

# SUSTAINABILITY REPORT 2023





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# MESSAGE FROM THE CEO

## [ GRI 2-22 ]

In 2023, Tupy celebrate its 85th anniversary. Throughout our history, we have developed new skills, which enabled the launch of new products. Looking back at our journey, one key element has never changed: our appreciation for knowledge.

This is how we have done it over the last eight decades and how we plan to take our company into the future: by dedicating ourselves to studying and understanding the world's challenges. Based on that, we will continue to develop technologies, products and services to solve them, while leveraging our skills, which have been expanded through acquisitions—important milestones in our evolution.

There is increased demand for energy, basic infrastructure—water, sanitation, electricity, decent and safe housing, health—and food production and distribution. All these essential needs are met by machines, vehicles and other equipment with which we are directly linked, in Brazil and abroad. To be competitive in this market, we must offer economic, scalable and cleaner solutions, contributing for viable decarbonization and a fair energy transition.

To achieve that, we continuously invest in technological innovation. In with regard to materials engineering, for example, we have developed increasingly lighter metal alloys, which have enabled the reduction

of the weight of structural components and, consequently, engines, saving fuel and reducing emissions.

Considering a multi-fuel future, we invested in Research & Development in the areas of biofuels, hydrogen and the circular economy, a model that has been the basis of the company's traditional business of transforming society's waste into high-value-added products. In 2023, 592,000 tonnes of metallic material were turned into cylinder blocks, heads and other structural components.

With the acquisition of MWM, whose indicators are included in this Report, our offering of services and products to drive decarbonization expanded not only in quantity, but also in impact. For agribusiness, for example, in addition to supplying engines for tractors and agricultural machines, motor pumps, generator sets and spare parts, we introduced the concept of Bioplants, a complete and circular solution that brings clean energy, renewable fuel, green carbon dioxide and organomineral fertilizer to rural producers in different regions of the country.

Through our various products and services, we help to facilitate the use of available and sometimes wasted energy. And we also continue to look to the future, investing in technologies that are not yet mature—such as battery recycling and the use of hydrogen as

fuel—but that could be relevant in the future, in a low-carbon economy, and generate new sources of revenue for the company.

We help improve quality of life not just through our products. This is something we care about across our entire value chain, as we consider our social and environmental impact. In 2023, we took an important step to learn more about Tupy's more than 20,000 employees through our first Diversity Census. Based on the results, we will be able to implement initiatives to help create an increasingly healthier, safer and more inclusive environment.

This attention to people extends to our community, through investments in social impact initiatives; to our suppliers, by training and recognizing them for their performance; and to the partners with whom we collaborate to continue to innovate. These are universities, research institutes, other companies and startups that enrich our innovation ecosystem.

This entire network also contributes for the evolution of production processes, with emphasis on those related to environmental management. With a range of products and services that help reduce impact on the environment, it is essential that we are diligent when it comes to our operations as well. The continuous improvement to which we have dedicated our efforts has produced good results. One example is our Greenhouse

Gas (GHG) intensity indicator which, in 2023, was 40% lower than the global average for the steel sector.

This transformation that we have experienced in the company's business and culture has only been possible thanks to the commitment of our people, to whom I am very grateful. Despite a very challenging year, our teams managed to achieve significant results, leading to the highest net revenue (R\$11.4 billion) and net profit (R\$517 million) in our company's history.

I invite you to read our Sustainability Report and learn more details about these challenges, achievements and investments that drive us to be a different company every day. We are transforming and building our future.



**Fernando Cestari de Rizzo, CEO**

# ABOUT THE REPORT

For the fourth consecutive year, we are pleased to publish our annual Sustainability Report, which includes information, indicators and highlights, and details our approach to managing topics that are relevant to the company and our stakeholders. The document covers the period between January 1 and December 31, 2023, which is the same period covered by our financial statements. **GRI 2-3**

The report complies with the 2021 Standards of the Global Reporting Initiative (GRI) and the guidelines of the International Integrated Reporting Framework (IIRC), issued by the Value Reporting Foundation. It also considers disclosure topics and metrics from the Sustainability Accounting Standards Board (SASB) for the Metals & Mining and the Industrial Machinery & Goods industries, as well as the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD). The content and performance data were correlated to the United Nations (UN) Sustainable Development Goals (SDGs).

