BCB is part of the taskforce responsible for developing an action plan to prepare the national sustainable taxonomy, led by the Ministry of Finance. The expectation is that the national sustainable taxonomy plays a relevant role in guiding future issuances.

Figure 8 – Main characteristics<sup>21</sup> of Brazilian issuances<sup>22</sup> – 2015 to 2022



21 Detailed table of Brazilian sustainable bond issues in: REB, Boxe 4 (in Portuguese).

22 Find out more about the [Sovereign Sustainable Bond Framework](#).

## 4.4 International initiatives on official statistics for climate change and financial inclusion

Ongoing climate change requires robust, comprehensive, and comparable official statistics and indicators to support public policymakers and implementers in adopting and putting into action measures to mitigate its social, economic, and financial effects. Nevertheless, there are relevant gaps in official statistics currently available at national and global levels, compiled and consolidated by international organizations.

In April 2021, the finance ministers and central bank governors of the G20 countries called on the IMF, the Inter-Agency Group on Economic and Financial Statistics (IAG), and the FSB to design a new phase of the Data Gaps Initiative (DGI)<sup>23</sup> to seek to close these gaps. Official statistics and indicators for measuring the impacts and mitigating the effects of climate change are the main pillars of this third phase, comprising seven of the fourteen recommendations. In addition to climate change, DGI-3 also includes financial inclusion and digital financial innovations.

DGI-3 was approved in October 2022, while the key milestones of its work plan were released in March 2023<sup>24</sup>. Whenever possible, official statistics and new indicators should be based on existing methodological standards – which are currently under revision – but in many cases, new concepts and definitions should be defined at a global level to generate internationally comparable data. Specific seminars for each DGI-3 recommendation have been held in recent months, aiming to assess the state of the art in statistical compilation in each country, discuss the methodology of new indicators and official statistics, and establish national commitments and deadlines for their achievement.

The seven recommendations for statistics and indicators of climate change<sup>25</sup> are detailed below, along with the main bodies responsible for developing them in Brazil.

### **DGI-3 – Recommendation 1: Greenhouse Gas Emissions and National Carbon Footprints Account.**

Goal: To disseminate the annual Air Emissions Accounts (for greenhouse gases) by sector, in accordance with the System of Environmental-Economic Accounts (SEEA) and estimates of the National Carbon Footprint from the perspective of demand, consistent with macroeconomic statistics on industrial production and national accounts.

Brazil: Ministry of Science, Technology, and Innovation

### **DGI-3 – Recommendation 2: Energy account.**

Goal: To disseminate the annual Energy Account in accordance with the SEEA, registering the supply and use of energy obtained from natural inputs, energy products, energy residues, and other residual flows in physical measurement units.

Brazil: Recommendation assigned to the Brazilian Institute of Geography and Statistics (IBGE).

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<sup>23</sup> Further information on the DGI [here](#).

<sup>24</sup> G20 DGI-3 Work plan – People Planet Economy available [here](#).

<sup>25</sup> The recommendations of the three DGI phases are available [here](#).

**DGI-3 – Recommendation 3: Carbon Footprint of Direct Investment Liabilities.**

Target: To disseminate carbon emissions (CO<sub>2</sub> per unit of production, with sectoral breakdowns, for direct investment liabilities and domestic companies. The methodology for converting the monetary values calculated for direct investment liabilities in the external sector statistics into production units is being developed.

Brazil: regarding direct investment liabilities companies, recommendation assigned to the BCB's Department of Statistics (Dstat), with the collaboration of the Financial System Monitoring Department (Desig) and the Strategic Management and Specialized Supervision Department (Degef).

**DGI-3 – Recommendation 4: Climate Finance (financing in the form of green debt and equity securities)**

Goal: to disseminate statistics on green debt and equity securities listed in green stock exchanges, disaggregated by issuer and holder sector, in accordance with the methodology of the International Bank for International Settlements (BIS) Handbook on Securities Statistics and using the dissemination standard for disseminating securities statistics currently reported to the BIS.

Brazil: recommendation assigned to Dstat, with the collaboration of Desig.

**DGI-3 – Recommendation 5: Physical and Transition Risk Forward Looking.**

Goal: To disseminate indicators related to populations, assets, production, corporate profitability, and wealth, based on a methodology to be developed.

Brazil: Recommendation assigned to Desig.

