



2019 CBA
Annual Report

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MESSAGE FROM THE BOARD OF DIRECTORS



Despite the challenging conditions in 2019 – both in the global economy and in the aluminum market in particular –, at CBA we remained focused on our **long-term strategy** of building a sustainable Company, creating value for stakeholders across the aluminum chain, and achieving higher levels of competitiveness.

Among the initiatives supporting delivery of our strategy is CBA 4.0, a large-scale program that saw significant progress in 2019, with much more still to come. Through CBA 4.0 we are investing in technology and working to firmly embed a digital mindset in our culture.

Another aspect of our strategy that has evolved is sustainability, in which we made important progress in the year: we created a dedicated sustainability department and committee, and joined the United Nations Global Compact. But our most significant achievement in the year was **CBA's certification against the Aluminium Stewardship Initiative (ASI) Performance Standard and Chain of Custody (CoC) Standard**. CBA has become the first Brazilian company to offer sustainable aluminum that is certified across the aluminum value chain.

Through these combined efforts, we successfully navigated the headwinds in the global economy and aluminum market, and kept the Company on course and **stronger than ever**. These are achievements that few others can claim, and have made us better poised for the future. In the coming years we aim to further expand our share of the domestic aluminum market vis-à-vis imported products, especially in the packaging and transportation segments, helping to strengthen local industry while also growing our presence across the Americas. CBA's growth has been planned so that it is sustainable and supported by efficient and more technology-intensive operations and highly engaged teams.

This is #ourCBA!

Luis Ermírio de Moraes

Chairman of the Board of Directors, Companhia Brasileira de Alumínio (CBA)

GRI 102-14

MESSAGE FROM THE CEO



Aluminum solutions that transform people's lives. This is CBA's purpose, as unveiled in 2019. It expresses our aspiration to build valuable partnerships with our different stakeholders, including customers, suppliers, shareholders, the communities where we operate and our employees, with a focus on creating shared value.

CBA's purpose reflects our approach to doing business and our history – the journey that has taken us where we are, **underpinned by 65 years** of successful operations and a pioneering spirit that has led us to deploy the best and most advanced technologies in our operations and interactions. It is also deeply connected to our strategy and our efforts to lead CBA on a sustainable and responsible journey.

In 2019 we embarked on a program toward digital transformation. We engaged the entire organization in working together to build the needed skill sets and actively identify new opportunities. Significant projects using **industry 4.0** technologies delivered improvements across aspects such as costs, the environment, safety, product quality, co-development with customers, and process simplification.

CBA's efforts earned us several accolades in the year, two of which in particular have been a source of pride for our team. We received **international ASI certification** attesting that our aluminum-making process is sustainable—from mine to final product, and we were ranked as one of the **150 Best Workplaces in Brazil by Great Place to Work**. In addition, we were positioned among the companies with the highest organizational climate favorability ratings in Brazil,

and were among the top 10% in the Korn Ferry Climate Survey. Korn Ferry also ranked CBA as one of the top companies in the world for “engagement and enablement”, in a survey that polled more than seven million employees worldwide.

In terms of results, adjusted EBITDA rose 3% compared to 2018, totaling R\$ 861 million. Net Revenue decreased 3% in 2019 to R\$5.3 billion, reflecting the global economic slowdown, contracted demand in the aluminum supply chain, and repercussions from the US-China trade war, which drove a 15% drop in LME aluminum prices.

Despite the adverse market conditions, we maintained our focus on CBA's **long-term strategy**, which in 2019 included the acquisition of a rolling mill in Itapissuma (PE), northeastern Brazil. The new facility will add to CBA's range of foil and sheet products and improve the competitiveness of locally produced products against imports, while also strengthening our position in aluminum markets in the Americas.

In closing, I would especially like to thank our employees for a highly productive year. Our people are at the heart of everything we do and deserve much of the credit for the progress we achieved in the year. We will continue working together each day to build #OURCBA—a more competitive, robust, modern, partnership-oriented, technology-intensive and sustainable Company.

Ricardo Carvalho

CEO, Companhia Brasileira de Alumínio (CBA)

Controllership Office – Aluminum Plant (SP)



02 ABOUT THIS REPORT



Mirai Mining (MG)

About this Report

The 2019 Companhia Brasileira de Alumínio (CBA) Annual Report describes our businesses' and operations' key strategies and activities between January 1st and December 31st across the environmental, social, economic and operational dimensions. This report has been prepared in accordance with the Global Reporting Initiative (GRI) Standards, under the Core option. The contents of the report are organized by CBA's material topics and correlated with the Integrated Reporting <IR> capitals. Each chapter also references the material topics and Sustainable Development Goals (SDGs) that are relevant to its content.

This report has been independently assured by PwC to ensure transparency and integrity.

To submit any questions, suggestions or comments, please contact the annual report team by email to comunicacaocorp-cba@cba.com.br

Materiality Exercise

The material topics presented in this report were selected in a materiality exercise conducted in 2017 for our aluminum

operations, in a process that engaged our leaders, employees and external stakeholders listed in the CBA stakeholder map, including customers, financial institutions and local communities. These surveys were supplemented by industry research, Company documentation, and benchmarking against local and global aluminum industry players. The key topics identified by strategic stakeholders in the materiality exercise were compiled as material topics for the report.















CBA stakeholders

A stakeholder is any party within the value chain that can affect or be affected by CBA. Our most significant stakeholders include: employees, customers, local communities, governments, industry associations, financial institutions, investors, suppliers, Votorantim S.A and the Votorantim Institute.

CBA engages with stakeholders based on a prioritized map of strategic sectors established by our Communications department. Our stakeholder engagement initiatives include employee climate surveys, customer visits and workshops, and initiatives geared to communities and local governments, which we describe throughout the report.

Our material topics

GRI 102-44, 102-46, 102-47

	CBA Material Topic	Related GRI disclosures	Related SDGs	SDG target used to establish linkage with material topic
ENVIRONMENT	Sustainable mining Monitoring and mapping the impacts of bauxite mining on biodiversity; reclaiming mine sites; and relations with land owners	304: Biodiversity (2016)*, MM1 and MM2		15.5: Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species
	Dam safety and waste management Waste management and treatment and mechanisms for monitoring dam safety	306: Effluents and Waste (2016)* and MM3		12.5: By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse
	Eco-efficient production Processes and investments to reduce consumption of water and energy in our production processes, and minimize greenhouse gas and other atmospheric emissions	302: Energy (2016)		
		303: Water (2018)		6.3: By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally 6.4: By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity
		305: Emissions (2016)		13.2: Integrate climate change measures into national policies, strategies and planning 13.3: Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning
		PEOPLE	Business ethics, compliance and resilience Corporate governance and financial performance that ensure business continuity and value creation for stakeholders	201: Economic performance (2016)
202: Market Presence (2016)	8.6: By 2020, substantially reduce the proportion of youth not in employment, education or training			
205: Anti-corruption (2016)				16.5: Substantially reduce corruption and bribery in all their forms
307: Environmental compliance (2016)				16.6: Develop effective, accountable and transparent institutions at all levels
412: Human rights assessment (2016)				16.3: Promote the rule of law at the national and international levels and ensure equal access to justice for all
419: Social and economic compliance (2016)				16.6: Develop effective, accountable and transparent institutions at all levels
Social license to operate Engaging with communities near our operations and supporting regional development, and creating reputational value for CBA	202-1 Ratios of standard entry level wage by gender compared to local minimum wage			8.5: By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value
	203: Indirect economic impacts (2016)			4.4: 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
	413: Local communities (2016) * and MM7			4.1: By 2030, ensure that all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and effective learning outcomes 4.2: By 2030, ensure that all girls and boys have access to quality early childhood development, care and pre-primary education so that they are ready for primary education 4.c: By 2030, substantially increase the supply of qualified teachers, including through international cooperation for teacher training in developing countries, especially least developed countries and small island developing States
				
Integrity and employee well-being Efforts to protect the physical integrity of our employees, and initiatives to improve quality of life	403: Occupational health and safety (2018)			8.8: Protect labor rights and promote safe and secure working environments for all workers, including migrant workers, in particular women migrants, and those in precarious employment
				3.1: By 2030, reduce the global maternal mortality ratio to less than 70 per 100,000 live births 3.5: Strengthen the prevention and treatment of substance abuse, including narcotic drug abuse and harmful use of alcohol 3.8: Achieve universal health coverage, including financial risk protection, access to quality essential health-care services and access to safe, effective, quality and affordable essential medicines and vaccines for all
FUTURE	Strengthening the aluminum industry Engaging with industry associations and civil society to contribute to the growth of the industry, and working to expand reverse logistics and recycling capacity in the aluminum value chain	301: Materials (2016)		9.4: By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities
				12.2: By 2030, achieve the sustainable management and efficient use of natural resources
	Innovation and customer satisfaction Innovative processes and products delivering sustainable value, and product co-creation with customers	CBA topic: Innovation and customer satisfaction		9.4: By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities 9.5: Enhance scientific research, upgrade the technological capabilities of industrial sectors in all countries, in particular developing countries, including, by 2030, encouraging innovation and substantially increasing the number of research and development workers per one million people and public and private research and development spending

* These material topics include disclosures from the Mining and Metals Sector Supplement (GRI G4).



Material themes in the chapter

Financial and manufactured capital

SDG

8

03 #OURCBA

2019 AT A GLANCE



INVESTMENT

R\$ 38 million
in innovation and technology

R\$ 43 million
in environment

R\$ 16 million
in safety

R\$ 6 million
in social initiatives

R\$ 7 million
in the *Legado das Águas*
and *Legado Verdes do*
Cerrado nature reserves



PEOPLE

4.800
direct employees

Among the
150 Best
Companies
to Work for in Brazil,
by GPTW



PRODUCTION

1.88 million
metric tons of bauxite
processed

323 thousand
metric tons of smelting
production

357 thousand
metric tons of aluminum
products*

98%
of electricity requirement
self-generated



FINANCIAL RESULTS

R\$ 5.3 billion
in net revenue

R\$ 861
million
in adjusted EBITDA

*Aluminum Plant (Upstream and Downstream) + Metalex



Ranked among the best

In 2019 CBA was named Company of the Year in the Minerals Industry, in the Nonferrous Minerals category, for the third year running. The awards were presented by trade journal *Brasil Mineral* to companies selected through a direct vote of journal subscribers.



Casting area at the Aluminum Plant (SP)

Who we are

Founded in 1955, Companhia Brasileira de Alumínio (CBA) is a vertically integrated, sustainable producer of high-quality aluminum products. With hydroelectric generation capacity for 100% of our energy requirement, CBA's operations span both bauxite mining and processing into primary aluminum (ingots, plate sheets, billets and rod*) and semi-fabricated products (caster rolls, sheet, foil, extruded profiles and parts and components). Working closely with customers, CBA also develops tailored solutions and services, primarily for the packaging, automotive and transportation markets, helping customers to produce more lightweight, durable and sustainable products.

The Company also works to strengthen the aluminum industry by engaging with industry associations and local and international organizations supporting the sustainability of the aluminum value chain, participating in customer and consumer segment events in partnership with universities and research institutes, and attending industry conferences and trade shows in Brazil and around the world.

GRI 102-2, GRI 103-3 – 301 Materials

*The rod casting step is handled by a partner.

Mirai Mining (MG)

Where we are

CBA directly manages the following operations and facilities: Corporate Office, Aluminum Plant (SP), Mining facilities, the Metalex plant, the Sorocaba Facility, a Distribution Center, Nickel Business operations and, the newly acquired, Itapissuma Plant (PE). The Company is headquartered at our Corporate Office in São Paulo. CBA's plant in Alumínio (SP), a city in São Paulo State, houses our core aluminum-making operations, and is supplied with bauxite ore from mines in the Southeast state of Minas Gerais and the Midwest state of Goiás. The Metalex plant in Araçatiguama (SP) is dedicated to recycling aluminum scrap, while the Sorocaba facility provides machining services, especially for CBA's units. Our Distribution Center operations in Caxias (RS) continues its operation, while the Distribution Center operations in Rio de Janeiro were wound up. The Nickel Business—which includes operations in Niquelândia (GO) and São Miguel Paulista (SP)—remained under a temporary shutdown due to unfavorable macro-economic and market conditions.

The acquisition of Itapissuma Plant, that used to be Arconic Indústria e Comércio de Metais Ltda, was announced in 2019 for US\$ 50 million. The deal was completed on February 1st, 2020. The facility, located in Itapissuma (PE), has a production capacity of 50,000 metric tons per year of foil and sheet that will add to CBA's range of flat-rolled products and improve the competitiveness of locally produced products against imports. The new operation is the leading producer of packaging foil in Latin America, with a portfolio of high value-added products such as extra thin foil for aseptic packaging and thin and medium foil for flexible packaging applications. It also supplies industrial sheet products for high value-added market niches, such as electric transformers, automotive gaskets and components, and special alloys.

CBA also has 20 hydropower plants that are operated by Votorantim Energia, supplying electricity to its Aluminum Plant. In addition, CBA owns the *Legado Verdes do Cerrado* reserve and co-funds the *Legado das Águas* reserve, both managed by Reservas Votorantim.

GRI 102-3, 102-9



Itapissuma
Plant (PE)

In early 2020, CBA completed the acquisition of a unit in Itapissuma (PE), which is leader in Latin America in sheet production for packaging and aluminum sheets.

Our operations

Administrative units

- **Corporate Office**
São Paulo (SP)
- **Distribution Center**
Caxias do Sul (RS)

Mining facilities

- **Itamarati de Minas Mining**
Itamarati de Minas (MG)
- **Miraí Mining**
Miraí (MG)
- **Poços de Caldas Mining**
Poços de Caldas (MG)
- **Barro Alto Mining¹**
Barro Alto (GO)
- **Alumina Rondon²**
Rondon (PA)

¹ Operated by a partner.
² Currently under licensing.

Industrial plants

- **CBA plant**
Alumínio (SP)
- **Sorocaba Facility**
Sorocaba (SP)
- **Metalex**
Araçariguama (SP)
- **Niquelândia**
Niquelândia (GO)
- **São Miguel Paulista**
São Paulo (SP)
- **Itapissuma Plant**
Itapissuma (PE)³

³ Acquisition concluded in 2020.

Nickel Business⁶

- **Niquelândia**
Niquelândia (GO)
- **São Miguel Paulista**
São Paulo (SP)

⁶ Under a temporary shutdown.

Legacy reserves⁴

- **Legado das Águas**
Miracatu (SP)
- **Legado Verdes do Cerrado**
Niquelândia (GO)

⁴ Managed by Reservas Votorantim.

Hydropower dams⁵

- | | |
|--|---|
| • Iporanga
Juquiá (SP) | • Itupararanga
Votorantim (SP) |
| • Serraria SHP
Juquiá (SP) | • Barra Grande
Pinhal da Serra (RS) |
| • Porto Raso SHP
Tapiraí (SP) | • Campos Novos
Campos Novos (SC) |
| • Barra
Tapiraí (SP) | • Canoas I
Cândido Mota (SP) |
| • Alecrim
Miracatu (SP) | • Canoas II
Palmital (SP) |
| • Fumaça
Ibiúna (SP) | • Machadinho
Piratuba (SC) |
| • França SHP
Juquitiba (SP) | • Piraju
Piraju (SP) |
| • Jurupará SHP
Piedade (SP) | • Salto Pilo
Apiúna (SC) |
| • Santa Helena SHP
Votorantim (SP) | • Salto do Rio Verdinho
Caçu (GO) |
| • Votorantim SHP
Votorantim (SP) | • Ourinhos
Ourinhos (SP) |

⁵ Managed by Votorantim Energia.

VALUE CREATION MODEL

INPUTS

- Negotiations with landowners to lease mining land
- Asset maintenance
- Purchased raw materials, services and inputs
- Investment in modernization and technology



Financial Capital

- Research and development of new technologies
- Innovation and co-creation to develop new products and services
- Collaboration with education and research institutions to drive innovation



Intellectual Capital

- Investment in social programs for community development through participatory planning
- Relations with trade associations, customers, the media, governments and other stakeholders



Social and Relationship Capital

- **Aluminum Business:** 4 bauxite mines¹, 1 integrated aluminum plant (from alumina to semi-fabricated products), 1 aluminum foil and sheet facility in Itapissuma², 1 distribution center, 1 scrap recycling facility (Metalex), 1 machining facility (Sorocaba)
- **Nickel Business:** 1 mine and 1 plant, both under a temporary shutdown
- 20 hydropower plants supplying power to the Aluminum plant³
- 2 private reserves: Legado das Águas ("Water Legacy")⁴ and Legado Verdes do Cerrado ("Cerrado Green Legacy"), both managed by Reservas Votorantim
- 6 dams⁵
- **Corporate office**



Manufactured Capital

- Direct and third-party employees
- Students and researchers working in-house on Company projects in collaborations with education and research institutions



Human Capital

- Land for our operations, especially mine operations
- Mined bauxite ore
- Water resources for our operations and hydropower plants



Natural Capital

1. Mining

Bauxite is extracted at our mines in accordance with best practices that ensure the land is restored to the same or better than original conditions, for use in farming activities after the mine is decommissioned



2. Bauxite receipt

After it is washed and crushed at the Mining facilities, bauxite ore is carried in trucks to a rail terminal, and from there by rail to the Alumínio Plant (SP). There, the ore is unloaded and the bauxite is separated according to its physical and chemical properties



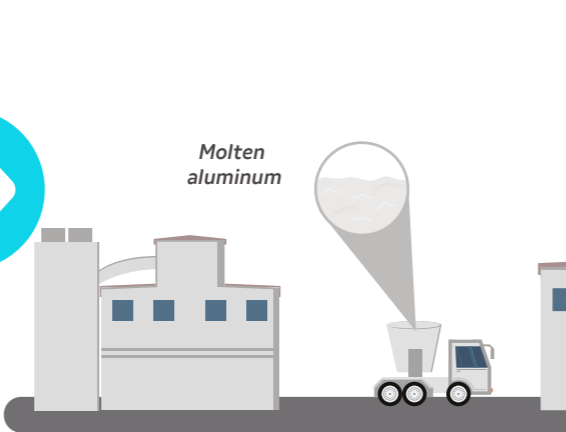
3. Alumina Refinery

At the Refinery, aluminum oxide (alumina) is extracted from the bauxite using the Bayer process, in which the ore reacts with caustic soda at high temperature and pressure



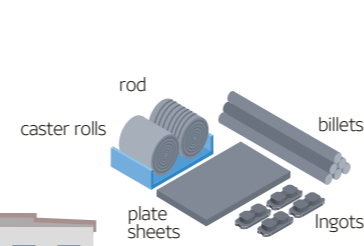
4. Smelters

Molten aluminum is produced through electrolytic smelting of the aluminum oxide



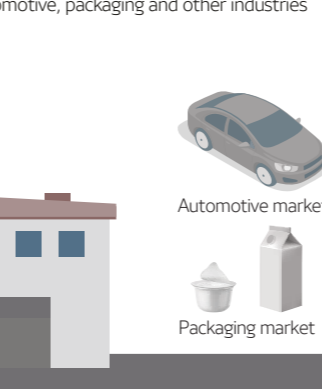
5. Casting

Alloy elements and scrap are added to the molten aluminum in the furnaces as needed, and the product is then cast into different shapes



6. Downstream

Cold and hot milling, extrusion and surface treatment processes transform primary products into higher value-added products co-developed with customers, enhancing our portfolio with customized solutions used in the automotive, packaging and other industries



ALUMINUM SOLUTIONS THAT TRANSFORM PEOPLE'S LIVES

Our aspirations

Our results generate increasing returns on investment through sustainable business and a strategy that creates value for our customers, suppliers, employees and communities.

Our customers recognize us as a trusted company that creates valuable partnerships, offers differentiated products and services, and delivers innovative solutions.

Our employees have Company pride and are recognized and valued by inspiring leaders.