The information includes the Tupy sites in Brazil (Betim, Joinville and São Paulo), Mexico (Ramos Arizpe and Saltillo) and Portugal (Aveiro), and

<sup>1</sup>Subsidiary

offices in the United States (Detroit) and Europe (Munich, Germany; Turin, Italy; and Arnhem<sup>1</sup>, Netherlands). For the first time, the report also includes information about the subsidiary MWM, located in São Paulo and acquired in December 2022. **GRI 2-2**

Data included in this report, published in April 2024 was collected internally, with the support of an external consultant. The Greenhouse Gas (GHG) emissions inventory was assured by an independent third party, DNV. **GRI 2-5**

The Executive Leadership Team verified the information presented in the Report, which was approved by the Board of Directors after an assessment and favorable opinion from the Strategy, Innovation and Sustainability Committee, People, Culture and Governance Committee and the Audit and Statutory Risks Committee. **GRI 2-14**

Questions or suggestions about this Report can be directed to [dri@tupy.com.br](mailto:dri@tupy.com.br). **GRI 2-3**



The main indicators and highlights of this report, can be found on our [Executive Summary](#).

## METHODOLOGY



Complies with the GRI standards



Includes elements of the International Integrated Reporting Framework (IIRC)



Follows the Sustainability Accounting Standards Board (SASB) topics



Addresses the Task Force on Climate-related Financial Disclosures (TCFD) recommendations

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# MATERIAL TOPICS GRI 3-2



A complete list of the material topics and their scope, impacts and indicators is presented in the [Annex – Additional Indicators](#).

## MATERIALITY GRI 3-1

In 2023, we reviewed the topics identified as material for the management of sustainability matters, thus aligning the content of this Report with business priorities and the perceptions of our main stakeholders. We also incorporated the concept of double materiality, which emphasizes the need for organizations to consider not only the environmental and social impact of their activities, but also how these external factors affect their financial performance and may pose a risk to business continuity.

The assessment included five steps: identification of topics based on business strategy, benchmarking against 11 Brazilian and foreign companies, and sustainability guidelines and standards; consultation with management to assess the relevance of topics; prioritization of aspects through consultation; assessment of the topics by the Strategy, Innovation and Sustainability Committee and creation of a final list; and approval by the Board of Directors. At the end of the process, we identified the same material topics—three environmental, five social and three governance topics—that had been prioritized in the previous assessment, carried out in 2022.

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TUPY

We are Tupy, a Brazilian multinational company with an 85-year history in the development and production of essential structural components of machines, vehicles and equipment that are used by the transportation and freight sectors (including all modes), as well as the maritime, infrastructure, power generation, and agribusiness segments. Our products and solutions help improve people's quality of life, enabling access to basic sanitation services, drinking water, food production and distribution, and global trade.

We offer foundry, machining, assembly, technical validation and engineering services related to these areas, which were expanded with the acquisition of MWM at the end of 2022. We enhanced our Energy and Decarbonization portfolio by adding biogas and biomethane engines and generators, evolving into complete and customized solutions that include waste management, biofuel generation, electricity, organomineral fertilizer and green carbon dioxide. Our decarbonization solutions for mobility include converting vehicles and agricultural machinery to use biofuels or natural gas. We operate in the replacement market, through an authorized network of resellers located throughout Brazil, and also produce and sell vessel propulsion systems to the maritime industry.



We are a team of 21,112 people who are committed to the mission of providing high-value products and solutions. We abide by principles of customer focus, integrity, transparency, health and safety, innovation, economic excellence, environmental protection and positive impact on communities.



More information about our operations and portfolio can be found in the [Strategy](#) chapter. Learn more about [Tupy's](#) and [MWM's](#) products and solutions.

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# WHERE WE ARE GRI 2-1

## North America

**46%**  
of global sales

### Plants:

- ▶ Betim, Joinville and São Paulo<sup>1</sup> (Brazil)
- ▶ Saltillo and Ramos Arizpe (Mexico)
- ▶ Aveiro (Portugal)

### Offices:

- ▶ Arnhem<sup>1</sup> (Netherlands)
- ▶ Detroit (United States)
- ▶ Munich (Germany)
- ▶ São Paulo (Brazil)
- ▶ Turin (Italy)

<sup>1</sup>Subsidiary

## Europe

**18%**  
of global sales

## Africa, Asia and Oceania

**2%**  
of global sales

## Central and South America

**34%**  
of global sales

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# 2023 HIGHLIGHTS



## MANUFACTURED CAPITAL

**6** plants

**5** offices



## FINANCIAL CAPITAL

**R\$ 11.4 billion**  
net revenue

**R\$ 1.3 billion**  
adjusted EBITDA

**R\$ 517 million**  
net profit

**R\$ 829 million**  
operating cash flow



## HUMAN CAPITAL

**21,112**  
direct employees

**433,000**  
hours of training

**R\$ 35 million**  
invested in workplace safety



## INTELLECTUAL CAPITAL

**R\$ 84.4 million**  
invested in Research & Development  
(up 130% compared to 2022)

**128** startups  
registered for ShiftT's third cycle  
(up 50% compared to 2022)

**17** partnering research and technology institutes

**Highlighted**  
in the Brazilian National Innovation Award from the National Confederation of Industry (CNI, in Portuguese)