**DGI-3 – Recommendation 6: Government Subsidies with Climate Impact.**

Goal: To disseminate an annual estimate of these government subsidies, broken down by type of subsidy. Although the concepts of government subsidies with climate impact and of implicit subsidies are still being defined on an internationally comparable basis, the starting point should be the concept of environmental subsidies that make up the 2008 National Accounts System (SNA 2008) and the 2014 Government Finance Statistics Manual (GFSM 2014).

Brazil: recommendation assigned to the National Treasury Secretariat (STN).

**DGI-3 – Recommendation 7: Expenses with Mitigation and Adaptation to Climate Changes**

Goal: to disseminate an annual estimate of current and capital expenses on activities related to climate mitigation and adaptation, by sector, consistently with recommendations 1, 2, and 4.

Brazil: Recommendation assigned to the STN.

In addition to DGI-3, the process of revision of international methodological standards also foresees the development of concepts and definitions and official statistics, as well as new indicators about sustainability and climate change. The review of international manuals on national accounts and external sector statistics begun in 2022 and should be concluded by March 2025.

The new SNA<sup>26</sup> should contain additional chapters about welfare and sustainability, contributing to the definition of a statistical standard about this issue. The

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<sup>26</sup> Further information on the SNA update [here](#).

approach to be adopted is wide, including the dimensions related to the economy and production, flows, and inventories, and the valuation (including non-monetary issues) seeking to provide a benchmark of national account for the organizations of these new statistics. The new approach will foresee the consistency between the SNA and the SEEA, as well as thematic accounts, for instance, that of oceans. New official statistics, in the national accounts reference, might include environmental flows (water, energy, emissions), natural resources (mineral, earth, soil), ecosystems (forests, sweet water), and economic activity related to the environment (environment taxes, expenses on environment protection). Sustainability indicators should also be included in the new SNA, as net income and wealth measures adjusted by the exhaustion and degradation of environmental resources.

Finally, the review of the Balance of Payments and International Payments Position 6th edition (BPM6)<sup>27</sup> foresees the inclusion of a specific annex on sustainable finances in the statistics of the external sector, indicating the compilation of indicators related to climate change. These indicators will include non-resident investments in specific economic sector, the physical location, and the type or nature of these investments. Furthermore, green loans and financing, climate-related derivatives, and the exposure of financing sources to climate change related risks are also foreseen.

## 4.5 Water, energy, materials, and waste

In 2022, the improvement of BCB's building facilities continued, with a particular focus on enhancing accessibility, security, and sustainability. This effort included optimizing space usage, allowing for the sharing of our facilities with other federal agencies. Furthermore, an extensive renovation of the Money Museum in Brasília began in August 2022, following sustainable practices in its renovation processes. This involved the use of energy-efficient materials and the sustainable disposal of construction waste. The renovation of the museum is sponsored by the Diffuse Rights Defense Fund of the MJSP.

The BCB also recognizes the importance of the responsible use of available natural resources as well as the minimization of its operational impact on the environment. Among the actions taken in 2022, it is highlighted the greenhouse gas emissions inventory, the initiatives to reduce paper usage, the installation of recycling bins in all of the BCB buildings, the correct destination of worn and damaged banknotes, and the donation of computer equipment and furniture. Collaborative efforts with other central banks and public institutions through meetings and events are also emphasized.

The execution of the [2021-2022 Sustainable Logistics Plan](#) (in Portuguese) aimed to implement sustainability practices in facilities and processes with the potential to generate waste. The primary goal of the plan was to minimize waste generation and ensure its proper disposal to reduce environmental impact.

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<sup>27</sup> Further information on the BPM6 update [here](#).



The BCB continues its efforts to enhance energy efficiency and lower water consumption through building revitalization and the installation of sustainable solutions. The intention is to reduce natural resource consumption and rationalize public spending, directly benefiting society.

Another example of an initiative of the BCB to reduce the consumption of natural resources was the elimination of paper document traffic. With this in mind, the BCB adapted its work processes and adopted the Digital Protocol to eliminate the sending and receiving of paper documents. Annually, approximately ninety thousand documents are processed using this approach. The elimination of paper has brought benefits to both the BCB and the SFN, as well as society in general, by making processes faster, more secure, and less costly. Additionally, this contributes to sustainability by significantly reducing paper consumption.

It is worth highlighting another initiative aimed at promoting the circular economy and avoiding the disposal of items that can still be used: the donation of computer equipment and furniture. These items are considered unusable within the BCB's organizational context but may be valuable to Non-Governmental Organizations (NGOs) and other public entities.