The capitals

The term 'capital' is used in economics to describe any asset that creates value over time, including not only financial but also intangible assets such as an organization's reputation, training and knowledge creation. These are all part of an organization's sources of wealth. In this Value Creation Model, capitals are divided into financial, intellectual, social and relationship, manufactured, human and natural capital, as outlined in the Integrated Reporting <IR> framework. Resources invested in each of the capitals are transformed by CBA through our production process, and then return to society in the form of results, thereby creating value.



SDGs

To the right of the Value Creation Model, our results in each capital are correlated with the 17 UN Sustainable Development Goals (SDGs)—an ambitious plan of action for people, planet and prosperity. The 17 SDGs are listed below:



OUTPUTS



Financial Capital
SDG 8

- R\$ 5.3 billion in net revenue
- R\$ 861 million in adjusted EBITDA



Intellectual Capital
SDG 9

- R\$ 38 million invested in innovation and technology
- Modernization using technologies such as artificial intelligence, robotization, connectivity and process automation
- A digital mindset for the CBA 4.0 Journey
- Innovation workshops with universities, institutions, customers and partners
- Capacity building and training for employees, including training on digital platforms and using virtual reality technology
- Ranked as one of the 100 companies deploying IT in the most innovative ways in the IT Midia awards
- Patents for projects and products



Social and Relationship Capital
SDG 1 2 6 8 10 11 16

- R\$ 6 million invested in social initiatives
- Transparent relations with stakeholders
- Corporate social responsibility projects across three pillars: Education Development, Public Management Support and Economic Development
- 704 employees working as volunteers in social programs
- More than 1,400 people involved in emergency drills in Zona da Mata and Alumínio
- Customer awards (a Material Supplier Award during the Honda Supplier Conference, and a best supplier award for Quality from Denso)



Manufactured Capital
SDG 7 8 9 12

- 1.88 million metric tons of bauxite processed
- 323,000 metric tons of smelting production
- 357,000 metric tons of aluminum products*
- 98% of electricity requirement from renewable sources
- Products for the automotive, packaging and transportation markets as well as growth markets where there are opportunities for aluminum
- Approximately 81,000 metric tons of internal aluminum scrap and 67,000 metric tons of external scrap recycled

*CBA Plant (primary and semi-fabricated) + Metalex



Human Capital
SDG 3 5 8 10

- 4,800 direct employees
- 1,327 fixed third-party employees
- R\$ 16 million invested in occupational safety
- Zero fatalities, and a lost-time and no-lost-time injury frequency rate of 1,75
- CBA was ranked as one of the 150 Best Workplaces in Brazil by Great Place to Work, and won a Korn Ferry Engaged Performance Award
- A commitment to initiatives focused on diversity
- Human rights due diligence to minimize risks in our operations



Natural Capital
SDG 3 6 14 15

- Certification against the ASI Performance Standard and Chain of Custody (CoC) Standard, with CBA becoming the first aluminum producer in the Americas to concurrently certify three mining operations (Mirai, Poços de Caldas and Itamarati de Minas), a fully integrated industrial plant (Alumínio) across all product types—billets, ingots, sheet, flat-rolled products and anodized and coated extruded profiles—and our Corporate Offices in São Paulo. Certified operations: Corporate Office; Mirai, Poços de Caldas and Itamarati de Minas mines; and Integrated Plant (Alumínio)
- R\$ 43 million in environmental investment
- Joined the Global Compact and committed to initiatives supporting the SDGs
- Targets set for 2025 to reduce greenhouse gas emissions, water withdrawal and waste disposal
- Aluminum Lifecycle Assessment developed
- Greenhouse gas emissions assured. Only 2.56 t CO2e/t of smelting production (Scope 1 and 2), compared to a global average of 12 t CO2e/t
- R\$ 7 million invested in the Legado das Águas and Legado Verdes do Cerrado nature reserves

1. Three mines are operated by CBA (Mirai, Itamarati de Minas and Poços de Caldas – MG) and in one CBA has mining rights but the mine is operated by a partner (Barro Alto-GO). CBA also has a mine project under licensing in Rondon (PA).
2. The acquisition of the Itapissuma facility was concluded in February 2020.
3. The plants are part of CBA's manufactured capital, but are managed by Votorantim Energia. For this reason, employees at these units are not accounted for as part of our human capital.
4. Legado das Águas is co-funded with other Votorantim portfolio companies. Employees at these units are not accounted for.
5. Two dams are for water impoundment, two are mine tailings dams, and two are industrial waste tailings dams. All dams have been built in a single step or have been either downstream- or centerline-raised.



Casting Area at the Aluminum Plant (SP)

Our Aspiration



Our results generate increasing returns on invested capital through sustainable business and a strategy that creates value for our customers, suppliers, employees and communities.



Our customers recognize us as a trusted company that establishes valuable partnerships, offering differentiated products and services and delivering innovative solutions



Our employees have Company pride and are recognized and valued by inspiring leaders

Potential to go beyond

We aspire to build a competitive and sustainable business that generates positive impact for shareholders, customers, suppliers, employees, the environment and society. How can we continue to meet this aspiration into the future, in such a rapidly changing business environment? The answer, of course, is by investing in technology—modernizing our processes and equipment, creating new solutions and preparing our people for an increasingly digital world. This journey of **cultural transformation**, known internally as “CBA of the Future”, was launched in 2017 and has required a disruptive process of rethinking our approach to ensure the Company is increasingly **agile and competitive** in this new context. Concurrently, we have continued our efforts to achieve greater organizational maturity with a focus on customers, sustaining operational excellence, improving supplier relations, engaging employees and delivering superior shareholder returns, in a growth journey that benefits all stakeholders.

Several planned improvements were successfully delivered throughout 2019. This included deploying new technologies (mobility, cognition and the Internet of Things) and embedding a digital mindset in the Company’s DNA, as we continued on a path to becoming **#CBA4POINTZERO**.

CBA 4.0

Our shift of strategy to CBA 4.0 aims to implement operating improvements that can positively impact business results, including improved controls and greater agility, with the ultimate goal of becoming a better organization. As part of these efforts, an internal assessment was conducted that identified four major pillars as the basis of our CBA 4.0 strategy.

The most significant change in 2019 was a cultural transformation aligned with our value of Competitiveness. We encouraged people to continuously think about what they do and how they operate to drive increased integration across the value chain—from suppliers to customers—and across all stakeholders, and to work to achieve competitive differentiation (*read more in the chapter “People”*).



- 1  Define approach and review previous materials
- 2  Hold discussions with leadership to identify tactical objectives linked to industry 4.0
- 3  Assess opportunities and build value map
- 4  Prioritize opportunities
- 5  Translate opportunities into actions and assess technological readiness
- 6  Estimate value capture from prioritized initiatives for budget

Sustainability today and tomorrow

To ensure the viability of our operations into the future, we need to look ahead at emerging global trends over the coming decades. Our leadership has identified four megatrends that are directly related to the Company's challenges in the coming years, and which will help to ensure we remain competitive, sustainable and, above all, continue to create value for shareholders, customers, suppliers, employees and broader society.

The four megatrends are:

- A planet under stress

- Diversification of the energy mix
- Changing production patterns
- Hyper-transparent relationships

These megatrends, combined with the Materiality Matrix defined in 2017, were addressed in workshops and internal discussions that informed important strategic guidance for the Company, including: The elaboration of the Strategy for CBA Sustainability, created in 2018 and definition of goals and objectives by 2025.

CBA has since continued to pursue this strategic direction, making Sustainability a ubiquitous topic

throughout the Company. In 2019 we formalized a Sustainability department responsible for building relations with society and addressing issues such as waste dams, the environment, health and safety, among others. We also created a Sustainability Committee to embed sustainability considerations in decision-making. The Committee is composed of the CEO, representatives from key functions and guest independent members. In the first Sustainability Committee meeting, it was decided that CBA would undertake a public commitment to a sustainable development agenda. At year-end 2019 we submitted a letter of commitment to join the Global Compact, the largest corporate sustainability initiative in the world, which provides guidelines on promoting sustainable growth and corporate citizenship. CBA committed to implementing the ten principles of the Global Compact on human rights, labor, the environment and anti-corruption. These principles have been embedded in the Company's strategy, culture and day-to-day operations, as described in greater detail throughout this report. We have also undertaken initiatives and projects in support of the Sustainable Development Goals (SDGs). CBA has joined several Global Compact initiatives and in 2020 we will make a more in-depth assessment of our contributions to the SDGs



Coffee plantation in a rehabilitation area in Miraf (MG)

SUSTAINABILITY STRATEGY

Inspiring leaders and **high-performance** teams that embrace diversity



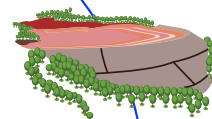
Committed to **quality of life** and **zero injuries**



Recognized by customers as a partner in developing **product and service solutions**



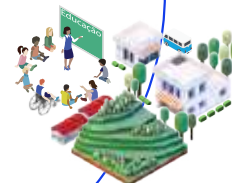
An industry leader in **dam management**



Business partners aligned at all times with the **CBA Code of Conduct**



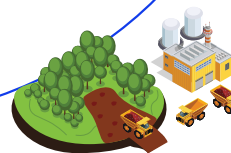
Recognized by communities as a **partner in social development**



Operational **excellence** and **cost management**



Recognized as a model for **environmental stewardship**



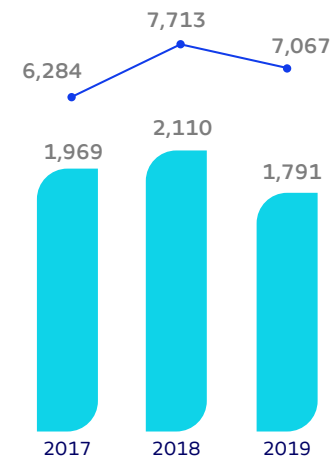
Financial results

The aluminum market

The year 2019 was marked by a continuous drop in London Metal Exchange (LME) aluminum prices and regional premiums. The slowdown in the global economy, lower growth in demand across the aluminum value chain, driven by weak activity in key aluminum end-use sectors (such as construction and transportation – particularly the automotive industry), and a seemingly oversupplied aluminum market are the main causes for the downward pressure on prices. In this context, LME aluminum prices fell 15% in the year, from US\$ 2,110 per metric ton in 2018 to US\$ 1,791 per metric ton in 2019. The US-China trade war has also contributed to an uncertain macroeconomic outlook and consequent

Price of aluminum London Metal Exchange (LME)

■ LME US\$ (US\$/t)
— LME R\$ (R\$/t)



US Dollar appreciation. The Brazilian Real weakened 8% against the US Dollar from 2018 to 2019, which resulted in an 8% decrease in the average LME aluminum price in local currency.

In Brazil, production in the domestic automotive sector grew 2% while exports fell 32%, according to ANFAVEA (National Association of Automotive Vehicle Manufacturers). The aluminum market grew 8% in 2019 when compared to 2018 according to ABAL (Brazilian Aluminum Association), on the back of sheet products and excluding can stock products. However, the Brazilian market was highly affected by a sizeable inflow of metals from China as a consequence of compulsory US import tariffs. In 2019, imports increased 14% (excluding can stock and cables) when compared to 2018, representing 23% of the total market.



Rolling mill area in the
Aluminum Plant (SP)

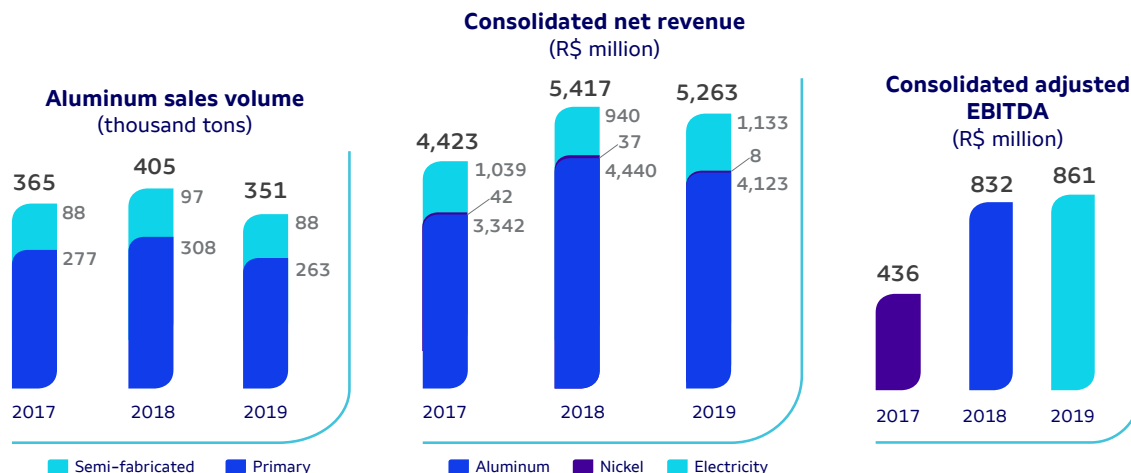
(GRI 103-1, 103-2, 103-3 201: Economic Performance)

Operating and financial results

Aluminum sales were a total of 351,000 metric tons, a 13% drop when compared to 2018. Net revenue was R\$ 5.3 billion, a decrease of 3% compared with the previous year, while adjusted EBITDA rose 3%, to R\$ 861 million. In the Aluminum business, net revenue totaled R\$ 4.1 billion, a decrease of 7%, while adjusted EBITDA fell 4% from 2018 to R\$ 855 million.

Despite the adverse economic conditions in 2019, our business model and strategy improved the Company's consolidated results, as CBA was able to benefit from higher energy prices on our energy surplus sales. Costs for the main raw materials used for aluminum production declined throughout the year, partly offsetting the narrower margins as a result of falling aluminum prices and premiums.

In the Upstream Business, we have maintained our focus on improving profitability by increasing cost competitiveness. The Downstream Business has worked to develop tailored solutions with key customers as part of our strategy of optimizing our capabilities for meeting customer needs and providing high value-added services.



Financial Team
in the Corporate
Office in Sao
Paulo (SP)

Liquidity and indebtedness

At year-end 2019 CBA's consolidated gross debt was R\$ 2.2 billion, an increase of 5% when compared to year-end 2018. In order to lengthen the amortization of debt over the next years, CBA repurchased US\$ 256 million in Eurobonds due in 2024 and obtained bilateral export finance facilities totaling R\$ 1.1 billion, with a 7-year average maturity, extending the debt maturity profile from an average of 4.8 years in 2018 to 5.1 years in 2019.

Net debt amounted R\$ 1.7 billion, 21% higher than in 2018, mainly due to the weakening of the Brazilian Real against the US Dollar. Financial leverage, as measured by the ratio of net debt to adjusted EBITDA, was 1.94x compared with 1.65x in December 2018. Financial discipline and stable EBITDA enabled us to meet our target for leverage. Cash, cash equivalents and financial investments ended 2019 at R\$ 608 million. The Company's cash position is enough to cover the next 4 years of debt obligations.

GRI 103-1, 103-2, 103-3 201: Economic performance



Material topics addressed in this chapter:

- Business ethics, compliance and resilience
- Integrity and employee well-being
- Social license to operate

<IR> Human and social capitals

SDG



04 PEOPLE

The purpose of everything

CBA is on a journey of continual improvement. As part of this, we continually upgrade our processes, deploy state-of-the-art technology, invest in capacity building, implement new projects, and ensure we are responsive to trends in our industry and around the world. After a rebranding effort in 2018, we unveiled our new purpose as a Company, reflecting these changes. Driven by our aspiration to create value for each stakeholder, CBA's purpose was articulated in 2019 based on four pillars:



- **Our History** – where we are coming from and the significant milestones in this journey

- **Our brand** – the way we do business, inspired by our origins and our journey up to the rebranding initiative

- **Our Aspiration** – where we are headed, taking into account our relations with different stakeholders

- **Our Estrategy** – how we will get there, in line with inputs from Strategic Engagement

Our purpose therefore defines who we are and reflects our outlook for the present and vision for the future. “Aluminum solutions that transform lives” are an integral part of our history as a Company, our way of doing business, and our day-to-day interaction with stakeholders. CBA's purpose reflects our outlook for the present and vision for the future, and provides clarity about everything we do and how we do it.

“Aluminum solutions that transform lives”



Casting Area in the Aluminum Plant (SP)

Corporate governance underpinned by ethics

We aim to create value for stakeholders and ensure the sustainability of our operations. This can only be achieved if our corporate culture is underpinned by ethics, integrity and corporate responsibility, within a rigorous and transparent governance process. Learn below about our governance structure and how our management bodies work together to ensure sound and agile decision-making.



Corporate Office in São Paulo (SP)

Human capital

CBA is committed to human rights. We are aware of and respect the rights, lawful interests and local customs of the communities where we operate. We seek to share and make decisions together with stakeholders, helping to build understanding and create shared value.

All service agreements incorporate provisions on discrimination, child labor, slave or forced labor and compliance with legislation. The Company also supports freedom of association and recognizes the right to collective bargaining.

In order to reinforce this shared value, CBA engaged a partner to assess the level of maturity of CBA's practices and policies in order to identify our positive and negative human rights impacts, and prevent, mitigate and remediate any identified negative impacts. At the end of 2019 we initiated our first human rights due diligence assessment on our operations in São Paulo (SP), Poços de Caldas (MG), Miraí (MG), Itamarati de Minas (MG) and the Aluminum Plant in Alumínio (SP). The assessment will inform a risk matrix describing risks for human rights violations in our operations, primarily using the United Nations (UN) guide on human rights as a yardstick. Based on this matrix, CBA will develop action plans to address any identified risks. Of the Company's 13 operations, the 5 most significant underwent human rights assessments.

At year-end 2019, more than 95% of CBA employees had received training on policies and procedures on human rights issues relevant to our operations. In 2019 alone, 740 employees attended e-learning training on our Code of Conduct with an estimated duration of one hour, covering topics on ethics and human rights.

GRI 103-1, 103-2, 103-3 – 412: Human Rights Assessment, 412-1, 412-2

CBA governance structure

How do these different levels interact with each other?

The responsibilities of each body in our corporate governance structure are outlined in CBA's Bylaws, which were last updated in 2018 and are described in our Governance Handbook. The levels of our governance structure are described below.

Shareholders' Meeting

It is the Company's highest decision-making body and includes all shareholders. It has authority to, for example, amend the Bylaws, appoint and/or remove members of the Board of Directors, approve the Company's accounts and financial statements, and decide on asset valuations and mergers and acquisitions.

Board of Directors

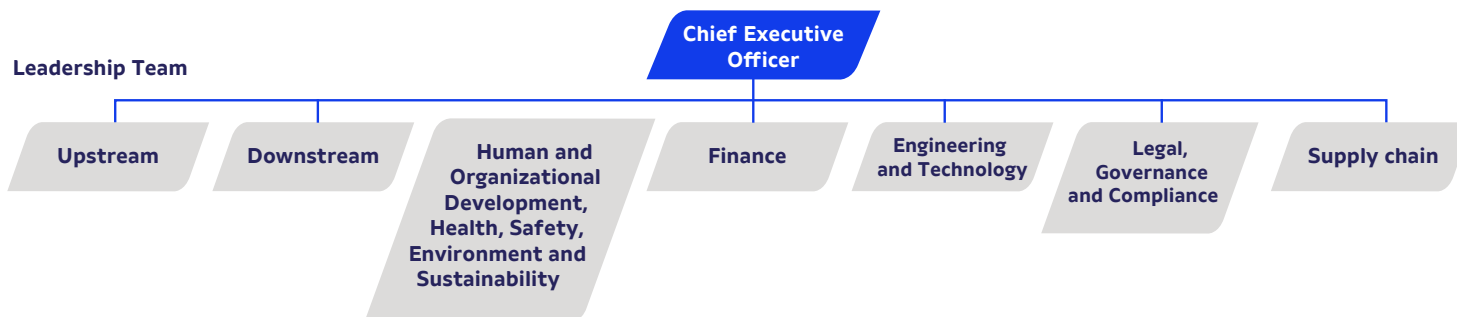
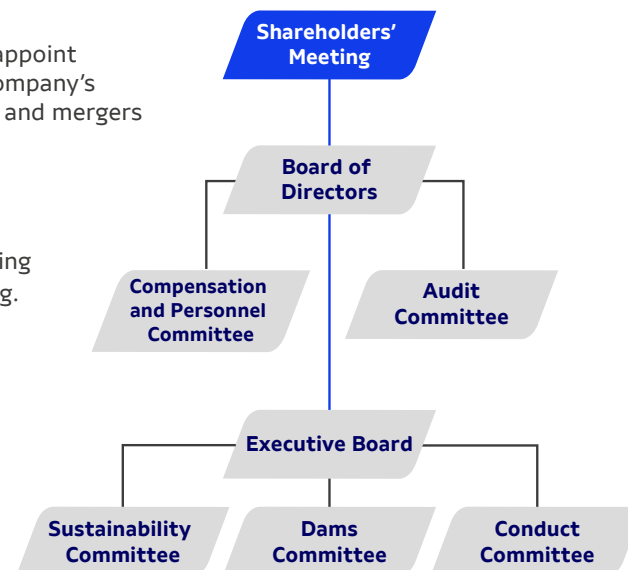
It monitors the Company's operating performance and decides on strategic and high-impact matters affecting CBA. Members, including independent members, are appointed by the Shareholders' Meeting.

