

# Annex to the climate report

Net-Zero targets

Reference: September 2024



## About the annex

In this document, we report our position regarding carbon-intensive sectors, listed by the Net-Zero Banking Alliance (NZBA), along with the respective decarbonization targets and/or sectoral positioning.

As signatories of the NZBA, we understand that success in achieving these targets depends on the collaboration and commitment of all sectors and agents of the real economy.

Achieving the targets set by the Paris Agreement requires a unified approach and concrete efforts from governments, businesses, and individuals to reduce carbon emissions across all activities.

As a financial institution, we remain committed to engaging and supporting our clients in the transition to a low-carbon economy.



# Portfolio decarbonization targets

In compliance with the requirements of the Net-Zero Banking Alliance (NZBA), we disclose our initial targets for the Coal Mining and Power Generation sectors in 2023.

Throughout 2024, we continue to make efforts to deepen our understanding of other sectors, always in line with the Brazilian macroeconomic context.

Setting sectoral decarbonization targets involves challenges such as data quality, available methodologies, the suitability of decarbonization scenarios to the Brazilian context, client commitments, and government objectives.

## Metrics and Methodology

We know that the first step in the decarbonization journey is engagement and raising awareness. To this end, we opted for a portfolio decarbonization approach that prioritizes client engagement, monitoring through the physical intensity metric\*, which considers economic growth and increasing financing to sectors in our portfolio.

Physical intensity measures GHG emissions per unit of product in the sector and, to calculate portfolio intensity, we weigh client intensities by the share of their credit exposures in the selected sectors.

## Base year

We adopted 2022 as the base year for the targets disclosed in this report, following the recommendations of Version 1 of the NZBA guidelines.

## Target Coverage

The targets disclosed in this report cover the lending operations of the expanded corporate credit portfolio, excluding guarantees and sureties.

The physical intensity metric for the different sectors was calculated considering the information and data available from clients who disclose GHG emissions and physical intensity.

To expand the coverage of our targets, we will continue to engage with the real

economy for greater measurement and disclosure of emissions-related data. This progress is essential for achieving sectoral and global targets.

## Decarbonization Curves

The decarbonization scenarios used are primarily projections made by scientific entities such as the Intergovernmental Panel on Climate Change (IPCC), the International Energy Agency (IEA), and the International Aluminium Institute (IAI), which include in their assumptions macroeconomic, regulatory, and technological development aspects to establish a trajectory for reducing carbon emissions by 2050. We considered no or low-overshoot scenarios.

We seek to use sector-specific curves for Brazil, as they consider the particularities inherent to the country's emissions, economic and political profile. However, the availability and coverage of relevant sector segments for each sector are still limited.

According to the scope of the NZBA commitment, targets can and should be updated as better options for measuring impact and progress emerge, always reflecting the real economy.

\*Except for the coal mining sector, for which we have committed to zero financing by 2030

The targets published in this annex were developed based on Version 1 of the Guidelines for Climate Target Setting for Banks of the Net-Zero Banking Alliance, given that the calculation and validation process in our governance began before the release of Version 2, which will be used as the basis for future revisions and new targets.

### Decarbonization Targets\*

NZBA Sectors	Segment(s)	Scopes	Metric	2021 Baseline	2022 Baseline	2030 Target	Reference Scenario
Coal	Mining and thermal power plants	1, 2 and 3	R\$ million	11,0	--	0 (-100%)	-
Power Generation	Generation	1 and 2	kg CO2e/MWh	61	--	23 (-62%)	IPCC SSP 1-1.9 (Brazil)
Aluminum	Production and rolling	1 and 2	t CO2e/t aluminum	--	2,32	2,07 (-11%)	IAI NZE
Cement	Manufacturing	1 and 2	t CO2e/t cement	--	0,59	0,47 (-20%)	IEA NZE
Iron and Steel	Steelmaking	1 and 2	t CO2e/t crude steel	--	1,85	1,13 (-39%)	IEA NZE
Transport	Manufacturing of light vehicles	3	g CO2e/km	--	69,3	52 (-25%)	IEA NZE

For the Real Estate, Agriculture, and Oil & Gas sectors, respecting data availability and the Brazilian context, we are proceeding only with our sectoral positioning, as detailed in the following pages. Bradesco will evaluate the addition of targets for these sectors once the dynamics of data availability and the national context change.