The BCB also aims to disseminate these sustainability best practices through meetings and events with members of the SFN and other public institutions, acting as a reference for them. Its participation in editions of the 'Coffee with Sustainable Logistics Plan (PLS)' event exemplifies this commitment. The objective is to exchange experiences with other agencies and public entities regarding the best sustainability practices that have been adopted. In November 2022, the BC organized the 6th edition of the event, which is available on its [YouTube channel](#).

Finally, to guide its sustainability efforts in procurement and acquisitions, the BCB published the PLS 2023-2024, with the main objectives of:

- Promoting eco-efficiency within the BC;
- Promoting environmental, economic, and social sustainability within the BCB community;
- Reviewing and improving procurement and contracting processes to develop specifications for the acquisition of services and projects that include environmental sustainability criteria;
- Qualifying installations and buildings for better utilization and resource efficiency;
- Establishing partnerships for waste recycling or environmentally responsible disposal;
- Monitoring greenhouse gas emissions related to BC activities with the aim of achieving low-carbon operations;
- Promoting health and well-being; and
- Promoting equity, diversity, and inclusion in the workplace.

# 5

## People

This chapter is dedicated to opportunities identified by the BCB to promote the protection of human rights. In this context, promoting financial citizenship contributes to achieving the BCB's mission, as it encourages conscious consumption, stimulates savings, and contributes to reducing consumer default. Furthermore, topics such as diversity, dignity, equality, equity, health, and well-being are also very important to the BCB.

### 5.1 Education

There are some important sustainability education initiatives in the Agenda BC# Education dimension, as detailed below.

#### 5.1.1 Brazilian Financial Health Index

The Brazilian Federation of Banks (Febraban), in partnership with the BCB, launched the Brazilian Financial Health Index (I-SFB) in July 2021, with annual surveys. The second survey was conducted in April 2022, and the third has taken place this year. It is the largest survey on financial health in the country with more than 5,000 participants.

The I-SFB is a diagnostic tool offered free of charge to citizens to measure their financial health over the years and compare it to the Brazilian average index. The I-SFB is calculated over a scale from 0 to 100 points, with 56 being the average score of Brazilians in 2022. In the first survey, in 2021, the average was 57 points. The 2023 survey results have been released in November 2023.

The I-SFB evaluates financial proficiency, financial security, and financial freedom. Based on the number of points scored, the tool classifies financial health into seven levels: excellent, very good, good, ok, low, very low, and bad.

In addition to the self-diagnostic tool to help the citizens in their decision-making process, the I-SFB is an essential tool to develop public policies in financial education and inclusion and for the design and offering of financial products suitable to citizens' needs. In addition to the survey, any citizen can answer the questionnaire and find out their score free of charge at the [I-SFB webpage \(in Portuguese\)](#).

### 5.1.2 “Aprender Valor” Program

The “Aprender Valor” Program has been devised to support state and municipal education departments and schools in bringing financial education to the classroom in public elementary schools. Following the precepts of the Common Core Curriculum (BNCC), the program was designed to integrate financial education with the mandatory subjects (especially Mathematics, Language and Geography) in a crosscurricular approach.

To date, more than 130,000 education professionals have joined the “Aprender Valor”. Over 1.6 million students are registered on the platform from 22,000 schools in more than 3,000 municipalities. School projects have been downloaded more than 18,000 times. Around 10,000 professionals have been trained and more than 750,000 financial literacy assessments and 837,000 Language and Mathematics assessments have been carried out. In 2022, an impact assessment was carried out, the results of which were released in August 2023. The data showed that students from schools that participated more actively in the program presented a more significant evolution in their financial literacy. The BCB’s Financial Education Program is funded by the Ministry of Justice’s Fund for the Defense of Diffuse Rights (FDD).

### 5.1.3 Publication of a study on the effect of changing the layout of credit card statements

In October 2022, BCB published in the Banking Report a study that investigated the impact of different layouts of credit card statements on the understanding of the product’s terms of use and potentially on the citizen’s payment decisions.

The experiment provided valuable insights into how people understand statements in different formats and how the information displayed influences their decisions. It demonstrated that participants who received invoices with simplified layouts better understood the data presented and were better informed to identify the consequences of accepting revolving credit or paying the invoice in installments.

The results suggest that simplified layouts of credit card statements have the potential to improve understanding of the financial product, encourage better financial decisions and reduce debt. These effects appear to be even greater for people with less education.