## SOCIAL CAPITAL

**5,671**  
active suppliers

**R\$ 2.8 million**  
invested in social impact initiatives

**2,123**  
volunteer hours

**18,676**  
people impacted by social initiatives

**R\$ 11.2 billion**  
added to the economy



## NATURAL CAPITAL

**R\$ 52 million**  
invested in environmental initiatives

**95%**  
of the metallic material used comes from recycling

**1.1 million**  
tonnes of recycled waste

**83%**  
of the water used comes from reuse

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# AWARDS AND RECOGNITION



## Valor 1000

We rose 26 positions in the Valor 1000 ranking, by the Valor Econômico newspaper, to the 111<sup>th</sup> position in net revenue in 2022. We were also highlighted as the 5<sup>th</sup> largest company in the Metallurgy and Steel industry in the south of Brazil and ranked 18<sup>th</sup> among the 50 largest companies in the region.



## Best and Largest 2023

We moved up 25 positions in the 2023 Best and Largest ranking organized by Exame magazine in partnership with IBMEC, placing 9<sup>th</sup> in the Steel, Mining and Metallurgy sector.



## Valor Innovation

We place 4<sup>th</sup> in the Capital Goods category of the Valor Innovation ranking, by the Valor Econômico newspaper.



## American Foundry Society Awards

We received the Howard F. Taylor Award, granted by the American Foundry Society, an organization that represents the global foundry sector.



## National Innovation Awards

We were one of the three companies recognized with the National Innovation Awards, in the Large Companies – Product Innovation category. Presented by the National Industry Confederation, this is the main industrial innovation award in Brazil.



## 2023 Best Technical Work SIMEA Award

We were recognized by the Brazilian Association of Automotive Engineering for our article "Analysis of energy demand for recycling electric vehicle batteries through a flexible hydrometallurgical process".



## Santa Catarina Innovation Award

Our Ultralight Iron Technology case study won the 2022 Santa Catarina Innovation Award – Professor Caspar Erich Stemmer – in the Product Innovation-Industrial Design category, presented by the Santa Catarina State Research and Innovation Support Foundation. Click here to learn more about the project.



## Exame Best ESG

For the second year in a row, we were recognized by Exame magazine as one of the Best in ESG in the Capital Goods and Electronics category.



## Ranking 100 Open Startups 2023

Our work to connect and promote startups was recognized by 100 Open Startups 2023. We ranked 8<sup>th</sup> in the Top 10 list of companies in the Mining and Metals category, among 5,348 corporations evaluated.



## Zero Waste Certification

Our plant in São Paulo (Brazil) earned Zero Waste certification based on the Zero Waste International Alliance methodology.

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# KEY INDICATORS

	INDICATOR	Page	Unit	2021	2022	2023
	<b>ENVIRONMENTAL</b>					
	Greenhouse Gas (GHG) emissions intensity —scopes 1 and 2— in tonne of CO <sub>2</sub> equivalent per tonne of product	66	tCO <sub>2</sub> /tonne iron	1.30	1.08	1.17 <sup>1,2</sup>
	Greenhouse Gas (GHG) emissions intensity —scopes 1 and 2— in tonne of CO <sub>2</sub> equivalent by revenue	66	tCO <sub>2</sub> /R\$ thousand	0.09	0.07	0.07
	Greenhouse Gases — scope 1	66	tCO <sub>2</sub>	482,270	560,102	560,113
	Greenhouse Gases — scope 2	66	tCO <sub>2</sub>	220,281	196,159	187,596
	Particulate matter	69	kg MPT/tonne iron	1,99	1,14	0,93
	Percentage of metallic material from recycled sources used in the process	70	%	97	93	95
	Percentage of water reuse in the process	80	%	73	93	83 <sup>3</sup>
	<b>SOCIAL</b>					
	Number of employees	32	Number	15,681	19,155	21,112
	Percentage of women in the company	37	%	8.28	8.04	9.06
	Health and safety rate index (frequency rate)	30	Number	13.36	13.96	9.89
	Average number of hours of training per employee	34	Number	29.7	20.6	20.9
	Number of people benefited by social investment	34	Number	15,000	19,200	18,676
	Social investment	57	R\$	146,808	2,119,199	2,888,720
	Volunteer hours	59	Number	900	970	2,123
	Value added to the economy	57	R\$ billion	6.8	9.8	11.2
	Recall incidents	56	Number	0	0	0
	<b>GOVERNANCE</b>					
	Percentage of women in the Board of Directors	19	%	33.3	33.3	22.2
	Percentage of independent members	19	%	33.3	33.3	100 <sup>4</sup>
	Taxes and contributions	87	R\$ million	318.8	698.5	633.5
	Investments in Research & Development	41	R\$ million	25	36	84.4

<sup>1</sup> The São Paulo subsidiary, MWM do Brasil, was not included in the calculation, since it does not have a common denominator regarding unit of measure of production.