\*The setting of targets and positioning was supported by the external consultant Oliver Wyman.





# Sectoral approach



# First-round targets

Reference: 2023

As part of our learning and evolution process on the Net-Zero Commitment, we reviewed the targets launched at the beginning of 2023 to include metrics and values that allow effective monitoring of sectoral portfolios.

For the coal sector, we replaced absolute emissions by the portfolio's outstanding amount, focusing on the sector financing.

For power generation, we recalculated the target baseline using the same methodology as of other sectors with physical intensity targets, standardizing the approach and systematizing data collection and monitoring.

The transition plan for both sectors was disclosed in our 2023 Climate Report, presenting our proposal for collaboration with companies.

It is worth noting that the scope, monitoring, and progress of the goals can be reviewed annually in line with the evolution of the NZBA guidelines, sectoral advancements, and the dynamics of the real economy.

NZBA Sectors	Segment(s)	Scopes	Metric	2021 Baseline	2022	2023	2030 Target	Reference Scenario
Coal	Mining and thermal power plants	Direct and indirect emissions (Scopes 1, 2, and 3)	R\$ million	11,0	21,3	14,7	0	--
Power Generation	Generation	Direct emissions (Scopes 1 and 2)	Intensity (kgCO <sub>2</sub> e/ MWh)	61	90,6	84,4	23	IPCC SSP1-1.9



## Coal

Following the decarbonization curves from references such as the IEA, Bradesco has established a plan to cease financing to coal mining companies and coal-fired power plants by 2030<sup>1</sup>.

Recognizing our role in promoting the gradual replacement of coal as an energy source in Brazil, we will seek a socially and economically sustainable process for this transition. We will support our clients who depend on coal by financing initiatives that ensure a just transition for their activities.



## Power Generation

The power generation sector in Brazil has a significant share of renewable sources, representing 88% of the electricity matrix<sup>2</sup>, compared to 29% in the global matrix<sup>3</sup>.

However, dependence on hydroelectric sources makes the system vulnerable to droughts, reducing energy generation and leading to the activation of thermal power plants.

Our strategy for the sector is based on engaging and financing clients in their decarbonization journey, as well as diversifying energy sources, including support in the preparation and reporting of available emissions data.

1. The target covers companies that obtain more than 5% of their revenue from these activities and focuses on companies that are part of the supply chain of coal-fired electricity, in accordance with NZBA requirements;

2. [Energy Research Office \(EPE\)](#); 3. [International Renewable Energy Agency \(IRENA\)](#)



Sector	Segment	Scopes	Metric	2022 Baseline	2030 Target	Reference Scenario
Aluminum	Production and rolling	Direct emissions (Scopes 1 and 2)	Intensity (tCO <sub>2</sub> e/t of aluminum)	2,32	2,07 (-11%)	IAI NZE

Global aluminum production, essential for sectors such as transportation, construction, and packaging, has nearly tripled in the last two decades<sup>4</sup>. Currently, it occurs through two routes:

Primary route: bauxite beneficiation, power intensive.

Secondary route: scrap smelting, with emissions representing 3% of the total emitted by the primary route<sup>5</sup>.

About 90% of the sector's GHG emissions are in scopes 1 and 2, with alumina electrolysis and the use of furnaces for bauxite smelting being the most carbon intensive stages.

In Brazil, due to the predominantly renewable electricity matrix, the emission intensity is equivalent to 33% of the global average<sup>6</sup>. Thus, our effort to drive decarbonization with clients in the sector will focus on direct emissions from their operations.