### 5.1.4 Financial Information Booklet for Migrants and Refugees

The BCB launched, in June of 2023, the 5<sup>th</sup> version of the Financial Information Booklet for Migrants and Refugees, in [portuguese](#), [english](#), [spanish](#), [french](#) and [arabic](#).

The Booklet is a result of joint effort between the BCB and the MJSP, the UN Agency for Refugees (UNHCR) and the International Organization for Migration (IOM). The document includes general guidelines for migrants and refugees, to make them more familiar with financial systems and Brazilian payments.

The main new features of the new version of the Booklet compared to the previous one are:

- information updating according to the Law 14,286, of December 29, 2021 (New Foreign Exchange Operations Law);
- information about Pix Saque and Pix Troco (money withdrawal and money change using Pix – Instant Payment) and Registrato System reports (that contains personal data about credit operations and other financial activities);
- guidance on registering a bank complaint, if the customer has been a victim of a scam and transferred money via Pix, so that the institution can evaluate the opening of the Special Return Mechanism (MED, acronym in Portuguese).

The Booklet, in the five languages, can be consulted in [Cidadania Financeira \(in Portuguese\)](#).

### 5.1.5 Organizational learning

In order for BCB's employees to develop their technical and behavioral competencies, BCB invests in learning initiatives. In this regard, the following initiatives should be noted: 1) Sustainability Communities of Practice, which include spaces for document sharing, event promotion, and learning opportunities; 2) Exchange of Ideas, in a new virtual format and an expanded event concept for the agile dissemination of cross-cutting knowledge within the organization; 3) Courses offered on Sustainable Finance and related topics.

## 5.2 Financial citizenship

The BCB is involved with promoting financial citizenship, which consists in the exercise of rights and duties that lead citizens to properly manage their resources. The process to achieve financial citizenship comprises financial inclusion and education, financial consumer protection, and the discussion on the SFN. In this Report, financial education programs are presented in section 5.1 and financial inclusion initiatives are detailed in section 6.1, in the chapter on "Prosperity". These are some impacts of the BCB's initiatives in 2022: 782,000 views to the financial citizenship webpage; 76,000 visits to the video series; 1,900 participants in lectures; 7,300 participants in courses and workshops; and 15 Technical Cooperation Agreements in full force to promote financial citizenship.

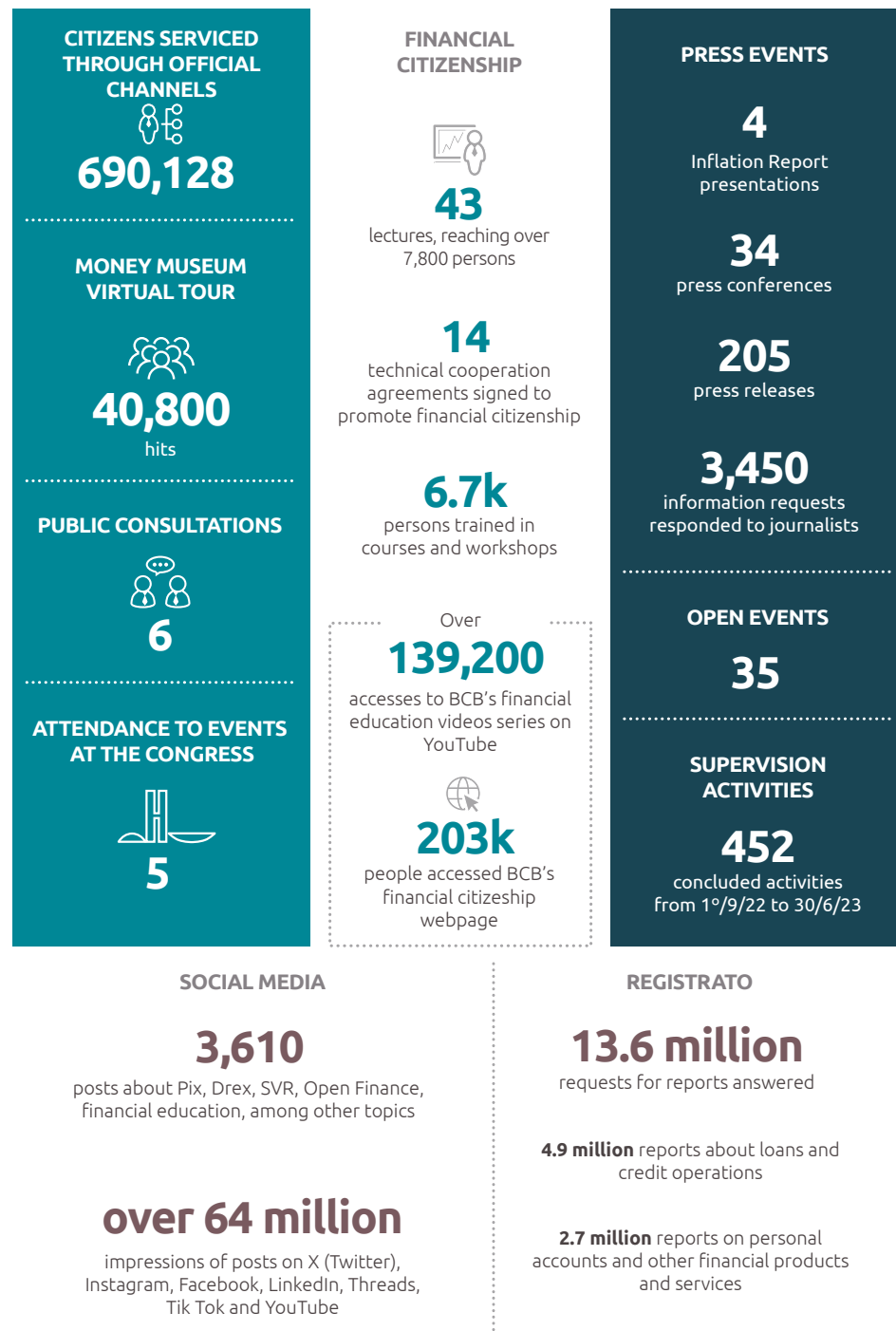
Other financial citizenship initiatives are presented in the [Annual Report](#).