<sup>2</sup> The increase in emissions intensity was due to an 8% reduction in equivalent production.

<sup>3</sup> Decrease due to the inclusion of the São Paulo (BR) site and increased water withdrawal at the Ramos Arizpe (MX) site caused by its expanded operations.

<sup>4</sup> On January 1, 2023, the Shareholders' Agreement filed at the company's headquarters expired, freeing all members of the Board of Directors from voting according to guidance from shareholders. Subsequently, the Ordinary General Meeting held on April 28, 2023, which elected the members of the Board of Directors for the 2023-2025 cycle, recognized that all elected directors meet the independence criteria, in compliance with B3 – Brazil Stock Exchange and Over-the-Counter Market Novo Mercado's regulations.

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# ESG SCORES

We are evaluated by agencies that analyze and rate companies according to their environmental, social and governance risks. This helps us understand the market's perception of our ESG strategy and practices, which helps to continuously improve our management.

Since 2022, our ESG risk has been considered low by Sustainalytics and our score in 2023 was 1.9 points lower than the previous year (the lower the score, the better the risk assessment), positioning us among the best-rated global companies within our industry.

We received a score of 38 from S&P ESG Ratings, above the average within the Capital Goods/Electrical Machinery and Equipment sector and an increase of seven points over 2022. Our MSCI rating was also upgraded to BB.

	2021	2022	2023	Evolution
SUSTAINALYTICS	31.0	18.8	16.9	↑
MSCI	CCC	B	BB	↑
S&P Global Ratings	4	31	38	↑
CDP	C	C	C	↔
ecovadis	NA	NA	Silver (60)	↑



## EXTERNAL COMMITMENTS GRI 2-23

In 2023, we strengthened our commitment to sustainability by joining the United Nations (UN) Global Compact. The initiative calls on organizations to align their strategies and operations with 10 universal principles in the areas of human rights, labor, environment and anti-corruption, and implement measures to help address challenges in these areas.

Another important initiative was the participation of our CEO, Fernando Cestari de Rizzo, represented the Brazilian private sector in B20—a discussion forum that connects G20 with the global business community—as co-chair of the Technology, Innovation and R&D taskforce. In addition to this taskforce, eight other working groups were formed to draft recommendations to G20. Rizzo has been appointed chair of the Digital Transformation taskforce for the year 2024, when Brazil will host both the B20 and the G20 annual meetings.

Other initiatives we participate in are described in the [Annex](#) section.

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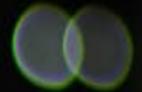
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BUSINESS  
STRATEGY  
AND MODEL



# STRATEGIC DRIVERS

The continuous increase in demand for food, drinking water, sanitation and electricity, among other inputs, drives the pursuit of infrastructure solutions that are not only economically viable, but also help overcome global challenges, such as population growth, increased urbanization and accelerated climate change.

Considering that, we dedicate our efforts to strengthening our strategy, which is guided by four drivers:

**Capture synergies and reduce costs; add value to our base through machining and assembly; take advantage of viable and available energy sources; and increase the energy efficiency of the products we sell.**

To drive business growth, especially in the areas of decarbonization and biofuels, we work closely with the Board of Directors, especially the Strategy, Innovation and Sustainability Committee. We also invest in innovation and technology both in our core business and in the area of alternative fuel and cleaner energy solutions, such as biogas, biodiesel, biomethane, ethanol, natural gas, HVO and hydrogen (*read more in [Solutions for Decarbonization](#)*).

## OUR STRATEGIC DRIVERS

- 1 Capture synergies and reduce costs**  
 We strive to increasing production capacity, using sustainable raw materials and leveraging synergies with suppliers and customers, as well as. We also seek to achieve economies of scale through our recent acquisitions and global presence.
- 2 Add value to our base through machining and assembly**  
 We seek to provide complete solutions to our customers, enabling them to add value to foundry products.
- 3 Take advantage of viable and available energy sources**  
 Offer decarbonization solutions that leverage the existing capital goods structure, combining different fuels and cleaner energy sources that are often wasted, such as biogas, biodiesel, biomethane, ethanol, natural gas, hydrogen and HVO (hydrotreated vegetable oil, a type of “green” diesel).
- 4 Increase the energy efficiency of the products we sell**  
 We help our customers increase their energy efficiency through our engineering and metallurgy solutions. This includes the production of more sustainable engines, which lead to reduced Greenhouse Gas emissions and costs.