The main strategies include reducing emissions from thermal energy and chemical reactions, using technologies such as inert anodes, low-carbon hydrogen, increased scrap recovery, and the use of carbon capture, utilization, and storage (CCUS) technologies.

The feasibility and impacts of these technologies are expected to grow after 2030.



Sector	Segment	Scopes	Metric	2022 Baseline	2030 Target	Reference Scenario
Cement	Manufacturing	Direct emissions (Scopes 1 and 2)	Intensity (tCO <sub>2</sub> e/t of cement)	0,59	0,47 (-20%)	IEA NZE

Cement is fundamental for modern infrastructure and vital for construction. Its emissions are concentrated in Scope 1, especially in the production of clinker, which accounts for about 60% of emissions.

Although the IEA predicts a stabilization of global production by 2030<sup>7</sup>, in Brazil, an increase in demand is expected to meet the housing and infrastructure deficit<sup>8</sup>. To decarbonize the cement industry, alternatives include replacing clinker with waste and additives, as well as substituting fossil fuels and part of the limestone with other raw materials.

Decarbonization scenarios also consider technologies such as CCUS to leverage emission reductions. However, these technologies are projected to reach significant scale after 2030 and, from 2040, the electrification of kilns and the use of hydrogen are expected to be viable<sup>9</sup>.

4. [International Aluminium Institute](#); 5. [European aluminium](#); 6. [World Economic Forum](#); 7. [IEA](#); 8. [Roadmap tecnológico do cimento \(SNIC\)](#); 9. [Getting to Net Zero - Global Cement and Concrete Association \(GCCA\)](#)

## Iron and steel

Sector	Segment	Scopes	Metric	2022 Baseline	2030 Target	Reference Scenario
Iron and Steel	Steelmaking	Direct emissions (Scopes 1 and 2)	Intensity (ton CO <sub>2</sub> e/ton steel)	1,85	1,13 (-39%)	IEA NZE

Steel is widely used in sectors such as civil construction and machinery manufacturing, including renewable technologies like wind turbines and solar panels. Iron and steel production accounts for about 8% of global emissions<sup>10</sup> and occurs through two main routes:

**Blast Oxygen Furnace (BOF):** A carbon-intensive process that uses coal.

**Electric Arc Furnace (EAF):** Uses steel scrap or reduced iron and electricity as the main energy source.

In Brazil, although 75% of steel production is done by the BOF method, its emission intensity is lower than in other countries due to the use of charcoal by some

producers. Production via EAF is also less intensive in Brazil thanks to the predominantly renewable power matrix<sup>11</sup>.

Despite the potential to increase scrap usage, currently at 30%<sup>12</sup>, the sector faces challenges in establishing a viable decarbonization route, given the low technological maturity and high implementation costs of the main alternative routes. Decarbonization technologies under development include increasing the share of the EAF route, using low-carbon hydrogen, and carbon capture, utilization, and storage (CCUS).

Despite the difficulties for implementation by 2030, major companies in Brazil have committed to decarbonization by 2050.

## Transport

Sector	Segment	Scopes	Metric	2022 Baseline	2030 Target	Reference Scenario
Transport	Manufacturing of light vehicles	Indirect emissions (Scope 3)	Intensity (gCO <sub>2</sub> e/km)	69,3	52 (-25%)	IEA NZE

In 2022, GHG emissions from road transport in Brazil accounted for about 9% of the country's total emissions<sup>13</sup>, highlighting the importance of this mode in the national fleet.

Globally, electrification and public policies encourage the decarbonization of road transport, especially light vehicles. In Brazil, despite recent movements to boost electric vehicles, their representation is still expected to be low by 2030 compared to Europe and the United States<sup>14</sup>, due to high prices, a relatively new fleet and lack of charging infrastructure.

A competitive advantage in Brazil is the high representation of flex-fuel vehicles (which allow the use of both gasoline and ethanol) and the low emission intensity of national ethanol (based on sugarcane). National policies such as the Route 2030 Program<sup>15</sup>, which sets efficiency targets for engines, and the Green Mobility and Innovation Program (MOVER), which encourages the production of hybrid and electric vehicles, are important in this journey<sup>16</sup>.