## 5.3 Relationship with society

BCB's relationship with society is carried out directly by citizen service and financial citizenship actions. There is also the attending to the press, regulatory, and supervisory activities. Furthermore, the BCB collaborates with federative entities and public authorities, participates in international organizations, interacts with international portfolio investors, and develops technical cooperation with

national and foreign entities. The BCB also seeks to exchange knowledge with academia and the market.

Figure 9 – Relationship with society



As part of the Digital Transformation Plan, the BCB offers a range of digital services to citizens registered on Meu BC. This portal, launched in April 2023, was designed to facilitate the citizen's journey, by offering all BCB public services in the same place. Simplification of language, audiovisuals, usability, and accessibility were some resources used to improve the user experience.

Another innovation was the introduction of some intermediate pages, which explain what the service offered is and what the purpose of it is, before the citizen makes their demand. The team that created Meu BC carried out research and tests with users and found that most people feel safer if they are well-informed when accessing a service.

The portal implements and deepens parameters established in the Digital Government Law (Law 14,129, of March 29, 2021), which establishes the criteria for offering public services. The law provides for the existence of a National Public Services Base, on the [Gov.BR platform](#), and determines that bodies make a Service Charter available to the User.

## 5.4 Diversity and Inclusion

In March 2023, the BCB launched its Diversity and Inclusion Program (PDI) to reinforce and internally consolidate an inclusive culture for a more powerful and diverse institution.

The program is part of BCB's People Management Master Plan and aligns with the adoption of the ESG model and the organizational values of Social and Environmental Responsibility, Integrity, and Cooperation. It also promotes greater organizational efficiency and effectiveness by harnessing the BCB's diverse capabilities.

The PDI is structured around two central pillars:

- Every person is unique and different from others in various aspects.
- We have all experienced the feeling of exclusion at some point.

In line with these pillars, the program is grounded in the belief that diversity is a discussion for everyone and affects everyone. Therefore, all are invited to participate, and the program must be constructed in a participatory manner.

The key premises of the BCB's Diversity and Inclusion Program are the following:

- Different ways of being and thinking bring different approaches to problem-solving;
- Diversity is a source of creativity and innovation when leveraged;
- For this to happen, everyone needs to feel comfortable being themselves in the workplace.

The PDI will be implemented in three stages, as described below:

### 1. Diagnosis

Survey on experiences of non-inclusion within the organization to gain a better understanding of the context and define the real issues to be addressed. The survey has already been conducted and is currently in the process of analyzing the results for publication.