Committees

They advise the Board of Directors with the in performing its oversight duties. The Committees are composed of independent members who support the Board within their areas of expertise. The Company also has dedicated committees advising the Executive Board.

Leadership Team

It meets on a weekly basis to discuss significant projects and investments, and oversees day-to-day operations. The Leadership Team is composed of the CEO and seven executives representing key areas of the Company.



GRI 102-18

Risk management

The CBA Risk Management Policy was revised and improved in 2019; we identified any emerging risks, and assessed and developed action plans for existing risks. We also initiated a process to identify relevant risks based on our Strategic Plan 2020–2024, and developed a new risk appetite methodology. As another significant improvement, compliance risks were integrated with corporate risks.

The risk management process begins with our leadership mapping out potential events that could prevent the Company from achieving goals. These risks are then categorized based on their likelihood and degree of impact on the Company.

Continually investing in compliance

CBA's Compliance Program was introduced in 2013 and has since been enhanced with new tools, processes and methodologies for training employees and improving our relations and dealings with customers, suppliers, competitors, creditors, the media, the public and governments, in line with the highest standards of ethics and corporate governance. Compliance is central to the



2019 Compliance Day

Votorantim Group Values

Solidness • Ethics • Respect • Entrepreneurship • Unity

business, and is accordingly addressed in regular employee initiatives organized by CBA and Votorantim. Know them!

Compliance Week – Group-wide culture and compliance activities organized by Votorantim.

Compliance Day – a day dedicated to discussing issues such as bribery, ethics and integrity with CBA leadership.

E-learning – online training on the Votorantim Code of Conduct for all employees.

Internal communication channels – used to disseminate information about the different issues

addressed in the Code of Conduct. A specially produced video series uses a lighthearted yet educational approach to address compliance issues, with a focus on Preventing Losses and Fraud, Preventing Corruption, and Contracts and Agreements. Each month, one of topics in the Code of Conduct is selected to be featured in internal communications.

Ethics Hotline – a communication channel that employees, suppliers and customers can use to report any breaches of our Code of Conduct anonymously and without fear of retaliation.

GRI 103-1, 103-2, 103-3-419: Social and Economic Compliance, 102-16, 103-1, 103-2, 103-3-205: Anticorruption, 205-3

Compliance Game

Addressing sensitive compliance issues often requires creativity. In 2019, the issue of workplace harassment was addressed using a game format: players (CBA employees) were placed in a real-life escape room where they had to solve puzzles on the theme of harassment to escape. All clues and evidence were based on the Code of Conduct. The initiative was organized at our Corporate Office, at the Sorocaba facility, at the Metalex plant, and at the Aluminum Plant (SP).



Compliance Game at Sorocaba Facility

Featured Compliance

CBA has a set of policies and procedures in place to ensure all employees are aware of the Company's zero-tolerance approach to misconduct or violations of legal requirements and/or Company standards. Those policies and procedures include: an **anti-bribery policy**, the Votorantim Code of Conduct, a Managerial Standard on Donations and Sponsorship (containing guidelines that employees are expected to follow to ensure that Company donations and sponsorship are compliant with legal requirements), and a Competition Compliance Handbook providing recommendations and rules of conduct for dealings with customers, suppliers and competitors. A Loss Prevention tool has also been deployed as part of our compliance initiatives. The tool performs an end-to-end assessment to mitigate the risk of losses and fraud.

We deliver on our commitment to compliance by observing all laws and regulations applicable to our business, by upholding the highest standards of ethics in our operations, and by acting with transparency and agility in everything we do. And we require the same commitment from our employees and partners.

Any reported compliance concerns are investigated by a Business Conduct Committee composed of the CEO and representatives from the Human & Organizational Development, Legal, Compliance and Internal Audit departments. All investigations are conducted in an impartial and responsible manner and the reporting party is kept anonymous and protected from retaliation.

GRI 102-16, GRI 103-1, 103-2, 103-3-205: Anti-corruption;
103-1, 103-2, 103-3 - 419: Social and economic compliance

Anti-bribery platform

Ethical and responsible business conduct is essential in achieving positive business results. No instances of corruption involving the Company were identified in 2019. Our leadership at CBA and Votorantim are committed to fighting corruption and to ensuring that anti-bribery compliance permeates all levels of the organization. CBA's Compliance Portal is a new platform within our Compliance Program that is designed to effectively communicate and provide transparency around employee activities in which conflicts of interest with CBA and other Votorantim Group companies could arise.

A Trade Compliance project will also be initiated in 2020 to ensure the Company's foreign trade transactions are aligned to international best practices.

High-performance teams

Turn to the new world - journey CBA 4.0

A strategic question set the tone for an important people management issue in 2019: how can we build a technology-savvy, future-proof workforce? How can we prepare employees for this new, competitive and digitized world? These questions were answered with assistance from a consulting firm engaged to assess our workforce's digital maturity and what skills they need to develop for a digital future.

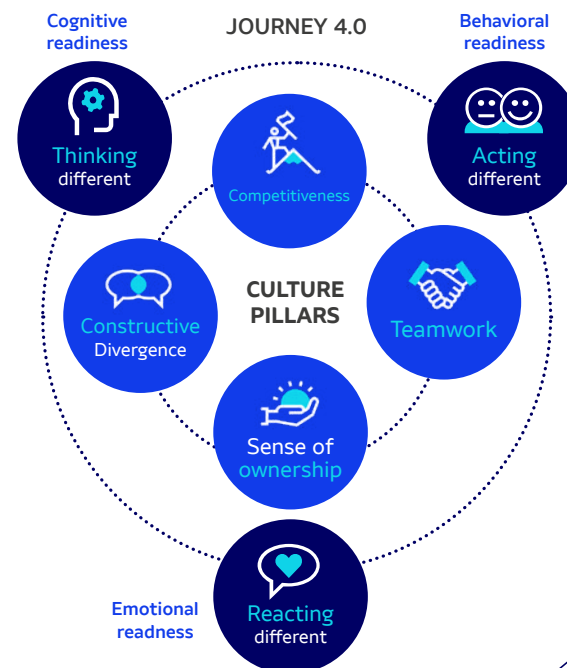
The assessment identified the need for a cultural transformation and a change in mindsets. An integrated mapping exercise involving more than 170 people identified 23 attributes related to a digital DNA and how the Company should be organized, operate and behave to build agility and value capture in this new business era. More than just skills building, our workforce requires cognitive, behavioral and emotional readiness.

The assessment team evaluated a set of professional attributes that the ideal CBA employee should demonstrate, including aspects such as alignment with Company values and technology readiness. Employee diversity was identified as being equally important in developing the right workforce profile (*read more in "Diversity to go to the next level"*).

After mapping out the target professional attributes, we developed a Leadership Journey with a series of activities designed to develop these attributes in our leaders, who then cascade these concepts on to their teams, forming a multidisciplinary digital learning network. These initiatives inspired CBA to move to the next level of our cultural transformation, toward our Journey 4.0. In 2020, a range of initiatives will be implemented as part of this Journey, including shared performance targets for the transformation of our organizational culture.



Controllship Office at the Aluminum Plant (SP)



Leadership Journey

Building a high-performance team that is aligned with Company strategy requires developing inspiring leaders. Our Leadership Journey was the pathway taken to achieve this. Supervisors, as the first level of leadership, have been the focus of this journey. Initially, the need was identified for supervisors to have a people- and results-oriented mindset. The roles and responsibilities they should have were then defined, and a training roadmap was designed to equip them to perform in those roles. Lastly, a training and development schedule extending to 2021 was developed and implemented within 2019.

Engagement

Act as an **inspiring leader**

CBA Culture

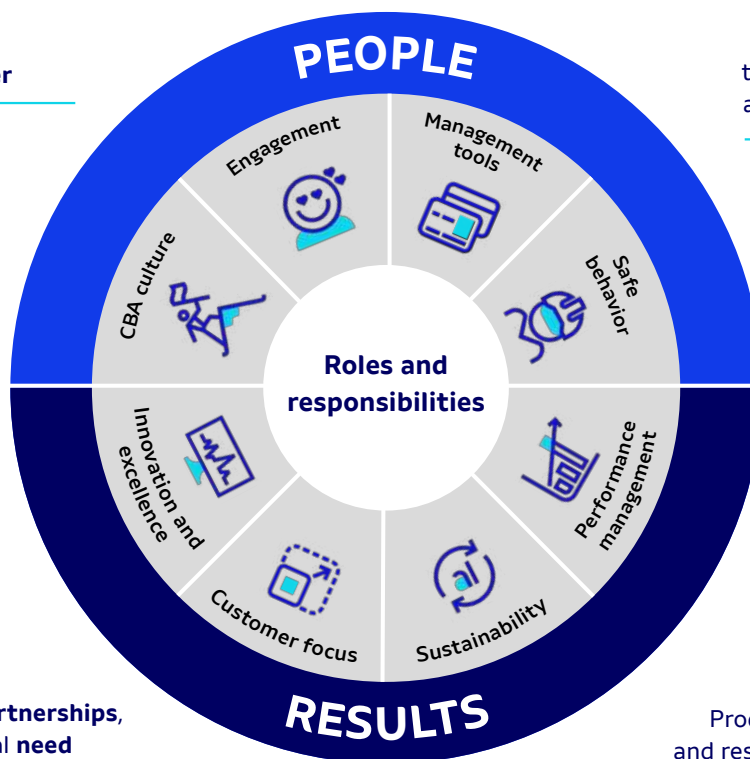
Be a guardian of the **pillars of culture** for reaching **business objectives**

Innovation and excellence

Create an environment of **open dialogue and constructive divergence** by stimulating and valuing **new ideas**.

Customer focus

Establish **valuable partnerships**, understanding the real **need** of the internal customers and **translating** in planning activities.



Management tools

Ensure **people management** through the tools and practices aligned with the **culture pillars**

Safe behavior

Be a **reference in safe behavior**, identifying and **controlling** threats as well as **developing** the team and **evaluating** employees for safety posture and attitude.

Performance management

Monitor **indicators**, ensuring efficiency in execution of processes.

Sustainability

Produce with health, safety and respecting society and the environment, **optimizing** resources and **avoiding waste generation**



Refinery Area at
Aluminum Plant (SP)

Employee satisfaction to boost productivity

People who are happy in the workplace tend to be more engaged and productive. To take this from theory to practice, CBA has fostered discussions to re-signify behavioral patterns and develop new mindsets among our 4,800 employees. The Company strives to create a workplace environment that supports co-creation, creativity and constructive collaboration, as well as encourage employees to develop their skills and attend educational programs.

An example of this is our ideas Program, called *IdeAI*, which encourages employees to submit ideas for process improvements or new products, either individually or in groups. A Program Committee reviews submissions and selects ideas with the potential to be implemented. The authors of selected ideas receive points that they can trade in for experiences. At the end of the year, the authors of the best ideas in four categories (Environment, Cost Reduction, Operating Excellence, and Products & Innovation) participate in an event in which they receive recognition and awards. In 2019, a total of 225 ideas were submitted, 96 were approved and 61 were implemented.

Another initiative is *Potenciar*, a Votorantim S.A program in which CBA employees are selected to develop projects revolving around the Company's strategic levers. A highlight in 2019 was the completion of a project on waste, which demonstrated that proper waste treatment can help to reduce natural resource usage while providing

new revenue streams for the Company. The success of the initiative led to the creation of a dedicated department within the Company (read more in "Environment"). The current *Potenciar* project, initiated in 2019 and scheduled to be completed in 2020, is related to our CBA 4.0 strategy.

High-performance tools

- Individual Development Plans
- Annual performance reviews
- A culture of continuous feedback
- Coaching sessions
- Mentoring sessions
- Internal education projects

People management pillars



Human centricity

Place the organization at the service of life, taking clarity of your purpose and being more organic

The emergence of new expectations and values related to work and career in society

People's concern with topics related to sustainability



News technologies

New forms of relationship x speed of companies adaptation

Impact on Communication

Digital revolution conferring power to people



Changes in culture and in the organizational structure

Encouragement to autonomy and to creativity

Less Centralized leadership

Formation of networks



Demographic changes

Diversity of generations in the Company

Increasing of expectancy of life

Gender diversity

Diversity to go to the next level

Another topic that has been strengthened in 2019 is diversity. A diverse environment is one that embraces different world views and in which all employees feel included and represented. Such an environment supports constructive disagreement, teamwork and, ultimately, business growth in an Industry 4.0 environment. For these reasons, diversity is being addressed as part of a project that will be ongoing over the next five years.

This first year was dedicated to reviewing our processes to detect potential obstacles preventing diverse candidates from joining the Company. Concurrently, our leadership received training for a better understanding on the subject, with support from a specialist consulting firm. Some of the topics addressed included: what is whiteness, LGBTQ+ and feminism. A Diversity Working Group, including the CEO as a member, was then created to address related issues. This journey is only just beginning, and there is still a long way to go. The next step will be to introduce diversity policies and practices within the Company.

Leadership Summit

Each year, CBA organizes an event for leaders (coordinators, managers, general managers and directors) to celebrate results in the year and outline actions planned for the following year. In the 2019 edition, awards were also presented to the winners in the Sustainability Talent Awards and the IdeAI Program (see the following chapters for more information).

CBA on Workplace



Another digital initiative in the year was our implementation of Workplace, a collaborative networking platform available to all employees. Approximately 3,500 active users now use the platform and publish posts about their work, discuss published content, and participate in thematic groups and projects. The tool has helped to provide employees with a strengthened sense of community, more accessible and efficient communications, a sense of connectedness with each other, and a more comprehensive understanding of the business.

Through diversity, we aspire to...

- ... foster engagement across generations
- ... strengthen our culture of gender equality
- ... attract talents with different world views
- ... reinforce the importance of racial equality
- ... recruit more women and young talent into the Company



Office at Aluminum Plant (SP)

Among the top workplaces in Brazil

In recognition of our people management practices, CBA was ranked as one of the large-size companies among the Top 150 Workplaces in Brazil in 2019. The ranking, compiled by the *Great Place to Work* (GPTW) Institute, recognizes the best-performing workplaces in Brazil for organizational practices. This was CBA's first year participating in the survey, and not only was the Company successful, but we were also the only company in the mining and aluminum segments in Brazil to make the list. The Company also competed in the São Paulo Minor Cities/Large Companies category, ranking in fifth place.

The recognition has created a sense of **employee pride** while putting a spotlight on the Company that has helped to attract a broader pool of new talents, increasing diversity in our workforce.

Data for the GPTW ranking is compiled through a sample-based organizational climate survey of employees. This annual survey is designed to assess employee favorability towards the organizational climate at CBA. With a favorability rating of 85%, the Company ranked among the **150 top workplaces in Brazil** in the Large Companies category. Insights from the survey were used to develop an action plan to ensure the Company remains on the right path and achieves consistently better performance.

In addition, CBA was positioned among the companies with the best organizational climate favorability index in Brazil (among the top 10%) in the Korn Ferry Organizational Climate Survey. This survey also awarded CBA as one of the **best companies in the world** in terms of Engagement and Training, considering the survey of more than seven million employees worldwide.

GRI 102-43

Our commitment to safety

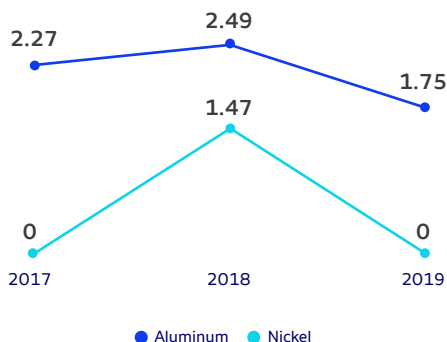
"Safety is non-negotiable!". Safety is an absolute imperative in all our operations, and awareness initiatives and investment in safety are a constant. In 2019, our focus was on safe behavior and preventing unsafe conditions. More than 130 supervisors attended the Safe Mindsets training module, and more than 200 employees were invited to CBA's Annual Safety Workshop for leadership. At these events, employees received instruction on how to identify and report risks.

Workplace injuries declined in 2019 compared with 2018, reducing our lost-time and no-lost-time Aluminum Business accident frequency rate from 2.49 to 1.75. This reflects significant initiatives that have been implemented to improve risk awareness, safe behavior and leadership engagement. CBA also outperformed both the national (7.27) and the international (4.0) average accident frequency rates, as published by respectively the Brazilian



2019 Safety Workshop

Accident frequency rate¹



1. This consolidation follows the NBR 14280 standard guidelines and comprises employees' and contractors' accidents with and without lost work-days (Total recordable accident rate – per MHW).

Accident severity rate²



2. This consolidation follows the NBR 14280 standard guidelines, comprising employees' and contractors' accidents and the calculation of lost and carriedforward work days

Aluminum Association (ABAL) and the International Aluminum Institute (IAI)*. However, a number of lost-time injuries occurred in 2019 that increased the Aluminum Business accident severity rate from 63 to 260. The Company is permanently engaged in further reducing these figures.

In 2019 the most prevalent incidents involving direct and third-party employees were hand, arm and foot injuries. Actions taken to address these issues included awareness campaigns, reinforcing safety concepts during risk analyses, and encouraging employees to use their Right of Refusal if they encounter any risks that threaten job safety.

We also worked to improve the safety performance of our contractors through safety campaigns such as the Contractor Marathon, a method used to measure, track, monitor and recognize contractor performance within the CBA management system.

*Based on the latest data available, for year 2018.

GRI 103-1, 103-2, 103-3-403: GRI Health & Safety, 403-9

“How do you behave when no one is watching?”

This question was the theme of Occupational Accident Prevention Week (SIPAT), to encourage safe behavior at all times, both in and out of the workplace.



Rolling Mill Area in the Aluminum Plant (SP)

Dealing with health and safety risks

Risks to the health and safety of employees are identified, addressed and adequately managed through CBA's Workplace Risk Prevention Program (PPRA), Occupational Health & Safety Program (PCMSO) and tools such as Preliminary Risk Analysis (PRA), *Fale Fácil* (an easy-to-use channel for reporting and addressing unsafe conditions and behavior), Toolbox or Weekly Talks and our Duty of Refusal policy (a mechanism to encourage employees to solve identified safety issues). CBA has an Integrated Management Policy that includes guidelines on occupational health & safety. The management system addresses both laws and regulations and industry best practice in health and safety. All employees, including direct and third-party employees, are covered by the system.

At CBA, all employees actively participate in managing health and safety. Reported injuries and incidents are investigated and addressed by a multidisciplinary group of representatives from the Safety department, the Internal Accident Prevention Committee (CIPA), and other departments.

The CIPA is composed of both employee and Company representatives, and meets on a monthly basis to discuss improvement actions and safety suggestions. CBA awards prizes to the employees within each function who submit the best reports via *Fale Fácil* – a tool used to report and address unsafe behavior and conditions. We also have a multidisciplinary group of representatives from senior leadership, who also hold monthly meetings.