## PRODUCT AND SOLUTION PORTFOLIO

### Structural components

- ▶ Cylinder blocks and heads
- ▶ Engineering parts
- ▶ Castings

### Manufacturing contracts

- ▶ Machining and assembly services
- ▶ Engineering services

### Energy, agribusiness, decarbonization and new businesses

- ▶ Generator sets
- ▶ Vehicle conversion to biomethane and natural gas
- ▶ Solutions for the biogas chain based on organic waste from agriculture and livestock activities
- ▶ Lighting towers
- ▶ Motorized pumps
- ▶ Battery recycling – being researched
- ▶ Hydrogen economy – being researched

### Distribution, replacement and hydraulics

- ▶ Spare parts
- ▶ Pipe fittings and continuous cast iron bars

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# FUTURE VISION

Recognizing global challenges such as energy, food and housing inequality, and considering climate change threats, we remain committed to working in the food production and distribution value chain, in the access to basic sanitation and drinking water value chain, and in viable decarbonization to, consequently, improve people's quality of life.

This results in an increased need for energy that is more affordable and cleaner. The energy transition is critical for tackling the effects of climate change, increasing life expectancy and improving quality of life across the globe. To achieve this, the only possible path is to consider the economic, social and environmental impacts of each alternative.



We believe that we can contribute to the future, while also changing the world now. We allocate our technological investments to three focus areas:

- 1 **Increase the overall energy efficiency of equipment for which we supply components or systems.**
- 2 **Leverage available and wasted energy sources.**
- 3 **Research new technologies with potential to be more efficient in the long term.**

Estimates for the sectors in which we operate point to growth in investments in infrastructure, which will require a higher number of machines in operation. Considering that, in addition to working on decarbonization, with a focus on a multi-fuel future, our business vision for the coming years includes capturing the growing demand for efficient and sustainable trucks and machines, and advancing in the machining of cylinder blocks and heads and in the assembly of complete engines.

By using energy more rationally each year and taking advantage of all available sources, we will reduce the consumption of fossil fuels without compromising access to the energy needed to ensure a dignified life. At the same time, by investing in mature and disruptive technologies, we will achieve a cleaner energy matrix, moving toward a low-carbon economy.



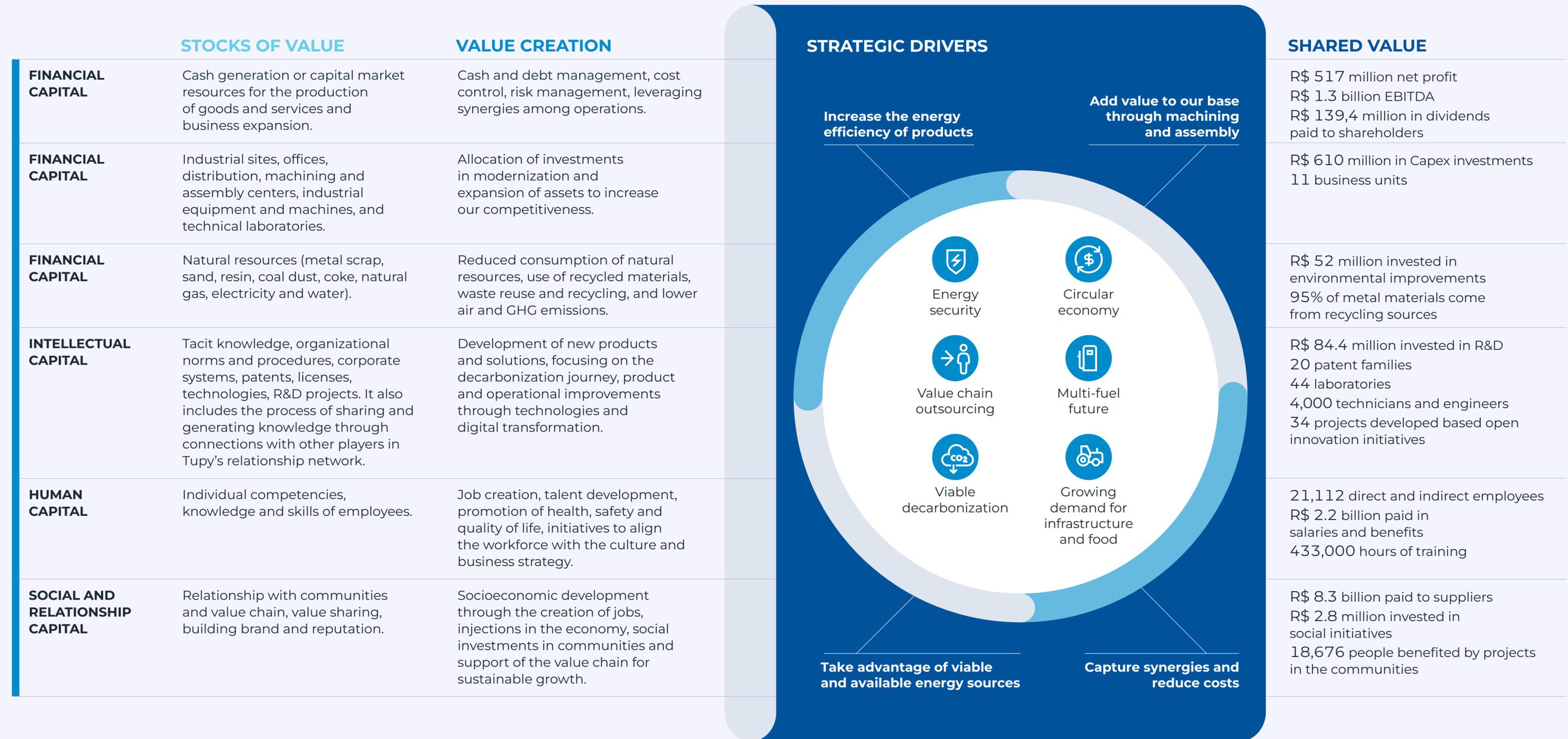
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# BUSINESS MODEL