Thus, the decarbonization of the light vehicle fleet in Brazil by 2030, our target, will result from a combination of increased use of biofuels which, according to current expectations, will play the leading role along with the growth in electrification of the light vehicle fleet in the country.

10. [Steel industry net-zero tracker – WEF](#); 11. [Decarbonizing Brazil's Steel, Aluminium and Aviation Sectors – WEF](#); 12. [Brazilian Association of Metallurgy, Materials and Mining \(ABM\)](#);

13. [Greenhouse Gas Emissions and Removals Estimation System – SEEG](#); 14. [Brazilian Association of Automotive Vehicle Manufacturers \(ANFAVEA\)](#); 15. [Route 2030 – MDIC](#); 16. [International Council on Clean Transportation \(ICCT\)](#);





## Real estate

The real estate sector accounts for about 37% of global GHG emissions, of which 73% result from the energy consumed by buildings<sup>17</sup>. In Brazil, the main source of energy used by buildings is electricity<sup>18</sup>, which in turn is predominantly renewable, leading to low emission intensity from the use of buildings.

Given the peculiarities of the real estate in Brazil, it will be necessary to adapt the decarbonization curves to the Brazilian reality for target setting in the sector, in addition to deepening the information on emissions associated with real estate financing portfolios. We are striving to improve data collection and reduce sector emissions through our financing line for real estate projects with efficiency certifications and socio-environmental quality standards (LEED, AQUA, and EDGE).

Furthermore, the decarbonization target for power generation and financing for solar energy should help reduce emissions from the use of buildings. Also, the targets for the cement and iron and steel sectors should contribute to the decarbonization of the construction phase.



## Agriculture

In Brazil, the diversity of biomes and production systems makes measuring emissions in this sector challenging. International methodologies often do not consider tropical particularities, such as management techniques that remove carbon, which can impact the sector's emissions assessment<sup>19</sup>.

Currently, there is insufficient data availability or specific methodologies to calculate financed emissions or viable decarbonization scenarios for major crops, making it unfeasible to implement a target aligned with the real economy and the Brazilian context.

In this context, to advance this agenda and promote progress in Brazil, we are developing a project in partnership with Fundação Getúlio Vargas - FGV Agro and other Brazilian banks to generate emission factors and national scenarios, aiming to estimate financed emissions and set decarbonization targets for soy, corn, and beef cattle, considering medium and long-term removal alternatives.

Once these barriers are overcome, the Brazilian banking sector will be able to set targets aligned with science and the sector's reality with these efforts.



## Oil and gas

Brazil is well-positioned in the transition of its energy sector, given the relevance of renewable sources in both its power matrix, which is about 90% renewable, and its energy matrix, which is almost 50% renewable. Within the power matrix, oil accounts for only 6% of generation, much lower than observed in the global power matrix<sup>20</sup>.

Additionally, Brazil is among the largest producers of biofuels in the world, with high expectations to be one of the leaders in the green hydrogen market.

We are committed to the sector's decarbonization agenda and will continue to engage, monitor, and assess the appetite of major companies, ready to support them in this decarbonization journey, aligned with the Brazilian economic context and the technological and efficiency advancements necessary for emission reductions.

# Challenges on the path to Net Zero

The transition to a low-carbon economy is a long-term journey, but it demands immediate attention and actions.

At the current maturity stage of this journey, we deal with the limited availability of climate-related data at various levels (sectoral, economic groups, clients, and granular), making it necessary to use provisional data, assumptions, and models until more granular and higher-quality information becomes available.

For this reason, this document includes metrics subject to uncertainties resulting from the limitations inherent to of the type of data used and the methods employed, which are evolving, making it difficult to compare financial institutions.

Thus, we recognize the need and reserve ourselves the right to update the information and targets contained in this document during the review process in the coming years, as provided by the NZBA guidelines, taking into account science and the most current information available.