GRI 103-1, 103-2, 103-3-403: Health & Safety, 403-1, 403-2, 403-4, 403-9

Leveraging technology to improve safety

In 2019 we continued to leverage virtual reality technology in fire response training at our rolling mills and lockout/tag-out training at the aluminum plant. This technology simulates real-life situations that make the training experience more dynamic for employees. Other initiatives included implementation of a Personal Protective Equipment (PPE) checkout module that uses biometrics, and development of a software system for managing safety tool usage and data.

R\$ 16 million invested in safety-related projects; facilities improvements, upgrades or new and safer equipment conforming to Brazilian regulatory standards (NRs); awareness campaigns; and safety initiatives.

Safety targets

Employee safety is embedded in CBA's Sustainability Strategy and is addressed by initiatives continuing to 2025. Our key health and safety goals are:

- Progressively reducing injuries to a frequency rate lower than 1
- A zero fatality commitment
- Reducing health insurance claims through our "For You" Quality of Life Program

Billet production area
at the Aluminum
Plant (SP)





Better health and well-being

Our *Por Você* (“For You”) Quality-of-Life Program improves well-being and encourages healthy lifestyles among CBA employees and their dependents. The program includes initiatives across four pillars – exercise, nutrition advice, well-being, and prevention – from fitness center discounts to nutrition consultations and special care for employees with high blood pressure and diabetes. In 2019 CBA also expanded its collaboration with fitness partners, allowing employees to choose plans that match their needs and pick different activities each day, including Pilates, swimming, dance lessons, martial arts, muscle training and functional training. Employees are also invited to participate in running races and sporting competitions such as the For You Futsal Soccer Cup, with teams formed by employees at the Plant in Alumínio (SP)

In prevention, CBA also organizes preventive health campaigns geared to all CBA employees, including flu vaccination, DST/AIDS, cancer prevention, healthy nutrition, mental health and hearing health initiatives. Employee health is further supported by health insurance with national coverage for all employees.

Occupational health

The CBA Occupational Health Department is staffed by occupational physicians and nurses who provide employees on sick leave with assistance and advice on the best treatment. The team also assists employees returning to work, often on light duty as they recover from their condition. Health indicators are used to assess the results of occupational health services and programs, and identify opportunities for improvement and medical conditions needing attention.

GRI 103-1, 103-2, 103-3-403: Health & Safety, 403-3, 403-6

Early care

In 2019 CBA launched *Mamãe, Bebê e Companhia* (Mother, Baby & Co.), a program offering support during pregnancy and the first 12 months from birth. Employees can use an app to schedule video or audio conference consultations with nutritionists or nurses specializing in obstetrics, pediatrics and breast-feeding – 24 hours a day. The initiative is available to both CBA employees and their dependents.

For You Quality-Of-Life Program

More than 2,300 people have participated in activities as part of the program across our operations.



For You Quality-Of-Life Program event in São Paulo (SP)

Competitiveness Management Program

This program designs and manages initiatives across CBA to optimize processes and accelerate value capture for the Company. Our Competitiveness & Performance department is responsible for managing the program, and is supported by work-front leaders assigned to oversee the projects and demonstrate outcomes and actual value capture for the Company. More than 800 initiatives have been identified, including initiatives related to CBA 4.0.

Operating excellence

Operating excellence is an imperative for CBA. Our continuous drive for productivity and resource efficiency spans multiple fronts:

- Facilities maintenance and modernization, including structured projects and process improvements to maximize productivity while minimizing costs, safety risks and environmental impacts. The Green Soderberg, Dry-Stack Disposal and Mobile Beneficiation projects (described in the chapter “Environment”) and initiatives as part of our CBA 4.0 program (described in the chapter “Innovation and future readiness”) are two examples of initiatives on this front.
- Employee development to build high-performance teams who are more agile in their ability to innovate and solve problems.
- Relations with suppliers, who are also considered a part of the business. Through them, we are able to leverage subject-matter expertise and knowledge in service delivery, and ensure a supply of high-quality raw materials so our processes are optimized.

Progress on supplier management

CBA currently has approximately 2,850 suppliers in Brazil—largely in the southeastern states of Minas Gerais and São Paulo—and globally, across categories such as energy commodities, carbon, caustic soda and facilities. In 2019 our supplier management process became better structured with a web-based online onboarding platform and a new Sustainable Sourcing policy, which suppliers are required to accept as a condition for onboarding. A new digital platform has also been launched for managing the mandatory documentation

of suppliers, subcontractors and their employees. If any required document has expired, the relevant supplier is blocked from performing services until they submit the missing documentation. Internally, a responsible sourcing policy was launched, followed by training for procurement teams and the introduction of new rules of conduct for those involved.

As part of our sustainability efforts, we also developed a financial risk matrix to monitor key suppliers and inform development action plans that are monitored on a quarterly basis. This matrix covers the entire supply chain and has been incorporated in the procurement process and in procurement approval reports. Suppliers are classified into risk ranges based on expenditure projections under the contract and potential impacts on CBA, providing greater visibility into supplier risk for those responsible for approving contracts and amendments.

The most significant suppliers in each key procurement and logistics category were also selected for a scorecard assessment, in which they were evaluated against a set of indicators and assigned performance scores for relevant requirements. These scores are now shared with each supplier on a monthly basis to improve transparency in our relations. Work meetings are also held to develop structured solutions to address supplier-specific issues. This has created a virtuous cycle of continual improvement in line with CBA’s vision for operating excellence.

CBA also initiated a sustainable sourcing project for supplier management in collaboration with the Votorantim Institute. The project will improve the way we deal with, develop and select suppliers in a way that increasingly takes account of social and environmental impacts. The next steps will include a benchmarking exercise against Brazilian companies to learn about industry best practice and further improve our supplier management processes.

Engaging with communities

At CBA we believe that social outreach can help to create shared value for the business, our partners and society through genuine and enduring, win-win relationships.

CBA's Social Action Strategy guides our outreach to communities in the regions where we operate, ensuring it supports their development and autonomy, is responsive to local needs, and is consistent with the nature of CBA's operations in the relevant region: the focus of our social strategy in the Upstream business is our social license to operate, while in the Downstream business our focus is on expanding value creation in commercial relations in the supply chain.

CBA has mechanisms in place for local engagement, studying the potentials and weaknesses of their ter-

ritories and planning their investment in a structured way in 6 of its 13 operational units (46.15%). Our social outreach in 2019 was focused on continued local development and continuous dialog in the communities where we operate, creating enduring partnerships and an environment that supports sustainable business.

Learning about the challenges facing communities is essential in designing long-term solutions. CBA conducts local social assessments and develops strategies to drive development while expanding our social license to operate and enhancing competitiveness. In 2019, socio-economic studies were completed in our areas of influence in Zona da Mata and Poços de Caldas, involving nine municipalities: Miraf, Muriaé, Rosário da Limeira, Itamarati de Minas, Fervedouro and Miradouro, Poços de Caldas, Caldas and Divinolândia.

Social responsibility assessment

In 2019 we engaged consultants to audit the level of conformity to ISO 26000 guidelines at CBA, with the audit finding our practices are 73% compliant with the standard. The assessment examined not only our Corporate Social Responsibility practices and conduct, but also the social and environmental impacts from our activities and decisions, our occupational safety practices, ethics and transparency, and the extent to which all stakeholders, including suppliers, are covered. The audit findings show that the Company is on the right

path to sustainable development, creating shared value throughout the value chain. In 2020, progress on this topic will be monitored in accordance with ASI requirements.

Integrated management for communities

CBA has an Integrated Management Policy relating to stakeholders. Under this policy, the Company commits to:

- Maintain a responsible and open channel of communication with all stakeholders to ensure their expectations are met.
- Engage with and ensure our relations with stakeholders support ethics, good corporate citizenship, transparency and sustainable development by regularly assessing our social, economic and environmental impacts.
- Recognize, prevent, manage and mitigate environmental impacts from our operations: depletion of natural resources and changes in local biodiversity and water, air and soil quality.

As part of the Policy, we have a procedure in place for documenting and managing interactions with surrounding communities in order to improve our relations with stakeholders and monitor their perceptions of the Company and our operations. This procedure is used most frequently in our mining operations.

GRI 102-43, 103-1, 103-2, 103-3- 413-
Local Communities, 413-1, MM7



Activity of the Environmental Education Program in Mining

Social programs

In 2019, 26 projects with indicators and targets were performed. They are related to Education, Public Management Support and Economic Development, that are the priority pillars in the CBA Social Action Strategy, to which most of our investment in this area is allocated. Other initiatives supported culture and the rights of children and adolescents. All this investments are aligned with the United Nations (UN) Sustainable Development Goals (SDGs) and CBA's key sustainability management topics, and have defined long-term goals and targets.

Funding for initiatives is provided by the Company and external sources and managed using the Votorantim Institute methodology, which governs the social investment of Votorantim S.A. Group companies.



CBA Educational Activity

Priority pillars

1. Education Development

investing in capacity building for education and school officials to ensure children and youth have better-quality public education and, as a result, a brighter professional future. This action area is also about mobilizing communities and enhancing impact.

2. Public Management Support:

helping to modernize public administration practices in partnership with the Executive and Legislative branches of municipal governments, working to achieve fiscal balance and/or implement sectoral plans, including master plans and basic sanitation plans.

3. Economic Development:

advancing inclusive business models that leverage the economic strengths of each municipality, creating new sources of income and revenue that help municipalities to achieve economic independence.

GRI 103-1, 103-2, 103-3-413: Local Communities

Through the PVE, municipalities receive support to improve their education indicators.

Education

For students

Votorantim's Partnership for Education (PVE) is a methodology that aims to improve municipal public education. The program involves the entire school community (students, educators, principals), the Municipal Office for Education and local residents. In 2019, the PVE program benefited five locations where CBA operates and saw increased community participation in providing suggestions for mobilization initiatives. The overarching theme was "Management with a focus on learning", helping public managers to better understand the factors affecting Brazil's primary education indicator, the Basic Education Development Index (IDEB).

During capacity building workshops in Niquelândia (GO), the idea was put forward that the program could leave a legacy through school managers describing their best practices in case studies that will later be compiled into a book. The book will provide a permanent record of managers' initiatives at each of the schools.

In Divinolândia, 11 mobilization events were organized that again included reading initiatives to enhance the cultural and social development of residents. The mobilization events also included initiatives such as the mayor meeting students from rural schools to gain an understanding of student needs; the 2020 Donate-a-Book Campaign; storytelling; and a "reading march".

In Muriaé (MG), student initiatives were organized to cultivate appreciation of local cultural heritage, including: a guided tour of "Grande Hotel Muriaé"; the "Gira Gira Giribela" project, with visits from students and residents from different communities and cultural performances for nursery school children; and the creation of a virtual library with significant youth participation.

GRI 102-43, 203-1



CBA Educational Activity



For employees and communities

In our Mining operations, CBA's Environmental Education Program (PEA) is geared to employees and the communities where we operate and includes environmental education initiatives that raise awareness about environmentally compliant mining operations. The program comprises a total of eight projects. In addition to these, the PEA program also includes workshops, lectures and other activities relating to sustainability.

Environmental Education Program Initiatives

- Environmental Education Refresher Training
- Getting to Know CBA (visits to Company facilities)
- CBA and the Community
- Environmental Education in the Field
- Environment Week
- *Chega Mais, Família!*
- *Chega Mais, Comunidade!*
- Employee Environmental Education

The PEA Logo Gets a Facelift

The PEA program now has a new visual identity that is better aligned with its mission of education for sustainability. The new logo is designed to express the notion of people's dependence on the environment and a sense of belonging.



PEA activity in Miraf Mining (MG)

More than 6,000 people were reached by educational initiatives organized by CBA.



Aluminum City (SP)

Public Management Support

As part of our efforts in support of public management in the cities where we operate, CBA implemented master plans for the municipalities of Niquelândia (GO) and Muriaé (MG) using a participatory approach.

Aluminio city 50 years

Another highlight in Public Management Support in 2019 was the launch of a project designed to support structured municipal growth. Alumínio 50 Years, as the project is called, is a participatory economic development plan for the city hosting our aluminum plant, in Alumínio (SP). It is a long-term project comprising four separate phases. The community has been encouraged to participate in building its economic independence and empowerment in the region.

Phase 1 – Mobilization

(November 2019 to March 2020)

Phase 2 – Collective Brainstorming

(January to April 2020)

Phase 3 – Preparing for the Future

(May to July 2020)

Phase 4 – Collective Construction and Securing Community Buy-In

(August 2020)

Protecting the rights of children and adolescents

Two years ago, CBA rolled out the Votorantim Program for Childhood and Adolescence (VIA) in Alumínio (SP) and Niquelândia (GO). The program combats violations of children and adolescent rights by working to strengthen the Social Protection Network and the Children and Adolescent Rights Advocacy System. The project works closely with the Municipal Council for the Rights of Children and Adolescents (CMDCA), the Social Services Center (CRAS) and the Child Protection Service. In 2019, progress was also made in advancing the maturity of the program, which provides capacity building for the municipal councils of both cities. Forums were organized and municipal officials analyzed statistics to find ways to address this challenge. In Niquelândia (GO), a public meeting was held to present the newly developed Municipal Social and Education Plan.

Other community initiatives

In Alumínio (SP), investments were made in renovating the municipal library and music school, making them better structured to receive visitors. In Mirai (MG), CBA donated equipment to 10 schools and 9 healthcare providers.

GRI 102-43, 203-1, 103-1, 103-2, 103-3-202: Market Presence;
203-2: Indirect Economic Impacts

Economic Development

Supporting the sustainable development of the cities where we operate is among our commitments at CBA. Within this pillar, CBA invests in and helps municipalities achieve economic independence by supporting individual entrepreneurs or cooperatives and other production and marketing organizations.

Supported businesses generate income, source inputs from within the municipality, and often create job opportunities. These initiatives also generate indirect economic impacts in host municipalities, which have not yet been accounted for but will be inventoried over the coming years.



Visit of the Inter-municipal Association of Seamstresses at the Mirai Mining (MG)

ReDes Program

ReDes is a program for external stakeholders created eight years ago in partnership with Votorantim Institute and the Brazilian Development Bank (BNDES) to support entrepreneurship and economic development. The program aims to provide technical and financial support to strengthen local value chains that can generate income opportunities. These objectives are pursued on multiple fronts. Some of these are described below.

Quality of life and empowerment – With support from the ReDes program, the Inter-municipal Association of Seamstresses of Santo Antônio do Rio Preto, in Mirai (MG), expanded its facilities, purchased new machinery, organized a course on cooperatives and entrepreneurship, acquired new customers, purchased a vehicle and conducted market research. The cooperative now has 18 members and is planning to launch its own brand while continuing to improve its management and cash flows.

Investment: R\$ 221,859.96

Support for better and more productive farming practices – In São Sebastião da Varagem Alegre (MG), CBA supports a Fruit Growing Inclusion Project offering technical assistance to improve the performance of 15 vineyards in the region.

Investment: R\$ 150,000.00

In Niquelândia (GO), two associations—one producing cassava meal and the other producing *rapadura* – received support from the ReDes program.

Investment: R\$ 458,809.00

Entrepreneurship Program

Also within the Economic Development pillar, alongside ReDes, is our Entrepreneurship Program, which provides business support to sole proprietorships.

Empreende Alumínio – This program was created as a way to support sole proprietors in the city of Alumínio (SP). In 2018, Empreende Alumínio selected four projects proposed by entrepreneurs to receive seed capital. In addition to funding, throughout 2019 participants received technical advice, went on benchmarking visits to similar businesses, and attended workshops about business models and action plans. By the end of the year, all participants had started marketing their products.

Investment: R\$ 185,000.00

GRI 203-1, GRI 102-43, 103-1, 103-2, 103-3-202: Market Presence; 103-1, 103-2, 103-3-203: Indirect Economic Impacts

The number of employees as volunteers was a record in 2019.

Volunteering

CBA's Volunteering Challenge is a constructive, altruistic competition organized annually since 2015 with support from the Votorantim Institute, in which participants select charities or schools for volunteer work. The 2019 edition was themed around "Volunteering and civic engagement". The volunteering program was also perfected to increase alignment with the UN Sustainable Development Goals and Agenda 2030.

CBA's Performance

The competition was highly successful, with a record number of participants. A total of 704 volunteers participated in the 2019 edition, compared with 252 in the previous year. Another highlight was the initiative demonstrated by participating teams, who successfully raised funds to implement transformations in their communities. The results reflected the level of employee engagement in contributing to the development of their cities, one of the Company's strategic commitments to the municipalities where we operate.



2019 Volunteer Action

GRI 103-1, 103-2, 103-3-413-Local Communities; 103-1, 103-2, 103-3-203: Indirect Economic Impacts

Material topics addressed in this chapter:

- Sustainable mining
- Dam safety and waste management
- Eco-efficient production

<IR> Environmental capital

SDG

6 7 12 13 15

Planting area of eucalyptus in Miraf (MG)

05 ENVIRONMENT

Global recognition for our commitment to sustainability

In 2019 CBA received international certification against the ASI Performance Standard and Chain of Custody (CoC) Standard, becoming the **first company in the American continent to certify, at the same time, three mining units and a fully integrated industrial plant, including all types of products**. The certification, granted by the Aluminium Stewardship Initiative (ASI), recognizes the Company's commitment to sustainability and places us in a more competitive position on the global aluminum market.

Benefits across the supply chain

ASI certification, which was achieved following a rigorous preparation process that began in 2018, attests that CBA-produced aluminum conforms to global best practices, from upstream to downstream.

CBA's ASI certification covers the following operations:



Corporate Office
in São Paulo (SP)



Three bauxite mining facilities in Minas Gerais –
Poços de Caldas, Itamarati de Minas and Mirai



Processes at the integrated aluminum plant in Alumínio (SP): Refinery, Smelters, Casting and Downstream



All types of products in the CBA portfolio, from billets and ingots to sheets, foils and extruded, anodized and painted profiles

This achievement has made CBA an important vertically integrated member producing ASI-certified aluminum, providing a significant boost from our ability to supply responsibly produced aluminum to a wide range of industries, including automotive and packaging industries.



About ASI

The Aluminium Stewardship Initiative is a global, multi-stakeholder, non-profit standards setting and certification organization, working across the entire aluminum industry and supply chain.

The steps for ASI certification

To prepare for certification, different functions at CBA were engaged around a common plan. Some of the activities conducted as part of the process included:

1. Training a multidisciplinary team of employees to research about international best practice in sustainability and the high-level certification topics;
2. A self-assessment of existing practices by experts within the Company;
3. Making the necessary adjustments at the different departments;
4. Engaging independent consultants to train the multidisciplinary team and perform a gap assessment of CBA's practices;
5. Creating an action plan for implementing recommendations from the independent consultants;
6. Conducting a certification audit on the previously described operations.



Prêmio Talento em Sustentabilidade

EDIÇÃO 2019

This is a Votorantim Institute initiative that recognizes best practices demonstrated by employees at Votorantim, creating benefits that make our businesses increasingly better for people and planet. In 2019 CBA extensively advertised the awards, which encourage and recognize employees for their engagement in sustainability projects in four categories: Environment, Efficiency & Productivity, Social Outreach, and Health & Safety. As a result, the Company had the largest number of projects registered among Group subsidiaries, with a total of 87 initiatives. To thank employees for their engagement, the Company organized an internal event in which all participants received participation certificates from the CEO, and the winners in each category were featured in a video about their project and invited to participate in the Annual Leadership Summit, during which they received honorary plaques.

Among the most sustainable companies in our category

A corporate social responsibility survey conducted by weekly news magazine Exame and independent consultants ABC Associados ranked CBA as one of the top companies for best practices in the Mining, Steelmaking and Metalworking category of the *Guia Exame de Sustentabilidade 2019* sustainability list — another accolade in the year. This was the first year that CBA participated in the survey. CBA's placement in the ranking recognizes that our practices and processes throughout the business are aligned with sustainability principles.



Winners of the Sustainability Talent Award – 2019 edition

Green Aluminum



Sustainable development: a journey of continuous growth

Aluminum is a unique metal. It combines strength with flexibility, plus infinite recyclability as one of its key benefits. Aluminum is recognized as a solution for developing less resource-intensive and more circular supply chains that re-utilize materials and minimize waste and environmental impact.