## 2. Engagement

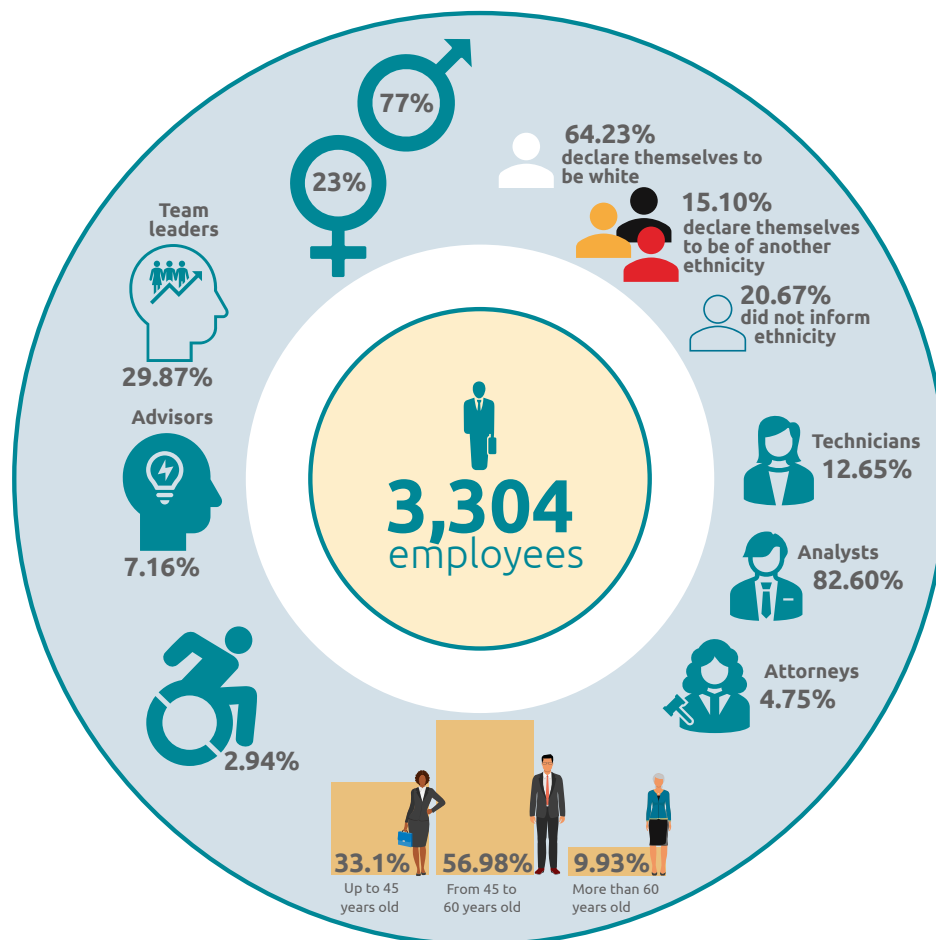
Affinity groups will be formed to discuss and qualitatively delve into the research results.

## 3. Execution

The affinity groups will propose countermeasure actions for the development of the PDI action plan. These actions will be prioritized within the scope of the Strategic People Management Committee (CGP).

Currently, BCB is represented as follows:

Figure 10 – Human Capital in BCB





# 6

## Prosperity

Prosperity is closely linked to the theme of sustainability because it reflects the ability that human beings to have a life marked by continuous development and progress considering social, economic, and technological evolution. All of this is in harmony with the environment, so as to generate development and, at the same time, preserve resources for future generations.

The BCB understands that financial inclusion, innovation, and an increase of competitiveness represent opportunities that contribute to prosperity and the achievement of its mission, since they facilitate access to the financial markets, contributing to the soundness of the SFN and the promotion of society's economic well-being. Furthermore, the strengthening of the relationship with society enhances the credibility of the BCB.

### 6.1 Financial Inclusion

In the "Inclusion" dimension of the Agenda BC#, the actions and initiatives are aimed at facilitating access to the financial market for all: small and large users, investors and borrowers, Brazilians, and foreigners. Having inclusion in the financial system as a premise, the topics of micro-credit, corporativism, convertibility, and capital markets are developed.

Specifically, regarding credit union, it is important to note their considerable growth over the last three years. Between September 2019 and September 2022, the number of cooperative members increased 41.12% while the number of branches increased 49.71% from September 2019 to June 2023. To learn more about the increase of credit unions, further information is [available here](#) (in Portuguese).