Our business model reflects the way we access the essential capitals for the development of our activities (financial, manufactured, natural, human, intellectual, and social and relationship capitals) and how we generate and share value through our activities and strategic drivers.



# .05

# CORPORATE GOVERNANCE



## MATERIAL TOPICS

- ▶ Corporate Governance
- ▶ Ethics and Compliance

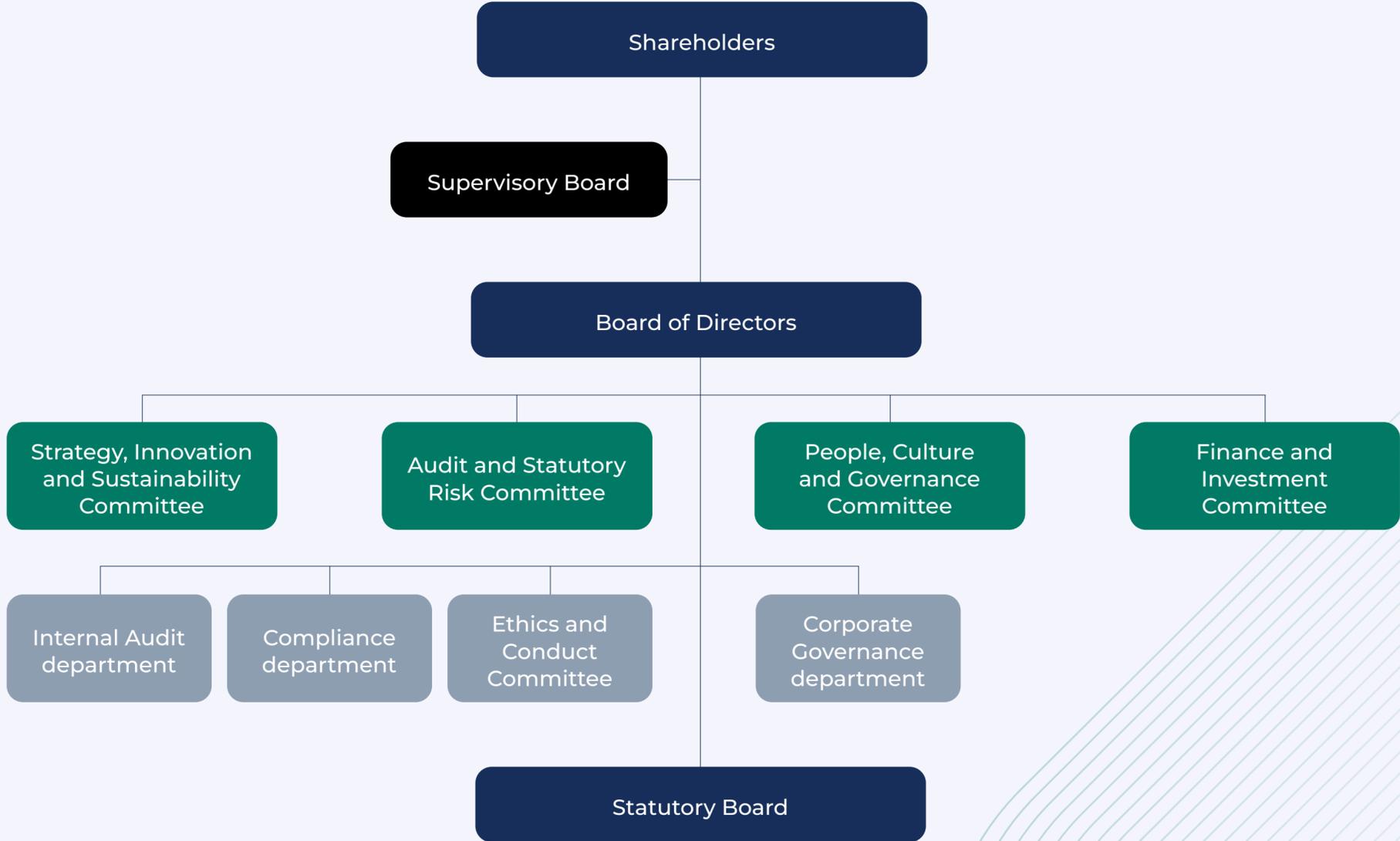
# GOVERNANCE STRUCTURE GRI 3-3



Our shares have been listed on the Brazilian stock exchange (B3) since 1966. In 2013, we became part of Novo Mercado, a differentiated listing segment for the trading of shares issued by companies that commit to adopting corporate governance practices that go beyond those required by Brazilian laws and the Securities and Exchange Commission (CVM, in Portuguese). Our governance model ensures that our relationships are based on ethics, transparency and respect for stakeholders.