One of the major focuses of our operations is producing sustainable aluminum and helping to tackle important environmental issues, such as natural resource depletion and climate change.

Our products are manufactured using renewable energy, helping to minimize greenhouse gas emissions. CBA invests continually in innovative solutions to lessen environmental impact and expand our aluminum recycling capabilities.

Our systematic drive for sustainability has given us recognition in the market and has led CBA to establish a set of environmental targets. These targets span CBA's entire value chain (from Mining to Aluminum Plant) and have been calculated based on the reduction potential over the target horizon as a result of implementing technology-based projects. Part of the reductions achieved so far was due to reduced production. For further information, read the chapters on emissions management, waste management and water and effluent management.

GRI 103-1, 103-2, 103-3-307:
Environmental Compliance

Environmental targets:

Targets (gross reduction from a 2017 baseline)	Reduction achieved
Reduce greenhouse gas emissions by 16% by 2025	4.8%
Reduce waste disposal by 35% by 2025	15.2%
Reduce water consumption by 22% by 2025	12.4%



Aluminum Lifecycle Assessment

In 2019, an Aluminum Lifecycle Assessment was completed based on ten selected categories of environmental impact from the different production stages. The inputs used in each stage were identified and the relevant impacts computed. In 2020, the findings from the assessment will be disseminated across the organization to reduce the impacts from the entire production process.



Environmental compliance

Environmental compliance means that CBA's operations are compliant with applicable environmental regulations and that we respect our stakeholders. CBA is also committed to adhering to the requirements outlined in ISO 14001 and ASI standards, and has a software system in place to update and audit compliance with legal and other requirements. In addition to internal routine audits, a specialized legal consulting firm performs on-site audits at all operations in our Aluminum and Nickel businesses. Each operation's Environment department is responsible for keeping up-to-date on and enforcing environmental requirements.



Metalex plant at Araçariçuama (SP)

The CBA performs recycling of aluminum from customers, generating value shared throughout your chain.

Aluminum recycling

Aluminum is infinitely recyclable and can support supply chains that are less resource-intensive and more circular, with increased re-utilization of raw materials and minimized environmental impact. Recycling is a significant activity at CBA. The Company recycles aluminum scrap as well as scrap purchased externally or supplied by customers and partners.

In 2019, CBA recycled 81 thousand metric tons of internally generated scrap and 67,000 metric tons of externally generated scrap. Two audits were conducted during the year, an internal and an external audit, to ensure these metrics are accurate. CBA offers a scrap recycling service at our plant in Alumínio (SP) and, at larger scale, at Metalex, an industrial scrap recycling facility in Araçariçuama (SP) with an installed capacity of 75,000 metric tons of aluminum billets per year. CBA has set a goal for the coming years to further increase consumption of scrap aluminum, especially at Metalex.

External aluminum scrap recycled – CBA Plant (GRI 301-2)

	2017		2018		2019	
	Aluminum Plant	Metalex	Aluminum Plant	Metalex	Aluminum Plant	Metalex
Customer scrap recycled (t)	20,502	37,982	24,483	43,093	19,389	42,559
Third party-purchased scrap (t)	2,943	628	12,765	838	4,372	913
Total raw materials consumed (t) Includes smelting, ingots and scrap	378,313	65,285	380,302	70,310	337,947	69,288
Percentages recycled	6.2%	59.14%	9.8%	62.5%	7.0%	62.80%
	14.0%		18.0%		16.5%	

GRI 103-1, 103-2, 103-3 – 301: Materials

Emissions management

The aluminum industry is energy-intensive and is therefore known to be a significant source of greenhouse gas (GHG) emissions. CBA has made significant efforts to adequately manage emissions, and these efforts have been recognized by renewed Gold certification within the GHG Protocol Program (Brazilian Program), a platform used globally to quantify and manage GHG emissions. This certification attests to the transparency and traceability of our emissions disclosures – CBA's emissions inventory, covering all operations, is filed with a public emissions register and has been independently assured.

CBA's inventory data have been benchmarked against the leading aluminum manufacturers globally, and the Company performed well in comparison.

Our emissions in the Smelting stage (2,56 tCO₂e/t smelting), the most emissions-intensive stage in the aluminum value chain, were well below the global average, including direct emissions and emissions from electricity consumption, published by the International Aluminium Institute (12 tCO₂e/t smelting) and the limit required for certification from the Aluminium Stewardship Initiative (8 tCO₂e/t smelting). This is due to our use of clean electric power supplied from our own hydropower plants.

Even if CBA's entire value chain were included (Mining facilities, Refinery, Smelters, Casting, Downstream and Supporting Areas), the Company's average CO₂e emissions in 2019 (scope 1 and 2) are well below the global average: 4.21 tCO₂e for every metric ton of aluminum finished products supplied to the market. Our biomass boiler project (*read more on 51 page*) will further reduce overall Aluminum Plant emissions in 2020. This means we are delivering more sustainable products to our customers. Metalex Plant, which remelts aluminum scrap into billets, produces only 0.25 tCO₂e of greenhouse gas emissions (scope 1 and 2) per metric ton of product.

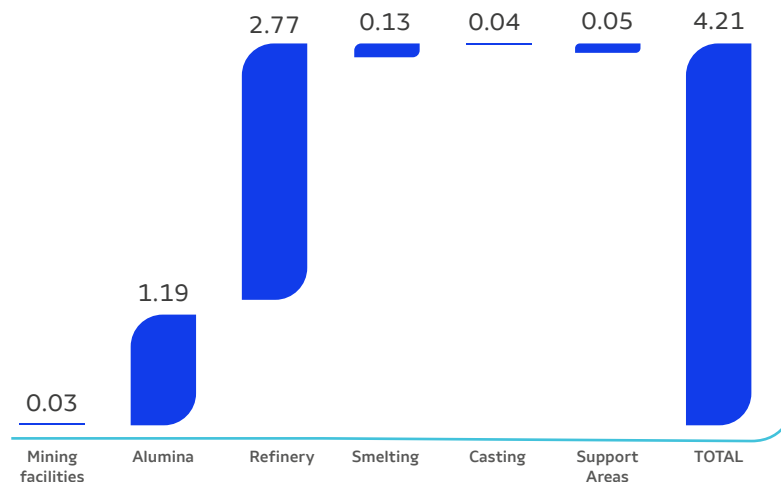
GRI 103-1, 103-2, 103-3-305: Emissions, 305-4



Programa Brasileiro
GHG Protocol
Membro 2019

CBA aluminum has low emissions of greenhouse gases compared to the world average.

Emissions of CO₂e/t finished prod.



**Average 2019 scope 1 and 2 emissions (market-based) for finished products (all products available on the market, including Upstream and Downstream products). Not including Metalex.*

CBA engagement against climate change

São Paulo Environmental Agreement

We have also subscribed to the São Paulo Environmental Agreement, an initiative created by the State government in November 2019 to reduce greenhouse gas emissions and support sustainability initiatives. Our participation in the initiative is in line with the Company's commitment to supporting UN Sustainable Development Goal 13, to "take urgent action to combat climate change and its impacts". In 2020 the Company will participate for the first time in the CDP (Disclosure, Insight, Action) ranking for climate change.



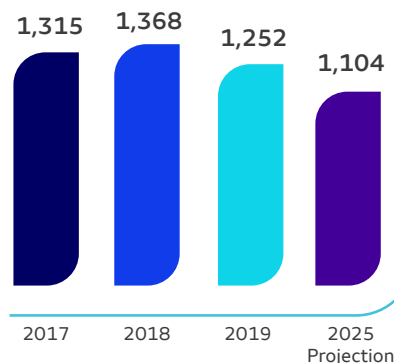
Greenhouse gas emissions target

CBA has set a target of reducing its GHG emissions by 16% by 2025 from a 2017 baseline. This target was set based on gross emissions from our Mining facilities and Aluminum Plant operations (scope 1 and 2), although internally indicators are monitored for each product produced at each process stage. In 2019, these emissions decreased by 4.8% compared with 2017, which includes emissions reductions in the Casting stage. The primary factor in these reductions is the lower production output in the period.

CBA expects further GHG emissions reductions will be achieved in the coming years through our pipeline of energy efficiency, modernization and fuel conversion projects.

GRI 103-1, 103-2, 103-3-305: Emissions, 305-1

2025 Target - Greenhouse gas emissions
('000 tCO₂e)



Mining facilities and Aluminum Plant operations (Refinery, Smelters, Casting and Downstream). Scope 1 and 2 (market-based approach)

CBA participated in two highly significant local and global initiatives related to GHG emissions in 2019:

- An emissions trading simulation led by the Center for Sustainability Studies at Fundação Getúlio Vargas (FGV) – carbon trading between companies was simulated based on their actual emissions and international market rates. The initiative was important in ensuring CBA is up to date on carbon pricing in Brazil.

- The UN Climate Change Conference (COP 25) – an annual, global event to discuss issues surrounding climate change, or the "climate emergency", as it is referred to in the context of the conference. CBA's participation in the conference was important in updating our knowledge about the effects of climate change and key global trends in climate adaptation and mitigation.

Higher productivity and less emissions

CBA uses Söderberg technology in its Smelting operations, where aluminum oxide is transformed into smelting aluminum. Our Green Söderberg project, launched in 2018, is automating the furnace feed process to reduce emissions from the process while also improving efficiency and safety. Currently 36 pots have the technology installed to test and optimize results. All furnaces are expected to be converted by 2030.

Key benefits from the Green Söderberg project:

- Reduced greenhouse gas emissions
- Lower consumption of materials (anode paste and fluoride)
- Improved electric current efficiency in the electrolysis process

Smelting Area in Aluminum Plant (SP)

Biomass boiler

As part of an effort to incorporate more sustainable options in our energy mix, CBA's Refinery will now purchase steam generated by a supplier using wood-chip biomass. This will further reduce emissions from burning fossil fuels while improving the management and predictability of steam costs. Construction of the boiler structure began in 2019, and the start of operation is scheduled for the first half of 2020.



Aluminum Plant (SP)

Other emissions

Besides greenhouse gas emissions, our production process generates particulate and other gas emissions, such as fluoride and sulfur and nitrogen oxides. Emissions management at CBA conforms to environmental legislation and is regularly monitored to support prevention and continual improvement. Internal and external audits are conducted on emissions monitoring results. In addition, the Company monitors data from a Weather and Air Quality Station located near the Aluminum Plant.

Other air emissions (t)	2017	2018	2019		
	Total	Total	Aluminum Plant	Metalex	Total
Nitrogen oxides (NOx)	649	330	361	32	393
Sulfur oxides (SOx)	99	50	58	2	60
Volatile organic compounds (VOCs)	1	4	-	4	4
Particulate matter (PM)	1376	1062.92	1069.19	3.24	1,072
Fluoride	113	160	157	-	157

Note 1: Mining facilities generate no fixed-source emissions and in 2019 production was on hold at our Nickel operations, and therefore these operations generated zero emissions. CBA's processes are not known to emit persistent organic pollutants (POP) or hazardous air pollutants (HAP). These emissions are therefore not monitored.

Note 2: Performance is satisfactory, with all measured items within the ranges permitted by applicable regulations.

GRI 103-1, 103-2, 103-3-305: Emissions, 305-7

A cleaner energy mix

Electricity is one of the primary inputs in the aluminum production process. To mitigate impacts on our cost base and maintain a renewable energy mix, CBA uses fully or jointly owned hydropower plants to supply the entire electricity requirement at the Aluminum Plant (SP). In 2019, 98% of the electricity consumed by our production processes was self-generated hydropower, or a total of 5,500 GWh. Of this amount, 90% is consumed at the Smelters, the most energy-intensive stage of the production process, for which specific energy consumption targets have been set (kWh/t). Including both fuel and electricity, CBA has an ener-

gy consumption of 27.9 million GJ, with 71% deriving from renewable sources.

Existing efforts have been maintained and new efforts have been undertaken to further reduce fuel consumption and therefore energy intensity over the coming years. An example of these efforts is the Leaf project described in the chapter "Innovation and Future Readiness".

In 2019 electricity consumption decreased in our Aluminum and Nickel businesses, primarily reflecting the decrease in production during the period.

Total energy consumption ('000 GJ)	2017	2018			2019		
	Total	Aluminum Business	Nickel Business	Total	Aluminum Business	Nickel Business	Total
Total consumption of renewable fuels ¹	53	18	2	20	60	2	62
Total consumption of nonrenewable fuels ²	8,075	12,071	17	12,088	7,850	18	7,868
Electricity	21,606	21,299	39	21,338	19,877	38	19,915
Total energy consumption within the organization	29,734	33,388	58	33,445	27,787	58	27,845

1. Including hydrous ethanol; anhydrous ethanol (% contained in gasoline); biodiesel and biodiesel (% contained in diesel). 2. Including natural gas, fuel oil (HFO); fuel oil (LSFO); gasoline; diesel; LPG and petroleum coke. Note: data on electricity sold is confidential.

Energy intensity (GJ/metric ton produced)	2018	2019
Aluminum Plant (smelting)	94.2	85.1
Metalex (recycled aluminum billets)	4.8	4.6

In 2019, energy intensity decreased at the Aluminum Plant in the Smelting stage (the most energy-intensive process step) and at Metalex in billet production.

GRI 103-1, 103-2 e 103-2: 302 Energy, 302-1

Waste management

CBA has policies in place on reducing and managing waste in our operations. In addition to minimizing the amount of waste we generate, we also ensure the waste we do generate is disposed of as sustainably as possible by either recycling or utilizing waste as a raw material in another process. All suppliers engaged for waste disposal undergo a screening process that includes on-site assessments on environmental requirements.

Zero Landfilling

Since November 2019, CBA's Alumínio (SP) plant has sent its organic waste for processing into Refuse Derived Fuel (RDF), resulting in zero waste going to landfill.

Potenciar Program

Many waste streams have the potential to become revenue streams for CBA. These were the findings from a project completed in 2019 as part of the *Potenciar* Program, a Votorantim Academy initiative to recognize

and develop talent within Group companies. The project proposal was accepted by CBA and we are now structuring a new department that will create value from waste in internal and external processes.

Generation of value with waste

In 2019, the Environment department, working with the Technology function and operational departments at the Aluminum Plant, completed an in-depth survey of waste streams to identify waste materials with potential untapped value. They then established shared plans and targets to transform waste costs into products.

While CBA already creates value from waste disposal, the new structure is set to optimize the process while enhancing compliance and ensuring the technical and commercial feasibility of each proposed waste disposal solution. CBA has developed value-creating processes for five of the six waste streams that were identified as being feasible in 2019.

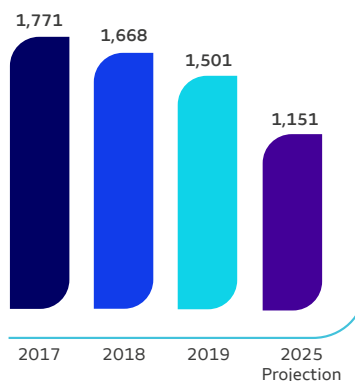
Hazardous and nonhazardous waste

In 2019, nonhazardous waste volumes were reduced and the amounts of waste sent for recycling increased. In Mining, within the Aluminum Business, waste volumes generated declined compared with 2018. Our Nickel operations significantly reduced their waste volumes due to a temporary shutdown.

Waste target

CBA has set a target of reducing waste volumes by 35% by 2025 from a 2017 baseline. This target was set based on gross waste volumes in our Mining facilities and Aluminum Plant operations. Waste volumes decreased by 15.2% in 2019 compared with 2017. The reduction reflects our strategy of using higher-grade ore from our Barro Alto operation, reducing mud volumes stored in dams. The reduction also reflects the decreased production in the period. CBA expects to reduce waste volumes in the following years through improvement projects with a primary focus on Mining facilities and Refinery waste.

2025 Target - Waste generation ('000 t)



Note: Mining facilities and Aluminum Plant operations (Refinery, Smelters, Casting and Downstream)

GRI 103-1, 103-2, 103-3-306: Waste, MM1

Hazardous waste transported, in metric tons (GRI 306-4)	2018	2019		
	Total	Aluminum Business	Nickel Business	Total CBA
Transported (by the Company/contractors)	96,780	44,726	485	45,210

Note: Waste transported by the Aluminum Business included 41 thousand metric tons of legacy waste materials that were disposed of during the period. No waste is imported or exported by the organization. All transported waste was treated and conformed to regulations on land transportation.

GRI 306-2

Non-hazardous waste by method of disposal in metric tons*	2019		
	Aluminum Business	Nickel Business	Total
Reutilization	22,111	-	22,111
Recycling	35,189	175	35,364
Composting	18	-	18
Recovery (including energy recovery)	3,218	12	3,230
Landfilling	536	18	554
On-site storage*	11,787	-	11,787
Other**	1,417,217	-	1,417,217
Total non-hazardous waste	1,490,076	205	1,490,281

*Local Storage includes electronic scrap, water treatment plant sludge and other non-hazardous solid waste.

**"Other" disposal methods include dam disposal (tailings and mud, which are also reported in disclosure MM3) and waste sent for co-processing. CBA uses neither incineration nor underground injection as disposal methods for nonhazardous waste. The increase in stored waste in 2019 is related to the storage of Wastewater Treatment Plant sludge in the dam facility.

Hazardous waste by method of disposal, in metric tons	2019		
	Aluminum Business	Nickel Business	Total
Reutilization	10	-	10
Recycling	1,836	4	1,840
Co-processing	8,966	481	9,447
Incineração (queima de massa)	1	-	1
On-site storage	2	1,118	1,120
Other*	923	370	1,293
Total**	11,739	1,973	13,711

*"Other" disposal methods include physico-chemical treatment of liquid waste and oil emulsion. CBA uses neither underground injection nor composting as disposal methods for hazardous waste. Recovery (including energy recovery), destination for landfill and incineration at the Aluminum Plant volumes were negligible (less than 100 kg).

**For reporting purposes, spent pot lining (re-refined) and remediation waste from the Smelters at the Aluminum Plant (residual stock) are not included in the total volume of hazardous waste. Storage volumes increased due to cleanups conducted in our nickel operations, which generated waste on-site.

Water Treatment Station at Aluminum Plant (SP)

Water & effluents

Water is essential in aluminum production. Usage of this resource at CBA is managed in a way that minimizes impacts and reduces pressures on local water resources. Water is used at some Mining operations for washing bauxite ore, and in our production operations primarily in steam boilers, wet gas scrubbing systems, and cooling processes. The Company's water requirements are sourced primarily through withdrawal from surface and groundwater sources.

Throughout 2019, we continued to recirculate water from the Alumínio (SP) and Mirai (MG) waste dams, increasing water reutilization in the production process.

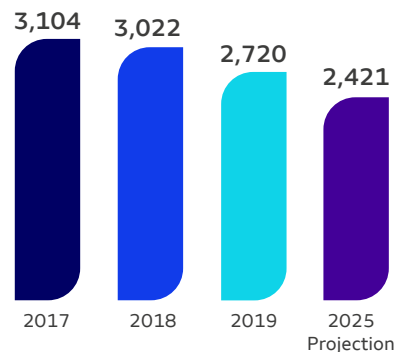
All CBA units identify aspects and impacts related to water usage and create appropriate controls within operating processes, as well as raising awareness and employee engagement. We also run campaigns, such as the Gota d'Água ("Not One Drop") challenge, that engage employees and their relatives as members of the communities surrounding our operations.

CBA's Zona da Mata (Itamarati and Mirai, Minas Gerais) operations have representatives on two committees: the Committee on Tributaries of the Pomba and Muriaé in Minas Gerais and the Committee for Integration of the Paraíba do Sul River Basin (CEIVAP).

New water consumption target

CBA has set a target of reducing water withdrawal by 22% by 2025 from a 2017 baseline. The target was calculated based on the water savings potential of projects that have been planned for this period, and covers the value chain from Mining facilities to Aluminum Plant. The Company had planned to reduce water withdrawals by 4% in 2019 through increased water recycling at the Aluminum Plant. As a result of lower production volumes, however, actual water savings were higher, at 12.4%.