The regulatory framework for credit unions was revised and improved in 2022, with the aim of strengthening them. The new legislation makes it easier for credit unions to expand their business, to the benefit of their members and their communities, and to operate in an increasingly developed and competitive financial market. [Read more here \(in Portuguese\)](#).

It should be noted that credit unions are non-profit associations that seek to provide financial services to their members through their mutual structure. The characteristics of these institutions include a collaborative philosophy and a

pursuit of self-sufficiency, which require the balancing of operational efficiency with serving their members' interests. The growth of credit unions is the result of various actions to incentivize their development and insertion throughout the country.

Other recent actions to foster inclusion include: a) Regulatory Resultive Assessment on Cooperative Auditing; b) launching of the cooperative Journey; c) new licensing regulation for financial institutions; and d) new regulation on foreign exchange and international capital. [Read more here.](#)

## 6.2 Innovation and Competitiveness

In the Competitiveness dimension of the Agenda BC#, actions and initiatives seek to ensure an adequate pricing through instruments for competitive access to markets. There are many innovations, driven by technology, which encourage competition and result in democratizing access and increasing financial inclusion. At the same time, there are challenges in reducing barriers, streamlining procedures, and managing risks.

With innovation and competitiveness in the SFN as a premise, Pix, Open Finance, the ESG initiative in the Interdepartmental Working Group (GTI) on Tokenization of Financial Assets and the sustainability dimension in the Laboratory of Financial and Technological Innovations (LIFT), among other projects, are being developed.

### 6.2.1 Consolidation and growth of Pix

In November 2020, the BCB introduced Pix, an instant payment system transforming the country's financial landscape. This innovative platform enables individuals, businesses, and government entities to send and receive payments within seconds, 24 hours a day, 7 days a week, including holidays. Pix promotes access to electronic means of payment, contributes to the digitalization of payments and the economy, promotes financial inclusion, and leverages competitiveness and efficiency with lower financial costs, increased security, and improved customer experience.

Pix can be used in the most diverse payment situations: transfers between individuals, payment of purchases and invoices, payment of taxes and public fees, among other use cases. People can make immediate transfers and payments, schedule transfers and payments for future dates or withdraw money using Pix.

Just over two years since its launch, Pix has become one of the primary means of payment used in the country, responsible for more than 30 billion transactions and the transfer of approximately R\$15 trillion.

In 2021, the BCB introduced Pix Saque and Pix Troco, enabling cash withdrawals and change functionalities, respectively. In 2022, the focus shifted to maintaining and enhancing existing Pix features.

Pix had the remarkable milestone of surpassing 100 Pix transactions per capita in 2022. This means that, on average, each Brazilian makes 100 Pix transactions

annually, a feat that even countries with a decade-long history of instant payments have yet to achieve.

With over 523 million active Pix keys since its launch, 130 million people and 11 million companies have used Pix, and 64 million people who previously didn't use TED (Electronic Funds Transfer) now pay with Pix, demonstrating its power to transform financial systems and empower individuals.

### 6.2.2 Open Finance

The Open Financial System (Open Finance) is the standardized sharing of customer data and services among institutions participating in this arrangement created and regulated by the BCB. Through it, bank account holders can authorize that their data be shared with another participating institution so that they can be offered services. Another possibility is to obtain credit from a certain institution and request that the debit be made from an account in another bank.

Open Finance incentivizes financial systems to be more competitive, efficient, and inclusive, putting the consumer at the centre of this change. Brazil has the largest Open Finance system in the world, both in terms of scope and in the number of participating institutions and consumer consents.

In 2022, the BCB took steps with supervised entities demanding the resolution of problems, that arose in the data sharing phase of Open Finance, mainly related to interoperability, consumption, and data quality.

Open Finance is one of the pillars for building the financial system of the future. It democratizes access to information on financial services and encourages the emergence of new solutions for innovative solutions for offering and contracting financial products and services. Consumers now have control over their data.

By the end of 2022, the Open Finance structure had logged more the 2 billion API calls (allowing interaction between computer softwares to exchange information) and 5.6 million active consents. [Read more \(in Portuguese\)](#).