Our structure is made up of decision-making, advisory and supervisory bodies, as shown on the image on the right.

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## SHAREHOLDER MEETINGS

We hold Annual General Meetings and, whenever necessary, Extraordinary General Meetings to discuss matters that require a position from shareholders.

## BOARD OF DIRECTORS

GRI 2-9, 2-11

The Board of Directors is made up of nine members who served a two-year term and are elected (and may be dismissed) at Annual General Meetings. All effective members elected in 2023 are independent<sup>1</sup>, as per applicable regulations, and two are women, including the Chairman of the Board, who does not have an executive role in the company. The Board is responsible for providing strategic direction to the business, considering its economic, environmental and social impacts; supervising and guiding the work of the Executive Leadership Team; monitoring the risk management and internal control systems; and executing the integrity program and the audit plan.

In 2023, the Board held 22 meetings, of which 12 were ordinary and 10 were extraordinary.

The Board is supported by four committees that advise on matters related to their scope of activity: Audit and Risk Committee (statutory), Strategy, Innovation and Sustainability Committee, Finance and Investments Committee, and People, Culture and Governance Committee.

The Statutory Board is responsible for executing all business initiatives, in line with the strategic plan developed by the Board of Directors.



We are certified by Women on Board (WoB), an initiative supported by UN Women that recognizes organizations that create inclusive corporate environments in which women are part of board of directors or advisory councils.

## BOARD COMPOSITION

GRI 405-1



[Click here](#) to learn more about the composition of the Board of Directors, Statutory Board, Supervisory Board and Committees.

<sup>1</sup>On January 1, 2023, the Shareholders' Agreement filed at the company's headquarters expired, freeing all members of the Board of Directors from voting according to guidance from shareholders. Subsequently, the Ordinary General Meeting held on April 28, 2023, which elected the members of the Board of Directors for the 2023-2025 cycle, recognized that all elected directors meet the independence criteria, in compliance with B3 – Brazil Stock Exchange and Over-the-Counter Market Novo Mercado's regulations.

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## PERFORMANCE EVALUATION

GRI 2-18

The Board of Directors, since 2014, and its Advisory Committees, since 2015, have performed collective and individual self-assessments annually.

Since 2022, this process has been conducted by the consulting company Korn Ferry (evaluating performance in 2021). In addition to the collective self-assessment of the governance bodies, it considers, in general terms, individual assessments of members of the Board of Directors and Committees and Governance officers, covering the following dimensions: (1) For the

Board of Directors: a) fulfillment of the mandate; b) composition and structure; c) support processes and structure; d) dynamics and effectiveness; e) contributions; and f) ESG engagement; and (2) For the Advisory Committees: a) execution of the mandate; b) team dynamics; c) composition and structure; d) processes e) contributions and; f) action plans.

Based on identified improvement opportunities, the evaluated bodies develop, implement and monitor action plans.

## CONFLICTS OF INTERESTS

GRI 2-15

Our Related-Party Transactions and Conflict of Interest Policy provides guidelines to address conflicts of interest, in line with the recommendations of the Brazilian Code of Corporate Governance and B3's Novo Mercado regulations. Additionally, to ensure that people will disclose personal matters that conflict with the company's interests and refrain from participating in decisions that may affect them, our governance includes additional corporate documents, such as the Code of Ethics and Conduct and the Internal Regulations on Conflicts of Interest, which outline rules that must be followed by administrators and managers with decision-making power.



Click [here](#) to read our Related-Party Transactions and Conflict of Interest Policy.

## COMPENSATION LINKED TO ESG TARGETS

In line with best practices in sustainable management, the short-term variable compensation of company executives is linked to the achievement of environmental, social and governance performance targets, among other aspects. The Board establishes individual targets for the CEO and other directors, which are cascaded to other levels of the organization.

In 2024, between 20% and 50% of the individual targets of directors, depending on their position, will be linked to ESG factors, such as reducing GHG emissions, expanding energy efficiency efforts, developing low-carbon products, making social investments, ensuring safety in the workplace and promoting diversity and inclusion (the latter two targets apply to the entire Executive Leadership Team).