Target 2025 - New water consumption ('000 m³)



Mining facilities and Aluminum Plant operations (Refinery, Smelters, Casting and Downstream)

Water footprint

In 2019 CBA was one of three companies invited to participate in a project called El Agua nos Une – SuizAgua Brasil, led by the Swiss Agency for Development and Cooperation (COSUDE). The initiative is being implemented locally by the Fundação Getulio Vargas Center for Sustainability Studies (FGVces), and aims to improve corporate water stewardship practices through water footprint surveys. Following the survey, in 2020 CBA will have a water stewardship action plan informed by data on the impact from the aluminum supply chain.

GRI 103-1, 103-2, 103-3-303: Water and Effluents

Effluents

At the Aluminum Plant (SP), all effluents are treated and re-utilized on-site in a closed-loop system. As a result, no effluents are discarded into the environment. In our Mining facilities, effluents are treated at a wastewater treatment plant and recipient water bodies are monitored. In our other operations, effluents are discharged into municipal sewage systems in accordance with water quality requirements contained in applicable legislation. Any deviations in water quality are promptly addressed to minimize impacts.

Water withdrawal and effluent discharge, in megaliters	2017	2018			2019		
	Total	Aluminum Business	Nickel Business	Total CBA	Aluminum Business	Nickel Business	Total CBA
Total water withdrawal (303-3)	4,408	3,189	124	3,313	3,042	134	3,176
Total de efluente descartado (303-4)	2,086	1,063	209	1,272	4,447	557	5,004

Note: Water discharge volumes increased significantly in 2019. Most of this volume is related to rainwater and the need to keep dam levels low, which is not directly related to water withdrawal.

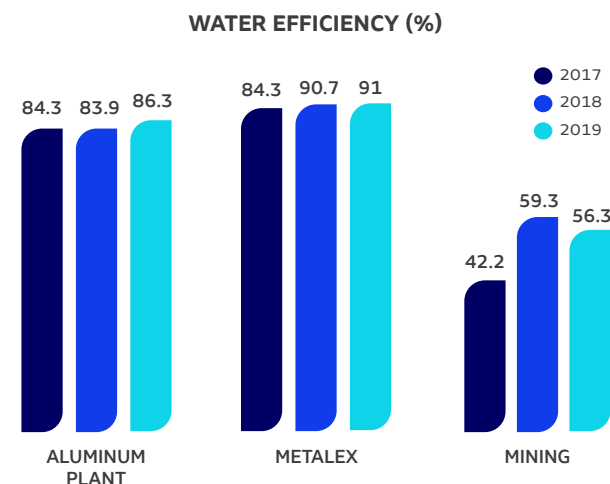
National recognition for reducing water consumption

In March 2019, CBA received an honorable mention in the 14th edition of the FIEPS Water Stewardship Awards. The project in question, called "Solutions to reduce water consumption in alumina production", implemented three initiatives over a two-year period: water withdrawal from the dam for reutilization in the process, reduction of evaporation losses, and replacement of pump gland packings with mechanical seals. The project delivered savings of 80 m³/h of plant water and 8 m³/h of potable water.

GRI 103-1, 103-2, 103-3-303: Water and Effluents, 303-2, CBA-2

Water efficiency

The efficiency calculation used at CBA is the volume of water recycled into the process ('000 m³) divided by the volume of water withdrawal ('000 m³), as recommended by the Sustainable Minerals Institute – Minerals Council of Australia (SMI-MCA) and the Brazilian Aluminum Association (ABAL) for aluminum producers.



Note: the figure for 2018 was restated as an adapted version of the calculation was previously used for operations with dams. To improve comparability with other processes globally, the standard method is now used instead.



Palmital Dam at Alumínio City (SP)

Dam safety

Dams are a critical part of the aluminum value chain. They are expensive to build and operate, and have the potential to cause significant damage. Of CBA's six dams, two are for water impoundment, two are mining dams, and two are industrial waste dams. These dams are located at Alumínio (SP), Itamarati de Minas (MG), Miraí (MG) and Niquelândia (GO).

The water impoundment and waste dams in Miraí and Itamarati de Minas, Minas Gerais, were built in a single step, which means they have never been subsequently raised. The waste dam in Alumínio (SP) has had two downstream raises built prior to reaching its final configuration and the dam in Niquelândia (GO) has had mostly centerline raises. All dams operated by CBA have been built with appropriate materials and never using waste.

To ensure our dams continue to operate safely, the Company has a monitoring system comprising more than 200 observation instruments, as well as regular inspection routines including inspections by the operations team and dam safety experts. CBA

is also supported by an independent geo-technical engineering firm that conducts monthly dam safety assessments and six-monthly inspections, and provides regular theoretical and practical training to our employees and contractors. To further improve our dam safety management practices, in 2019 CBA created a multidisciplinary Dam Committee and established a dedicated department for dam safety.

CBA strictly adheres to the guidelines outlined as part of our Integrated Dam Safety Management System (SIGBAR) to ensure the physical integrity of the dams we operate is maintained. All dams have a dedicated Dam Safety Plan (DSP) as required by law, and an Emergency Response Plan (ERP) that includes training and evacuation drills involving local communities.

Design, installation and ongoing management ensure the safety of the CBA dams

GRI 103-1, 103-2, 103-3, Topic Dam Safety, GRI G4 MM3

Additional Safety Investment

In addition to rigorous monitoring and preventive maintenance, CBA invests in projects, research and development to ensure our dam structures are sound and reliable. R\$ 33.7 million was invested in dam safety in 2019 alone. Half of this investment was allocated to installing early warning and dam monitoring systems as part of Emergency Response Plans (ERPs). In addition, investment was made in new dam disposal technology in Alumínio (SP).

Dry-stack disposal – The future of dam waste management

This project will use filter presses to dewater waste materials stored in the Palmital Dam in Alumínio, shifting from wet disposal (with a low concentration of solids) to dry disposal (with a 75% solids concentration). The project is expected to involve an investment of approximately R\$ 300 million. Construction began in 2019 and the project should be operational in 2023. The initiative could lengthen dam life by as much as 20 years. In addition to longer dam life, the project allows the caustic soda present in the mud to be re-utilized, generating resource savings and supporting operating excellence. The dry mud can also be used in other processes, such as in the cement industry. CBA has research projects at an advanced stage to develop these applications.



Pilot Press Filter at
Alumínio (SP)

To enable dry disposal, the Company has conducted tests with a filter press installed at the Refinery in 2016, with a capacity of 10 t/h. The pilot filter press has been used to recover caustic content from the liquid that is being removed from the dam for dry disposal, further optimizing results. In three years, this project has reduced the amount of impounded surface water by 70%, making the dam dryer and, therefore, safer.

Tailings and mud generated by operations (metric tons)	2017			2018			2019		
	Aluminum Plant	Mineração	Total	Aluminum Plant	Mineração	Total	Aluminum Plant	Mineração	Total
Mud	602	930	1,532	581	913	1,494	507	763	1,270
Sand	103	0	103	100	0	100	114	0	114
Other waste ¹	8	0	8	13	0	13	27	0	27
Total	713	930	1,643	694	913	1,607	648	763	1,411

1. Process waste at the Refinery, such as tank cleaning waste.

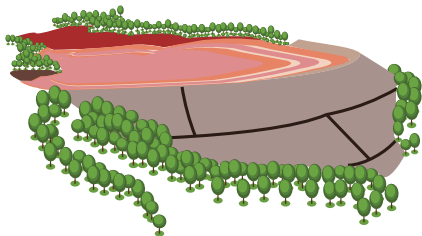
Note: the annual reduction in mud volumes is due to the use of higher-grade bauxite and decreased production.

GRI 103-1, 103-2, 103-3, Topic Dam Safety

An integrated project creating a chain of benefits

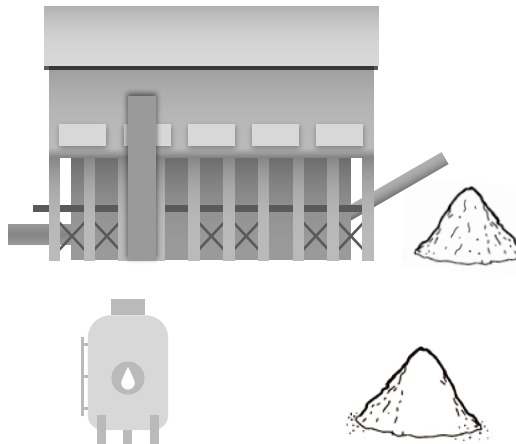
A liquid removal project is one of several ongoing initiatives related to the Alumínio dam. The project is now being optimized through a filter press pilot that allows caustic content to be reutilized. See how the process works:

Water is removed from the dam to allow for dry-stack disposal in the future. 70% of liquid content has been removed.



70% of liquid content has been removed

A pilot filter press is used to transform the sodium carbonate contained in the liquid phase into caustic soda through a high yield causticization process developed at CBA.

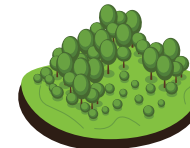


Liquid:
caustic solution

Solid:
calcium carbonate



The caustic solution is re-utilized in plant processes.



The calcium carbonate can be used as a soil amendment in remediating mine sites.



It can also be used in producing cementitious materials (e.g. grout, mortar, cement).

16,000 t of carbonate generated and currently being used in testing and development

1.

2.

3.



Palmital Dam at Alumínio City (SP)

Prevention is always important

Safety drills have been incorporated in our Emergency Response Plans (PAE) and were initiated in 2019, with a very positive media response. These annual drills are important in ensuring that evacuation procedures are up-to-date and in identifying opportunities for improvement. As part of this, 11 emergency sirens were installed in Alumínio (SP), 12 in Miraf (MG) and 7 in Itamarati de Minas (MG). In Niquelândia (GO) the sirens will be installed and the first drill will be held in 2020.

GRI 103-1, 103-2, 103-3, Topic Dam Safety

Alumínio dam drill

More than 1,200 people from the CBA and communities were involved in the first emergency drill for the Palmital Dam in Alumínio (SP). The drill was organized in partnership with the Municipal and State Civil Defense Departments with support from the Military and Road Police, the Fire Department, the Environmental Regulator (CETESB) and the Raposo Tavares toll road operator. The drill involved communities living in the Self-Rescue Zone (ZAS)—the area that would be affected in the hypothetical event of a dam breach—and was designed to train residents and government agencies on the procedures to be followed in an actual emergency.

Zona da Mata Dam Drill

Residents living near the dams in Itamarati de Minas (MG) and Miraf (MG) participated in evacuation drills where they were instructed on how they should act in an emergency. Around 200 people from CBA and community participated across the two drills. The activities were supported by the Municipal and State Civil Defense Departments, the Fire Department, the Military Police, the Environmental Police and government representatives from the six municipalities within the Self-Rescue Zone.



Community membership to the simulated in 2019

60% in Itamarati
of Minas (MG)

23 people

71% in Miraf
(MG)

81 people

29% in Alumínio
(SP)

1,198 people

Biodiversity

CBA works to minimize impacts and preserve biodiversity in our areas of influence. Our focus is on recognizing, preventing, managing and mitigating environmental impacts from our operations.

Our most significant impacts on biodiversity result from clearing vegetation and stripping the soil for mining. To offset these impacts, all environmental licensing processes in the mine cycle are managed transparently and with a high standard of care, and mine sites are rehabilitated and the vegetation restored to form ecological corridors and return the area to farmers in the same or in a better state than before the mining operations.

CBA has implemented biodiversity management plans to ensure minimum requirements on biodiversity management are met. This supports prevention and continual improvement at our operations, ensuring on-site and surrounding areas are safely and effectively managed. All three Mining operations have biodiversity management plans in place.



Planting in recovery area in Mirai (MG)

CBA's Mining operations also have Environmental Education Programs (EEP) for employees and communities that cover biodiversity management and other topics. We also have an environmental management system with targets set for environmental rehabilitation and recontouring of decommissioned mine sites.

CBA's operations in Zona da Mata have a partnership with the Federal University of Viçosa for research and development across three areas: environmental rehabilitation (soil), forest restoration (forests) and water stewardship (forest hydrology). A total of 84 papers have been published as part of the partnership to date, including 16 in scientific journals, 9 doctoral theses and 9 master's dissertations.

A Mobile Beneficiation system is in an initial testing stage as part of our efforts to leverage process technology and innovation to minimize impacts and optimize resources. This will allow the beneficiation stage—a small-scale beneficiation plant—to be moved to the mine site. The system operates as a closed circuit and allows unusable ore to return to the original soil, accelerating the reclamation process and avoiding the need to store waste in dams.

Amount of land disturbed or rehabilitated (hectares)	2017	2018	2019
Total land disturbed and not yet rehabilitated at start of period	28.4	59.7	46.6*
Amount of land newly disturbed within the reporting period	60.8	31.7	27.4
Total amount of land newly rehabilitated within the reporting period	29.5	38.4	39.7
Total land disturbed and not yet rehabilitated at end of period	59.7	53.0	34.3

Note: Figures are for the Mirai, Poços de Caldas and Itamarati de Minas operations, all in the state of Minas Gerais. Disturbed areas include both mining and supporting areas (service roads, decanting wells, etc.).

* In 2019, the Mirai Mining (MG) changed its calculation assumptions, changing its non-rehabilitated disturbed land from 25.6 hectares to 19.10 hectares, impacting the total CBA of "Total land disturbed and not yet rehabilitated at start of period" in relation to the value of "Total land disturbed and not yet rehabilitated at the end of the period (2018).

GRI 103-1, 103-2, 103-3 304: Biodiversity, 304-2, GRI G4 MM1, (GRI G4 MM2)



Atlantic Forest in
Legacy of Waters

Legado das Águas

With funding of R\$ 2 million in 2019, CBA is the largest sponsor of the *Legado das Águas* (“Water Legacy”) reserve, an initiative managed by Reservas Votorantim that is stewarding the entire area around the Vale do Ribeira hydropower plants in São Paulo, which supply electric power to CBA’s operations.

The Reserve was originally acquired by CBA for the preservation of plant cover to protect water resources for hydropower generation; since 2012, the Reserve has been repurposed to include activities that create knowledge, revenue, employment and income through conservation and responsible use of natural resources, providing a positive legacy for society.

The *Legado das Águas* reserve is open to the public, with its 31,000 hectares of hiking trails, lookouts, aquatic recreational activities and Atlantic Forest walks. In 2019, more than 3,000 people visited the Reserve for eco-tourism, studies, research and technical and engagement visits. The plant nursery on the Reserve produces saplings that are sold to reforestation and landscaping projects in cities across São Paulo, bringing the Atlantic Forest to urban centers, and generating new business opportunities from standing forests! The wealth of fauna and flora on the reserve also attracts researchers in different fields who generate scientific information and knowledge about the Atlantic Forest, the world’s most biodiverse—and its most threatened—biome.

Improving cities in the region

Located in Vale do Ribeira, an area whose municipalities have some of the lowest municipal Human Development Index (IDH) indicators in the state of São Paulo, the *Legado das Águas* reserve has a mission of catalyzing socio-economic initiatives that better people’s lives in the cities of Juquiá, Miracatu and Tapiraí. A range of initiatives are being developed and implemented in the areas of public management support, cultural development, inclusive education, entrepreneurship and tourism support, through projects that are aligned with the Votorantim Institute’s social guidelines and technologies.

Legado Verdes do Cerrado

Legado Verdes do Cerrado (“The Cerrado Green Legacy”), a private sustainable development reserve owned by CBA and managed by Reservas Votorantim, invested R\$ 5 million in 2019 in infrastructure, equipment, a nursery expansion, ecotourism and environmental education projects, scientific research, and activities creating sustainable business opportunities.

Created in 2017 in an area spanning 32,000 hectares, the Reserve has implemented a new land-use model in which 20% of its area is allocated to conventional, intelligently managed and profitable economic activities (cattle farming, soya and maize crops and forestry) and the remaining 80% is occupied by preserved native *Cerrado* (wooded savanna).

Production of native saplings expanded in 2019, cementing the initiative as a new and promising business. The nursery was expanded to a production capacity of 300,000 saplings per year, serving reforestation projects largely in the states of Goiás and Minas Gerais.

In crop growing, the Reserve uses syntropic farming, agroforestry and conventional farming techniques, seeking harmony with nature and its resources. In 2019, the Reserve’s agroforestry system received a SEBRAE award in both the regional and the national category. The system

intercrops *baru* (a fruit typical of the *Cerrado*), bananas, *Cerrado* cashew and lemons, providing year-round harvests in what has proven to be a highly successful agricultural project.

SEBRAE Entrepreneurship Education Award

A project titled “Advanced Family Farming Campus”, a collaboration between the *Legado Verdes do Cerrado* reserve and Instituto Educacional Tiradentes, in Niquelândia (GO), took first place at the state level in the SEBRAE Entrepreneurship Education Awards, in the Professional Education Category, and third place at the national level. The partnership provides 20 fully funded scholarships to students from low-income families to attend professional education programs, and the reserve sets aside 10 hectares for practical training.

Partnership

Our partnership with the Goiás Research Funding Foundation (FAPEG) supports nature conservancy projects within the Reserve. Three projects were awarded funding: one for research on zebrafish, which are a good bio-indicator of water quality; one for monitoring soil and sediments, providing valuable information in support of adequate soil management; and the third for identification of flora species.

Other significant partnerships include a collaboration with the State University of Goiás (UEG) to monitor water quality in the Traíras River, an important source of water for the city, and an agreement with the Goiás Agriculture Federation (FAEG) to support smallholders in expanding protected areas on their properties.



Legado Verdes do Cerrado



**Material topics
addressed in this
chapter:**

- Strengthening the aluminum industry
- Innovation and customer satisfaction

<IR> Intellectual Capital

SDG

9 12

06 INNOVATION AND FUTURE READINESS



Development of market and innovation

Developing products with attributes that customers value, and expanding the use of aluminum in our key markets—automotive, packaging and transportation—as well as growth markets where there are opportunities for aluminum. This aspiration set the tone for the activities of our Market Development and Innovation department. In practical terms, this means targeting our innovation efforts to current needs, such as urban mobility, healthiness and industry 4.0, to deliver more customized products to customers. It also means developing new products that ensure the sustainability and longevity of the business, working shoulder-to-shoulder with customers.

The strategy for these efforts is in line with the goals set for our Upstream and Downstream businesses:

- **Build loyalty with Upstream customers**, by developing close relations that foster experience-sharing to drive improved performance and operating excellence for both parties.
- **Be recognized as the industry leader in the packaging sector in the Americas and for developing new solutions for automotive and transportation customers as well as segments offering opportunities in Brazil in the Downstream business**, supplying higher-strength and more lightweight parts made of aluminum. Lightweight parts make equipment more fuel-efficient and produce less greenhouse gas emissions, supporting the overall sustainability of the supply chain.

GRI 103-1, 103-2, 103-3 Innovation and Customer Satisfaction

The future is 4.0

The CBA 4.0 program has identified more than 450 industry 4.0 initiatives with a focus on training and process improvement. Priorities have been set and, within the Competitiveness Management program, the different departments are following up on action plans to accelerate outcomes and process improvements.

Progress so far

Online Metering Systems: combinations of online equipment that correlate and measure process variables. At the Refinery, three pieces of equipment are being tested to separately measure the concentration of alumina and caustic soda in the digestion stage and the liquor/mud interface levels in the precipitation stage. This project can be replicated at different stages of the process and will considerably reduce the requirement for manual sample collection for laboratory testing.

Advanced Analytics - Smelters: using Artificial Intelligence (AI), a system was developed to improve electrolysis cell efficiency by predicting non-run events (NRs). Using different correlations of 13 real-time variables, the system detects potential deviations that could result in loss of efficiency, allowing preventive action to be taken to improve overall cell efficiency.

Leaf Project: This project is using fuzzy logic to develop algorithms to regulate consumption and optimize resources by reducing process variability. The project was first implemented at the Refinery to reduce natural gas consumption, and in 2019 was extended to several Casting furnaces. The goal is to expand the project to all furnaces and to Downstream operations.