### 6.2.3 ESG in the Internal Working Group for the Tokenization of Financial Assets

In compliance with the Resolution amending BCB Resolution 273, of December 12, 2022, a new division was created in the Tokenization Internal Working Group to propose recommendations and evaluate the potential impacts of using Distributed Ledger Technology (DLT) technologies in accelerating the development of asset markets linked to sustainable activities. To this end, it considered the following aspects of sustainable tokenization, or linked to ESG factors:

- Comparison between the Brazilian experience and international initiatives, with mapping of activities, agents, and services;
- Analysis of Sandbox and LIFT BC;
- Opening up a forum for debate;
- Impact study on DLT technology, security, and the legal framework; and
- Analysis of risks and opportunities.

The Drex (Brazilian Central Bank Digital Currency) initiative may bring opportunities for the advancement of financial instruments that support the sustainability agenda, stimulating the tokenization of ESG financial assets. By providing a new, standardized, and open infrastructure - for the registration, custody, negotiation, and settlement of assets - Drex may incentivize the emergence of new markets and digital assets related to sustainability, increasing their liquidity, and reducing management costs.

Strengthening the integrity, reliability, and transparency of the infrastructure for operating ESG financial assets linked to sustainable finance stimulates the participation of agents and their liquidity, contributing to negotiations and the proper pricing of these assets.

The Drex platform incorporates emerging technologies and allows for the development of innovative business models that will meet the population's demand for digitally native means of settlement, similar to those available in the cryptoasset ecosystem. An infrastructure based on Distributed Ledger Technology (DLT) with the possibility of registering assets of different natures in the same environment - multi-asset registration is planned to be developed for this platform. This should facilitate trading and increase market liquidity. For example, these assets could be carbon credits, green CPRs, Rural Credit certificates, green bonds, among others.

The representation of these assets through tokens brings a number of potential benefits, such as: i) greater programmability, offering new forms of automation; ii) atomic settlement, where the automated and conditional exchange between tokens reduces counterparty risks; iii) and decentralized registries, which break down information silos; iv) asset fractionation, increasing accessibility for small investors and promoting financial inclusion; v) immediate clearing and settlement; and vi) potential use associated with the Internet of Things, bringing ease and innovation to non-financial markets.

This initiative is in line with the international state of the art. Organizations such as the BIS, World Bank Group (WBG), IDB Bank, International Emissions Trading Association (IETA) and International Organization of Securities Commissions (IOSCO) have been studying and promoting initiatives that seek to integrate DLT technology, smart contracts and the tokenization of assets linked to sustainability, with the aim of increasing the transparency and efficiency of their respective markets, as well as environmental and social integrity.

In summary, Drex platform tends to facilitate the creation of regulated or voluntary markets for assets that support the sustainability agenda. In addition, the ESG Tokenization GTI broadens the scope of the BCB's work on the asset tokenization agenda. It is therefore an opportunity to deepen the discussion and interface with the market on the intersection between the technology and sustainability agendas.

#### 6.2.4 LIFT 2022 and 2023

The LIFT develops prototypes of innovative products. All the projects are proposed by society, making LIFT an open environment with direct participation of people and institutions in the promotion of innovations in the SFN.<sup>28</sup>

In the LIFT Lab, the topic of sustainability is always representative, and in 2023, out of the 95 projects that were presented, 19 had a sustainability aspect. In its first five years of LIFT Lab, 256 project proposals have been submitted to LIFT, with 91 projects selected; and notably 76 projects reached development completion. Moreover, 37% of LIFT Lab finalist projects received investments from the private sector during or shortly after their acceleration, totaling more than BRL400 million. In the 5th edition of LIFT Lab, in 2022, the BCB selected eight projects, but none of which were directly related to ESG themes.

2023 also saw the results of the LIFT Challenge, a challenge developed in 2022 by the BCB to select and develop relevant use cases for the Drex. At the time, a project was proposed through a partnership between Vert (BR), Digital Assets (USA), Oliver Wyman (USA) and DuAgro (BR), for the digitalization and greater transparency in the process of granting credit to rural producers and the subsequent use of this money to buy inputs and machinery. The project proposes an ecosystem in which the rural producer, in order to apply for credit from a financial institution, goes through an onboarding process to validate the documentation and compliance with the green credit criteria. Once the credit has been granted, the producer receives tokens issued by the credit provider to be used on the Drex platform (under development), which can be used at authorized retailers. Once the purchase has been made, the material purchased is validated against the terms of the credit, and the amount in Drex is transferred directly to the merchant. At the same time, the borrower pays the financial institution, under agreed terms.

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28 LIFT Lab was recognized as one of World's Best Innovation Labs 2023 by the Global Finance Magazine.



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