Machine and Process Connectivity: this generates reliable data for Process-Based Management and future projects using machine learning, improving process efficiency and productivity. The solution has been implemented in caster roll production at the rolling mills to maximize productivity and product quality.

Data Intelligence: in the Downstream, the rolling mills operations equipment are connected to the cloud with data intelligence. Management teams gain agility to make accurate decisions, contributing to increase the productivity.

Digital Safety Dashboard: a one-stop platform for managing safety data (checking outstanding items and approvals, and tracking action plans), enhancing safety management.

Training on digital platforms and using 3D technology: digital training enhances e-learning, providing greater flexibility in terms of training schedules and greater control of training attendance. In some areas, 3D headsets are used for safety training to enhance the learning experience and improve retention.

Digital Supply Chain – A Logistics Transformation Journey: integrating information, creating connectivity across the logistics chain, and improving productivity and service levels delivered to customers. Real-time information speeds up decision-making and reduces risks inherent to our operations.

CBA's Digital Supply Chain received an award from IT Mídia, which ranked CBA as one of the 100 companies deploying IT in the most innovative ways.



Market Development and Innovation Team in Aluminio (SP)

The digital revolution requires a transformation in people

To fully harness the value of digital technology, it is essential that we rethink our work approach and make the necessary changes, including behavioral changes, across the Company.

This involves three major fronts:

- Implementing exponential technologies, such as mobility, cognition and the Internet of Things;
- Incorporating a digital mindset in our DNA;
- Creating a continuous feedback loop, with processes in place to encourage experimentation and innovation.

This is precisely what CBA is doing to drive competitive differentiation, enhance profitability and reduce corporate risks.

The digital revolution we aspire for is one that is perceived by all stakeholders, especially those engaged with the business; delivers increased shareholder returns; improves product quality; and drives employee engagement. These aspirations underlined the importance of this journey to CBA—a process of seeking out technology that can be deployed in the aluminum world, and one which is just beginning.

Our innovation journey

At CBA innovation is a continuous endeavor in our day-to-day operations. It all begins with potential ideas and projects being identified, primarily by our market intelligence team, based on market trends and customer feedback.

During execution, projects are monitored in terms of progress and pace, work dynamics, deliverables, and challenges at each stage. Other outcome indicators we track include customer/partner loyalty and retention, OEM approvals, positive feedback on completed projects, and awards.

Our innovation methodology

CBA's approach to project management and governance is based on the Design Thinking model, a dynamic approach to innovation that provides the required agility and appropriate indicators, and places the customer at the center of each stage of the process as a thermometer to gage whether we are on the right track. Tools such as Scrum and Canvas are used to gain an understanding of and prioritize projects, often using 3D printer prototyping. These prototypes help to improve both time and resource efficiency.

We encourage employees to share ideas on a digital platform, called IdeAI, that is used to capture and manage those ideas. Projects are classified by order of complexity, readiness and adherence to strategy, and delivery is monitored by a multidisciplinary group as part of weekly product development committee meetings. Projects, challenges, indicators and lessons learned are also shared monthly during innovation and new business forums, and are reported to the leaders involved in the Company's innovation ecosystem.

GRI 103-1, 103-2, 103-3 Innovation and Customer Satisfaction

Close monitoring

The Innovation function organizes visual management flashes on a weekly basis, and projects are validated and approved each month using a governance approach that is focused on time-to-market and allows for errors in the development phase as part of the learning process. A target has also been set for new products in the Company's portfolio, and performance against this target is communicated to commercial and production teams, as well as targets related to project pace and margins on new and ongoing projects.



Printing of 3D
prototype -
Aluminio (SP)

Innovation projects and development new products represented 14.8% of the net revenue from Transformed Business in 2019, from 32 projects and 28 clients.

Planning for innovation

CBA has a strategic roadmap for innovation, describing opportunities and challenges over the following 5 years, including details for each segment. Actions to achieve these goals have already been implemented and are followed closely and reported on a monthly basis to senior leadership.

GRI 103-1, 103-2, 103-3 Innovation and Customer Satisfaction

Collaborating on innovation projects with customers

Many innovation projects are conducted in collaboration with customers. These include projects across themes such as:

- Reducing the weight and assembly costs of aluminum truck bodies for the transportation segment
- Developing easy-to-assemble and lightweight chassis for electric buses
- Roof mounting structures for photovoltaic modules
- Vehicle floor reinforcement to increase torsional stiffness and enhance safety for vehicle occupants
- Automotive projects to improve vehicle safety, reduce weight and enhance sustainability
- In packaging, CBA secured approval in the US of an alloy that is widely used in the domestic market, enabling customers in this market to leverage our knowledge and experience
- In the Brazilian market, we validated a foil product with more malleable mechanical properties that minimize flex cracking, helping to improve usage in existing applications and capture market share in new applications as a solution for autoclavable products and food packaging
- In other markets, we have developed solutions with customers for structural parts with better applications. In these cases, new technologies were used and alternative welding, press-fit and adhesive joints were created to support the application of onboard technologies in customer solutions

Customers

CBA has a department dedicated to managing customer service and ensuring we develop the best possible relations with each customer. Some strategic customers are managed by a Key Account Manager (KAM) to develop deeper, personalized and more enduring relationships under short -, medium-and long-term plans.

CBA conducts Customer Satisfaction Surveys to identify and document the underlying reasons for customer satisfaction and/or dissatisfaction. The findings from the surveys inform strategic plans to improve customer service, using a tailored approach where necessary. And the results have begun to show. Market recognition came in the form of several awards in 2019, including an award in the material supplier category during the Honda Supplier Conference, and a best supplier award for Quality from Denso. Another highlight in the year was the first edition of CBA's Upstream Business Customer Conference to showcase what the Company can do in partnership with customers.



Logistics highlights

In 2019, further progress was made on implementing solutions within the Logistics Transformation Journey initiated in 2017 to optimize service levels and customer satisfaction. Industry 4.0 and the Internet of Things (IoT) have been instrumental in increasing process efficiency. Below are three examples of newly implemented capabilities:

- **My CBA Deliveries app:** CBA and customers can track shipments in real time, and respond rapidly to unexpected events. The solution supports risk management, faster delivery times and greater transparency for customers.

- **Geolocation tool:** this tool tracks vehicle movements and times at the Plant yard, helping to identify and address bottlenecks in the logistics process, improving productivity.

- **Customer Scheduling Portal:** FOB customers and trucking companies can schedule vehicle loading times within a scheduling grid on the requested delivery date. Shipments are prepared and items are separated one day in advance.

The new processes have already delivered improved performance indicators, and customer feedback indicates digital solutions are driving operating excellence.

GRI 103-1, 103-2, 103-3 CBA Topic: Innovation and Customer Satisfaction

Proven improvements in 2019:

- **Inventory accuracy** – up from 93% in 2017 to 99.9%
- **OTIF (On Time In Full)** – an indicator of the extent to which deliveries are made in the quantities and on the date agreed with the customer—up from 65% in 2017 to 98% of upstream customers
- **Backlog** (scheduled but uncompleted deliveries) – down from 200 metric tons in 2017 to 37 metric tons per day
- **Vehicle waiting times at the plant:** – down from an average of 5 hours in 2017 to 2.1 hours
- **Daily shipments overview** – data now has hourly resolution, supporting identification of bottlenecks in the logistics process in real time to inform immediate action and problem solving.



Innovation in events and scientific production

CBA has invested in partnerships for collaborative scientific research. The Company has selected and developed important collaborations with universities both near our operations and across the country that have mutually complementary capabilities.

In Market Development and Innovation, two projects were approved to source qualified professionals through a partnership with Instituto Euvaldo Lodi (IEL) and the Brazilian Counsel for Scientific and Technological Development (CNPq). Newly graduated grant holders now collaborate directly in innovation projects. In a partnership with the Brazilian Aluminum Association (ABAL), a research grant holder has been allocated to the Technology department to develop new materials using graphene for applications with aluminum.

In addition, CBA has organized a range of innovation workshops with universities, institutions, customers and partners, as well as Tech Day events that bring together aluminum industry experts to discuss applications, trends, innovative solutions and opportunities. In 2019, our Tech Day events showcased new products in the truck equipment segment, helped to strengthen alliances in the automotive segment, and accelerated opportunities in packaging as well as new opportunities in other potential segments. A workshop on additive manufacturing was held at the Alumínio (SP) plant, with guest speakers including academics and industry experts.

CBA also had a significant presence at Votorantim Hub, an initiative organized by Votorantim subsidiaries to show stakeholders their transformation journeys toward the future. Visitors to CBA's booth were invited to use a tour guide to learn about our technological transformation and sustainability journey. They also had the opportunity to interact with our virtual reality tools, test their compatibility with the Company's aspirations, participate in creating a word cloud, watch videos and interact with employees.

GRI 102-43, 103-1, 103-2, 103-3 Innovation and Customer Satisfaction



Proudly building the future

With so many achievements in 2019, we are confident that CBA has made great strides toward a more sustainable, technology-enabled and efficient future, in which customers, partners and employees work together for each other's and society's benefit. We are nimble, resourceful and prepared, and have the best team to turn our aspirations into reality.

Ricardo Carvalho

CEO, Companhia Brasileira de Alumínio (CBA)

GRI & ASI supplement

GRI 102-5 Closely Held Corporation

GRI 102-8 and 102-41 – CBA ended year 2019 with a workforce of 4,800 employees—a figure relatively level with 2018—all of whom are covered by collective bargaining agreements. The Company also has 1,327 fixed third-party employees.

Total direct employees by employment type and gender	2018			2019		
	Men	Women	Total	Men	Women	Total
Full-time direct employees	4,458	358	4,816	4,380	420	4,800

Note: these figures exclude apprentices and interns. CBA has no part-time employees.

Total direct employees by employment contract and gender	2017			2018			2019		
	Men	Women	Total	Men	Women	Total	Men	Women	Total
Permanent	4,406	292	4,698	4,328	335	4,663	4,355	407	4,762
Temporary	116	19	135	130	23	153	25	13	38
Total	4,522	311	4,833	4,458	358	4,816	4,380	420	4,800

Our operations are located in the Midwest, Southeast and South of Brazil.

Total direct employees by employment contract and region	2017			2018			2019		
	Southeast	Midwest	South	Southeast	Midwest	South	Southeast	Midwest	South
Permanent	4,491	192	15	4,466	182	15	4,569	180	13
Temporary	107	28	0	153	0	0	35	3	0
Total	4,598	220	15	4,619	182	15	4,604	183	13

GRI 102-11

At CBA the precautionary principle is used as a guide for risk analysis and procedures, but has not been formally adopted by the company. The Company has a Corporate Risk Matrix in place and conducts risk updating rounds with Heads and Risk

Owners to ensure all business risks and action plans are covered and in progress. Impact assessments take account of all identified risk factors, and the potential consequences of risks materializing are identified across six dimensions: Financial, Reputational, Environment, Health & Safety, Social and Legal.

The likelihood of a risk is determined based on the history of prior events, future expectations and projections, and the current situation of identified risk factors. After formalizing and implementing one or more action plans addressing risk events, which are monitored by the relevant departments, those risks given a “high” or “critical” final risk rating are reported to CBA’s Executive Board, Audit Committee and Board of Directors.

GRI 102-13

CBA is an active member of industry associations in the regions in which we are present, where we contribute to discussions on issues affecting the aluminum supply chain and work with other stakeholders to support local sustainable development. These associations include the following:

- Brazilian Aluminum Association (ABAL), where we are represented on the Board and on several committees, subcommittees and working groups
- International Aluminium Institute (IAI)
- Aluminium Stewardship Initiative (ASI)
- Poços de Caldas Association of Mining Companies (ASMPC)
- Serra do Brigadeiro State Park Advisory Board
- Committee on Tributaries of the Pomba and Muriaé in Minas Gerais (COMPE)
- Committee for Integration of the Paraíba do Sul River Basin (CEIVAP)
- Brazilian Association for Business Communications (ABERJE)
- Brazilian Packaging Association (ABRE)
- Brazilian Association of Aluminum Window and Door Manufacturers (AFEAL)
- Brazilian Association for Photovoltaic Solar Power (ABSOLAR)
- Brazilian Association of Truck Equipment Manufacturers (ANFIR)
- Global Aluminium Foil Roller Initiative (ALUFOIL)

GRI 102-45

Aluminum and Mining, Nickel and Own Hydroelectric Plants), Metalex Ltda., CBA Energia Participações S.A., CBA Machadinho Geração de Energia Ltda., BAESA-Energética Barra Grande S.A. and ENERCAN-Campos Novos Energia S.A.

GRI 102-46

The report coordinators were responsible for considering and defining report boundaries for each topic for year 2019. The analysis was done by a team representing the Sustainability (project leader), Environment, Treasury and Investor Relations & Communications departments. The GRI Standards were applied with support from specialized consultants.

GRI 102-48

In this year's report the GRI disclosures reflect the performance of all CBA operations. Any restatements are presented on a disclosure-specific basis.

GRI 102-49

There were no changes. The information compiled for this report addresses the material topics defined in the materiality exercise in 2017 and used for the previous report.

GRI 102-51

Date of most recent report: 2018 CBA Annual Report.

GRI 102-56

The decision to seek external assurance for the report was taken and approved by senior leadership, including the CEO. Assurance services were conducted independently.

GRI 103-2 302

Energy - CBA uses a structured approach to energy management that is supported by an integrated management system covering certification practices, routines, improvements, initiatives, systems and policies.

GRI 202-1

Employees are paid the entry-level wages established for their categories under collective bargaining agreements, with no gender-based differences, at all significant locations of operation. The lowest entry-level wage paid to employees is 4% higher than the national minimum wage.

GRI 201-2

To assess the financial implications and other risks and opportunities due to climate change, the Alumínio (SP) operation developed a risk map that identified three threats:

Risks or opportunities due to climate change	Nature of risk	Associated impacts	Financial implications	Methods used to manage the risk or opportunity	Cost of actions taken
Water shortages due to extreme drought	Physical	Disruption of operations	Costs of disruptions (not calculated)	Daily monitoring of water reserve levels and rainfall, and fortnightly meetings of a multidisciplinary team to monitor water usage indicators. If a reduction in reserves is identified, meetings are held weekly and a crisis management plan is developed.	Costs have not been identified as these are routine activities
The effluent pond overflowing due to extreme weather	Physical	Risk of water body contamination and fines	Cost of fines (not calculated)	Daily monitoring of effluent pond levels and, where necessary, activation of rainwater diversion procedures. The Water Treatment Plant team is available 24/7 to ensure a prompt and effective response.	Costs have not been identified as these are routine activities
Financial risks of carbon pricing	Regulatory	Costs of offsetting emissions	Based on the PMR Brazil questionnaire, these costs were calculated to be as high as R\$ 20 million/year	Efforts to reduce emissions over the coming years and participation in the FGVces Emissions Trading Simulation to determine the best way to respond to each pricing scenario.	An annual cost of R\$ 10,400 to participate in simulations. Other reduction projects have not been taken into account as they have other associated productivity and efficiency benefits.

CBA has not sustained significant climate-change impacts as measures taken to date have been effective. However, the Company plans to perform the relevant calculations and revise its risks in 2020. CBA also plans to participate in the Carbon Disclosure Project (CDP), a voluntary climate change program, the following year.

Water withdrawal, in megaliters GRI 303-3	2017			2018			2019		
	Total Aluminum Business	Total Nickel Business	Total CBA	Total Aluminum Business	Total Nickel Business	Total CBA	Total Aluminum Business	Total Nickel Business	Total CBA
Surface water, including water from wetlands, rivers, lakes, and oceans	3,308	984	4,023	2,992	118	3,110	2,900	110	3,010
Groundwater	64	0	64	72	0	72	136	0	136
Rainwater (harvested and stored directly by the organization)	307	0	307	118	2	120	0	22	22
Utility-supplied water	8	5	14	7	4	11	6	1	7
Total water withdrawal	3,418	990	4,408	3,189	124	3,313	3,042	133	3,175

Note: CBA makes no withdrawals of seawater, produced water or withdrawals in areas with water stress. All water withdrawals are freshwater (≤ 1000 mg/L total dissolved solids).

Water discharge, in megaliters GRI 303-4	2017	2018			2019		
	Total	Aluminum Business	Nickel Business	Total CBA	Aluminum Business	Nickel Business	Total CBA
Destination							
Surface water, including water from wetlands, rivers, lakes, and oceans	Not reported	811	206	1,017	4,442	516	4,958
Water sent to other organizations	Not reported	252	3	255	5	41	46
Total discharge	Not reported	1,063	209	1,272	4,447	557	5,004

Note: CBA does not discharge effluents into seawater/groundwater. No discharges are made in areas with water stress. All water withdrawals are freshwater (≤ 1000 mg/L total dissolved solids).

GRI 304-2

Except at Mining facilities, there were no impacts on biodiversity directly related to our operations, as no facilities were expanded. However, forest fires occurred on Company-owned land during the dry season, which were unrelated to our operations. Our operations have fire responder teams available to respond in the event of a forest fire in order to minimize potential damages.

No studies were conducted during the period with respect to

the introduction of invasive species, pests, and pathogens or the reduction of species.

During the year there were no impacts related to habitat conversion or changes in ecological processes outside the natural range of variation. There were also no significant impacts with reference to the extent of areas impacted, as ore bodies are localized within confined areas and are mined during short periods of time. In addition, there were no significant impacts on species in our Aluminum Plant operations. All identified im-

pacts are documented and are considered significant when categorized above a threshold of IV.

GRI 304-3

CBA has 62.4 thousand hectares of protected areas, and 39.7 hectares were restored during the period. These areas contain vegetation of the Cerrado and Atlantic Forest biomes, as shown in the table below.

GRI 304-3

Size and location of all habitat areas protected or restored (km²)

Biome	2018			2019		
	Area approved by independent external professionals or conforming to external parameters/ protocols		Área total	Area approved by independent external professionals or conforming to external parameters/ protocols		Área total
	Yes	No		Yes	No	
Cerrado	0	296	296	0	384	384
Atlantic Forest	0.001	36	36	0	240	240
Other	0	0	0	0	0	0
Total km ²	0.001	331	331	0	624	624

Note: this item covers CBA's Mining facilities (Mirai, Itamarati de Minas and Poços de Caldas), the Legado do Cerrado reserve, Nazca, the Aluminum Block and the Transshipment Yard.

GHG emissions ('000 tCO ₂ e)	2017	2018	2019
GRI 305-1, 305-2, 305-3			
Stationary combustion	434.6	456,1	421.6
Mobile combustion	16.2	13,3	17.6
Fugitive emissions	10.6	4,9	6.5
Industrial processes	858.1	862.1	813.5
Agricultural	1.8	0.01	0.1
Total scope 1	1,342.8	1,336.5	1,259.2
c. Biogenic CO ₂ emissions	4.1	1.9	2.8
Removal of biogenic CO ₂	Not available	3.5	7.6
Total scope 2 (market-based)	10.2	17.9	9.9
Partial scope 3 (bauxite transportation)	21.4	28,7	25.0

Note: includes the Alumínio (Aluminum Plant), Metalex, São Miguel Paulista, Niquelândia, Mirai, Itamarati de Minas and Poços de Caldas operations. Figures for 2017 and 2018 restated for conformity to the updated Public Emissions Inventory tool. Changes in land use generated only biogenic emissions.

GRI 305-1, 305-2 e 305-3

The method used by the organization to consolidate the emissions from all operations is operational control in accordance with the Brazilian GHG Protocol Program, which covers the following greenhouse gases: CO₂, CH₄, N₂O, HFCs, PFCs, SF₆ and NF₃. Emissions performance was considered satisfactory in 2019, with scope 1 emissions declining as a result of reduced production, and with hydropower plants supplying 98% of the Company's electricity requirement (compared with 96% in 2018). This resulted in low scope 2 emissions given that hydropower is considered a clean source. Scope 3 emissions rose with increased use of bauxite from the Barro Alto mining, which is further than other Mining facilities (the percentage of bauxite from Barro Alto increased from 53% to 62%).

GRI 306-3

CBA has a chemicals management procedure with requirements on proper storage and use of chemicals and on mitigating the risk of chemical spills and resulting soil and water contamination or effects on neighboring communities. Chemical storage areas are required to have bunding and emergency response kits, and all operations have environmental response teams who are trained to respond in the event of a spill. The Company also has a contaminated area management procedure covering preliminary assessments of areas with contamination risk, confirmation investigations, risk analyses and adequate remediation of confirmed contamination. No significant spills occurred in 2019. CBA's performance is therefore deemed to be satisfactory.

GRI 307-1

CBA received notices of environmental violations in 2019 against which the Com-

pany submitted its defense to the relevant authorities, and no decisions have been issued to date imposing fines/sanctions. As a strategic decision, a settlement was reached to end proceedings involving a dispute over environmental licensing documentation for Mirai (MG), after fines were imposed in 2015. CBA agreed to pay the fines solely for the purpose of diminishing its liability, but without this constituting any admission of guilt or liability. Under the settlement, the fines will be paid in 36 installments amounting to an aggregate payment of R\$ 115,257.70 in 2019. The Company is committed to compliance and any notices of violations from the relevant authorities are immediately reviewed and defended or appealed against.

GRI 403-5

CBA plans and implements training on safety protocols, induction training for all employees and contractors, as well as statutory training, at the frequency required by our internal controls.

GRI 403-7

CBA has Occupational Health & Safety policies and procedures in place for all on- and off-site activities, and provides information and directions to surrounding communities as necessary.

GRI 403-9

Five high consequence injuries occurred in 2019 involving direct employees. Each operation area has a risk assessment spreadsheet identifying the risks and hazards inherent to that area. The most significant risks are related to falling from heights and chemicals. If any such incidents occur, a root-cause analysis is conducted and an action plan is developed to prevent recurrence.

Note: the most prevalent incidents were hand and foot injuries. Indicators are consolidated in accordance with NBR 14280 guidelines. All incidents requiring any form of medical attention are reported. Serious (high-consequence) injuries are defined as injuries requiring medical care (lost time). There were no fatalities in 2019; CBA's fatality rate is therefore zero. The Company's internal controls use consolidated data covering both direct and third-party employees, and some data for 2017 and 2018 are not available for direct employees only.

*Total of lost and carried forward work days.

GRI 403-9 a. Work-related injuries (direct employees)	2017		2018		2019	
	Aluminum Business	Nickel Business	Aluminum Business	Nickel Business	Aluminum Business	Nickel Business
Number of high-consequence work-related injuries (excluding fatalities)	N/D	N/D	N/D	N/D	4	0
Rate of high-consequence work-related injuries (excluding fatalities)	N/D	N/D	N/D	N/D	0.42	0
Number of work-related injuries	23	0	24	0	16	0
Injury frequency rate	2.57	0	2,62	0	1.69	0
Injury severity rate	107.21	0	31	0	134.1	0
Number of lost days*	N/D	N/D	N/D	N/D	1,271	0
Number of hours worked.	8,963,588	N/D	9,135,179	330,471	9,484,314	333,172

Note: the most prevalent incidents were hand and foot injuries. Indicators are consolidated in accordance with NBR 14280 guidelines. All incidents requiring any form of medical attention are reported. Serious (high-consequence) injuries are defined as injuries requiring medical care (lost time). There were no fatalities in 2019; CBA's fatality rate is therefore zero. The Company's internal controls use consolidated data covering both direct and third-party employees, and some data for 2017 and 2018 are not available for direct employees only.

* For "other employees" are considered full-time third-party employees

GRI 403-9 a. Work-related injuries (other employees)*	2017		2018		2019	
	Negócio Alumínio	Negócio Níquel	Negócio Alumínio	Negócio Níquel	Negócio Alumínio	Negócio Níquel
Number of high-consequence work-related injuries (excluding fatalities)	N/D	N/D	N/D	N/D	1	0
Rate of high-consequence work-related injuries (excluding fatalities)	N/D	N/D	N/D	N/D	0.24	0
Number of work-related injuries (including fatalities)	5	0	7	1	8	0
Rate of work-related injuries (including fatalities)	1.48	0	2.11	2.84	1.91	0
Injury severity rate	3	0	150	0	113	0
Number of hours worked.	3,368,638	N/D	3,305,346	351,045	4,194.453	303,441

Operations with significant actual or potential negative impacts on local communities GRI 413-2	2019
Total number of suppliers	13
Total operations with significant potential impacts	4
Location of operations with significant potential impacts (municipality/State)	Alumínio (SP), Miraf (MG), Itamarati de Minas (MG) and Niquelândia (GO)

GRI 412-3	2018	2019
Total number of investment agreements and contracts signed in the period	344	490
Total number of investment agreements and contracts that include human rights clauses or that underwent human rights screening	200	161
Percentage of investment agreements and contracts that include human rights clauses or that underwent human rights screening	58%	33%
Definition of significant investment contracts/agreements	Significant contracts are contracts with a term longer than six months and/or a value greater than R\$ 1 million.	Significant contracts are contracts with a term longer than six months and/or a value greater than R\$ 1 million.

GRI 413-2

No actual negative impacts were identified at CBA's operations. However, there are significant potential impacts as identified through two different methodologies. The first is the Company's strategic risk matrix, which identifies social impacts affecting the community. Risks are considered significant if rated as "extreme" in terms of social impact, although the likelihood of occurrence is extremely low due to the controls that are in place. The second methodology is based on a Prioritization of Communities for Social Action based on the potential impact from the decommissioning of the relevant operation, denoting economic dependence. The Alumínio (SP), Miraf (MG) and Niquelândia (GO) operations have a potential impact rated as significant.

For dam-related impacts, a management system is in place to ensure safe operation. In relation to economic dependence, affected locations are covered by social action plans providing public management support and development of local supply chains.

GRI 419-1

The Company tracks all legal proceedings through a software-based management system. Fines and awards related to labor matters, including court settlement, were a total of R\$ 27.4 million in 2019, of which a significant portion represents payments and proceedings involving units where operations were partially suspended pending resolution of the dispute. During the period, three fines were received related to tax proceedings, in a total amount of R\$ 4.2 millions. A tax-related fine of R\$ 15,000 was also paid during the period. For the remaining cases the Company submitted its defense and the proceedings are currently in progress.

GRI MM7

As in the previous year, in 2019 there were 25 complaints in Zona da Mata and 1 in Poços de Caldas. These complaints were largely related to impacts from our operations such as dust, noise, sediment carriage during the rainy season, vehicle speeds and dam emergency alarm sirens being activated due to the potential theft of equipment. To mitigate dust emissions, tank trucks are used to spray the roads and make the dust settle. To address complaints about noise, operation hours were adjusted to reduce disturbance. Carried sediments were addressed by the Mining facilities team through interventions in affected areas. Vehicle speed issues were addressed through Toolbox Talks and surprise inspections by the Safety team. In relation to disturbance from the alarm system, the option is being considered to reduce the motion sensor coverage area to closer to the towers. This entire process is documented and managed using a control spreadsheet. At the factory, there is still no control over the total complaints received from the community, but the CBA provides a contact point for complaints through the Ethics Line Channel, from where it is later directed to the responsible areas.

ASI 3.3.b

In 2019 CBA paid R\$ 2.29 million in mining taxes to the Brazilian Mining Agency.

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For the Materiality Disclosures Service, GRI Services reviewed that the GRI content index is clearly presented and the references for Disclosures 102-40 to 102-49 align with appropriate sections in the body of the report. The service was performed on the Portuguese version of the report.

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GRI 103: General disclosures 2016	103-2	The management approach and its components	61, 62, 63	
GRI 103: General disclosures 2016	103-3	Evaluation of the management approach	61, 62, 63	
GRI 304: Biodiversity 2016	304-2	Significant impacts of activities, products and services on biodiversity	61, 75	Yes
GRI 304: Biodiversity 2016	304-3	Habitats protected or restored	75, 76	Yes
GRI mining and metals sector supplement	MM1	Amount of land (owned or leased, and managed for production activities or extractive use) disturbed or rehabilitated	53, 61	Yes
GRI mining and metals sector supplement	MM2	The number and percentage of total sites identified as requiring biodiversity management plans according to stated criteria, and the number (percentage) of those sites with plans in place	61	Yes
TOPIC - 305: EMISSIONS MATERIAL TOPIC: ECO-EFFICIENT PRODUCTION				
GRI 103: General disclosures 2016	103-1	Explanation of the material topic and its Boundary	48, 49, 51	
GRI 103: General disclosures 2016	103-2	The management approach and its components	48, 49, 51	
GRI 103: General disclosures 2016	103-3	Evaluation of the management approach	48, 49, 51	
GRI 305: Emissions 2016	305-1	Direct (Scope 1) GHG emissions	49, 76	Yes
GRI 305: Emissions 2016	305-2	Energy indirect (Scope 2) GHG emissions	49, 76	Yes
GRI 305: Emissions 2016	305-3	Other indirect GHG emissions (scope 3)	49, 76	Yes
GRI 305: Emissions 2016	305-4	GHG emissions intensity	48	
GRI 305: Emissions 2016	305-7	Nitrogen oxides (NOX), sulfur oxides (SOX), and other significant air emissions	51	Yes
TOPIC - 306: WASTE MATERIAL TOPIC: DAM SAFETY AND WASTE MANAGEMENT				
GRI 103: General disclosures 2016	103-1	Explanation of the material topic and its Boundary	53	
GRI 103: General disclosures 2016	103-2	The management approach and its components	53	
GRI 103: General disclosures 2016	103-3	Evaluation of the management approach	53	
GRI 306: Waste 2016	306-2	Waste by type and disposal method	54	Yes
GRI 306: Waste 2016	306-3	Significant spills	76	Yes
GRI 306: Waste 2016	306-4	Transport of hazardous waste	53	Yes

GRI Standards	Disclosure Item	Page	Comments and omissions	External assurance
TOPIC - 307: ENVIRONMENTAL COMPLIANCE MATERIAL TOPIC: BUSINESS ETHICS, COMPLIANCE AND RESILIENCE				
GRI 103: General disclosures 2016	103-1	Explanation of the material topic and its Boundary	46	
GRI 103: General disclosures 2016	103-2	The management approach and its components	46	
GRI 103: General disclosures 2016	103-3	Evaluation of the management approach	46	
GRI 307: Environmental compliance 2016	307-1	Non-compliance with environmental laws and regulations	76	Yes
TOPIC - 403: OCCUPATIONAL HEALTH AND SAFETY MATERIAL TOPIC: INTEGRITY AND EMPLOYEE WELL-BEING				
GRI 103: General disclosures 2016	103-1	Explanation of the material topic and its Boundary	31, 32, 33, 34	
GRI 103: General disclosures 2016	103-2	The management approach and its components	31, 32, 33, 34	
GRI 103: General disclosures 2016	103-3	Evaluation of the management approach	31, 32, 33, 34	
GRI 403: Occupational Health and Safety 2018	403-1	Occupational health and safety management system	32	
GRI 403: Occupational Health and Safety 2018	403-2	Hazard identification, risk assessment, and incident investigation	32	Yes
GRI 403: Occupational Health and Safety 2018	403-3	Occupational health services	34	Yes
GRI 403: Occupational Health and Safety 2018	403-4	Worker participation, consultation, and communication on occupational health and safety	32	
GRI 403: Occupational Health and Safety 2018	403-5	Worker training on occupational health and safety	35	
GRI 403: Occupational Health and Safety 2018	403-6	Promotion of worker health	34	
GRI 403: Occupational Health and Safety 2018	403-7	Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	76	
GRI 403: Occupational Health and Safety 2018	403-9	Work-related injuries	31, 32, 76, 77	
TOPIC - 412: HUMAN RIGHTS ASSESSMENT MATERIAL TOPIC: BUSINESS ETHICS, COMPLIANCE AND RESILIENCE				
GRI 103: General disclosures 2016	103-1	Explanation of the material topic and its Boundary	22	
GRI 103: General disclosures 2016	103-2	The management approach and its components	22	
GRI 103: General disclosures 2016	103-3	Evaluation of the management approach	22	
GRI 412: Human Rights Assessment 2016	412-1	Operations that have been subject to human rights reviews or impact assessments	22	Yes
GRI 412: Human Rights Assessment 2016	412-2	Employee training on human rights policies or procedures	22	
GRI 412: Human Rights Assessment 2016	412-3	Significant investment agreements and contracts that include human rights clauses or that underwent human rights screening	78	
TOPIC - 413: LOCAL COMMUNITIES MATERIAL TOPIC: SOCIAL LICENSE TO OPERATE				
GRI 103: General disclosures 2016	103-1	Explanation of the material topic and its Boundary	36, 37	

GRI Standards	Disclosure Item		Page	Comments and omissions	External assurance
GRI 103: General disclosures 2016	103-2	The management approach and its components	36, 37		
GRI 103: General disclosures 2016	103-3	Evaluation of the management approach	36, 37		
GRI 413: Local communities 2016	413-1	Operations with local community engagement, impact assessments, and development programs	36		Yes
GRI 413: Local communities 2016	413-2	Operations with significant actual and potential negative impacts on local communities	78		Yes
GRI mining and metals sector supplement	MM7	The extent to which grievance mechanisms were used to resolve disputes relating to land use, customary rights of local communities and indigenous peoples, and the outcomes	36, 78		Yes
TOPIC - 419: SOCIOECONOMIC COMPLIANCE MATERIAL TOPIC: BUSINESS ETHICS, COMPLIANCE AND RESILIENCE					
GRI 103: General disclosures 2016	103-1	Explanation of the material topic and its Boundary	24, 25		
GRI 103: General disclosures 2016	103-2	The management approach and its components	24, 25		
GRI 103: General disclosures 2016	103-3	Evaluation of the management approach	24, 25		
GRI 419: 2016 Socioeconomic Compliance	419-1	Non-compliance with laws and regulations in the social and economic areas	78		Yes
OWN TOPIC - INNOVATION AND CUSTOMER SATISFACTION MATERIAL TOPIC: INNOVATION AND CUSTOMER SATISFACTION					
GRI 103: General disclosures 2016	103-1	Explanation of the material topic and its Boundary	65, 68, 69, 70 e 71		
GRI 103: General disclosures 2016	103-2	The management approach and its components	65, 68, 69, 70 e 71		
GRI 103: General disclosures 2016	103-3	Evaluation of the management approach	65, 68, 69, 70 e 71		
Own topic: Innovation and customer satisfaction	CBA-1	Investments in technology and innovation	9		
OWN TOPIC - DAM SAFETY MATERIAL TOPIC: DAM SAFETY AND WASTE MANAGEMENT					
GRI 103: General disclosures 2016	103-1	Explanation of the material topic and its Boundary	57, 58, 59, 60		
GRI 103: General disclosures 2016	103-2	The management approach and its components	57, 58, 59, 60		
GRI 103: General disclosures 2016	103-3	Evaluation of the management approach	57, 58, 59, 60		
GRI mining and metals sector supplement	MM3	Total amounts of overburden, rock, tailings, and sludges and their associated risks	58		Yes

Independent auditor's limited assurance report on sustainability information in the 2019 Annual Report

To the Board of Directors and Stockholders
Companhia Brasileira de Alumínio
Alumínio - SP

Introduction

Companhia Brasileira de Alumínio ("CBA" or "Company") engaged us to present our limited assurance report on the compilation of sustainability information in the **CBA 2019 Annual Report** for the year ended December 31, 2019,

Management's responsibility

Management of CBA is responsible for the preparation and fair presentation of the sustainability information in the 2019 Annual Report, presented in accordance with the Global Reporting Initiative (GRI-Standards) and for such internal controls as it determines necessary to prepare of information free from material misstatement, whether due to fraud or error.

Independent auditor's responsibilities

Our responsibility is to express a conclusion on the sustainability information included in the 2019 Annual Report based on our limited assurance engagement carried out in accordance with the Technical Communication CTO 01, "Issuance of an Assurance Report related to Sustainability and So-

cial Responsibility", issued by the Federal Accounting Council (CFC), based on the Brazilian standard NBC TO 3000, "Assurance Engagements Other than Audit and Review", also issued by the CFC, which is equivalent to the international standard ISAE 3000, "Assurance engagements other than audits or reviews of historical financial information", issued by the International Auditing and Assurance Standards Board (IAASB). Those standards require that we comply with ethical and independence requirements, and other responsibilities, including in relation to the Brazilian Standard on Quality Control (NBC PA 01) and, therefore, the maintenance of a comprehensive quality control system, including formal compliance policies and procedures for ethical requirements, professional standards and legal and regulatory requirements.

These standards also require the work to be planned and performed to obtain limited assurance that the information included in the 2019 Annual Report, taken as a whole, is free from material misstatement.

A limited assurance engagement conducted in accordance with the Brazilian standard NBC TO 3000 and ISAE 3000 mainly consists of making inquiries of management and other professionals of the en-

tity involved in the preparation of the sustainability information, as well as applying analytical procedures to obtain evidence that enables the issue of a limited assurance conclusion on the information taken as a whole. A limited assurance engagement also requires the performance of additional procedures when the independent auditor becomes aware of matters that lead the auditor to believe that the information taken as a whole might present significant misstatements.

The procedures selected are based on our understanding of the procedures applied in the compilation and presentation of the information in the 2019 Annual Report, other engagement circumstances and our analysis of the areas in which significant misstatements might exist. The following procedures were adopted:

- Planning the work, taking into consideration the materiality and the volume of quantitative and qualitative information and the operating and internal control systems used to prepare the information in the 2019 Annual Report;
- Understanding the calculation methodology and the procedures adopted for the compilation of indicators through interviews with the managers responsible for the preparation of the information;
- Applying analytical procedures to quantitative

information and making inquiries regarding the qualitative information and its correlation with the indicators disclosed in the 2019 Annual Report;

(d) Comparing the financial indicators with the financial statements and/or accounting records.

The limited assurance engagement also included tests to assess compliance with the guidelines of the Global Reporting Initiative (GRI-Standards) applied in the preparation of the information related to sustainability included in the 2019 Annual Report.

We believe that the evidence we have obtained is sufficient and appropriate to provide a basis for our limited assurance conclusion.

Scope and limitations

The procedures applied in a limited assurance engagement are substantially less detailed than those applied in a reasonable assurance engagement, the objective of which is the issuance of an opinion on the sustainability information in the 2019 Annual Report. Consequently, we were not able to obtain reasonable assurance that we might become aware of all significant matters that might be identified in an assurance engagement, the objective of which is the issue of an opinion. Had we performed an engagement with the objective

of issuing an opinion, we might have identified other matters and possible misstatements in the information related to sustainability in the 2019 Annual Report. Therefore, we do not express an opinion on this information;

Non-financial data is subject to more inherent limitations than financial data, due to the nature and diversity of the methods used to determine, calculate and estimate these data. Qualitative interpretations of the relevance, materiality, and accuracy of the data are subject to individual assumptions and judgments. Furthermore, we did not carry out any work on the data reported for prior periods, nor future projections and goals.

The preparation and presentation of the sustainability indicators were performed pursuant to the criteria of the GRI Standards and, therefore, do not aim to provide assurance with the regard to the compliance with social, economic, environmental, or engineering laws and regulations. However, the aforementioned standards establish the presentation and disclosure of possible cases of non-compliance with such regulations when sanctions or significant fines are applied. Our limited assurance report should be read and understood in this context, which is inherent to the criteria selected (GRI-Standards).

Conclusion

Based on these procedures, no matter has come to our attention that causes us to believe that the information included in the 2019 Annual Report of Companhia Brasileira de Alumínio has not been compiled, in all material respects, in accordance with the Global Reporting Initiative (GRI – Standards).

São Paulo, March 26, 2020

PricewaterhouseCoopers
Contadores Públicos
CRC 2SP023173/O-4

Maurício Colombari
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PricewaterhouseCoopers – PWC

Translation

LATAM – Latin American Translations

We thank the support and cooperation of the managers and other colleagues involved in the corporate and industrial areas of CBA, Votorantim and partners in collecting information and preparing this Annual Report.



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