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## STRATEGIC SUSTAINABILITY VISION

GRI 2-12

The Strategy, Innovation and Sustainability Committee, which was established in 2023 and consolidates the duties of the company's former Strategy and Innovation Committee and Sustainability Committee, is responsible for advising the Board regarding the definition of the company's strategic guidelines and the analysis of research and innovation initiatives and best practices related to sustainability, as well as the identification and monitoring of risks within its scope of work.

The Board ensures that significant risks and relevant impacts are identified and communicated in a transparent and accurate manner, in a way that reinforces our commitment to corporate responsibility and business sustainability.

## NOMINATION AND SELECTION PROCESS

GRI 2-10

The nomination and election of Board directors and members of the Advisory Committees follow specific rules established by the company's Nomination Policy and comply with the Bylaws and Internal Regulations of the Board of Directors and all applicable laws. Information about the candidates is disclosed to the market, in accordance with the rules of the Brazilian Securities and Exchange Commission. The appointment of the current external members that make up the Advisory Committees was approved by the Board of Directors on May 16, 2023, based on a list of names of qualified professionals, with proper experience (technical, professional or academic) and in line with the company's values and culture, in addition to the ethical and behavioral standards set out in Tupy's Code of Ethics and Conduct.

 [Click here](#) to view the company's Nomination Policy.



## REMUNERATION POLICIES

GRI 2-19

Approved by the Board of Directors, the company's Remuneration Policy for Administrators and Members of Advisory Committees to the Board of Directors establishes guidelines for determining the remuneration of members of these governance bodies and the Statutory Board. The objective is to ensure that remuneration is compatible with the functions and risks of each position, while creating a competitive total remuneration package, managing costs and supporting talent attraction, retention and motivation and recognition for performance and potential, thus aligning the interests of professionals with those of the company in the long term.

 [Click here](#) to view the company's Remuneration Policy for Administrators and Members of Committees.

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## PROCESS TO DETERMINE REMUNERATION

GRI 2-20

The total amount of the annual compensation of administrators (members of the Board of Directors and Statutory Board), members of the Statutory Audit and Risk Committee and the Supervisory Board is set at General Shareholder Meetings, based on a proposal developed by the Human Resources department, reviewed by the People, Culture and Governance Committee and approved by the Board of Directors. This proposal considers data collected through market research carried out by a specialized consulting firm. The practices and procedures followed by the Board of Directors to define the individual remuneration of Board directors and executive officers are detailed in item 8.1 b of the Reference Form.

**Compensation structure:** Board and Committee members have fixed compensation. If a Board director also serves on committees, he/she receives an additional payment for the additional work (limited to one additional payment regardless of the number of committees he/she participates in). Statutory directors receive a monthly base salary, short-term variable compensation (linked to company and individual targets set by the Board of Directors), and long-term variable compensation, which includes an incentive plan approved by the shareholders.

	Fixed compensation	Additional payment for participation in committees (if applicable)	Short-term variable compensation	Long-term variable compensation
Board of Directors	✓	✓		
Supervisory Board	✓			
Statutory Audit and Risk Committee	✓			
Other non-statutory Committees	✓			
Executive Leadership Team	✓		✓	✓

## POLICIES AND COMMITMENTS

GRI 2-23, 2-24

Our Bylaws, Code of Ethics and Conduct, and corporate policies establish the guidelines for our company, the companies we control, our administrators, executives, employees and suppliers. These documents are periodically reviewed and updated, and published on the [Investor Relations](#) website.

### The main policies and regulations that guide our operations are:

▶ Integrated Management Policy: Safety, Environment, Quality and Social Responsibility



▶ Social Investment Standard



▶ General Purchasing Conditions



▶ Bylaws

▶ Code of Ethics and Conduct

▶ Integrity Policy

▶ Anti-Corruption and Anti-Bribery Policy

▶ Donations and Sponsorship Policy

▶ Risk Management and Internal Controls Policy

▶ Crisis Management Policy

▶ Policy for Nominating Members of the Board of Directors and Advisory

▶ Insider Trading Policy

▶ Regulations



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# RISK MANAGEMENT GRI 2-12, 2-13, 2-16, 2-25

Our Risk Management and Internal Controls Policy aligns our processes with international standards and guidelines. We classify our impacts and risks according to three categories: strategic, operational and climate, which includes environmental, social and governance aspects. Risks identified and managed in 2023 included workplace safety, environment, labor and energy resources.

The Board of Directors, supported by the Audit and Risk Committee, evaluates our exposure to risk and action plans for mitigation. Measures to address the most relevant risks are updated quarterly by administrators after being reported to the Statutory Audit and Risk Committee. It is also the Board's responsibility to approve the guidelines for the integrated risk and control management process, including strategic risks, prioritizing their response and contingency plans. In 2023, we started using a risk appetite statement.

The Executive Leadership Team must ensure the application of policies, review and approve the portfolio of strategic impacts and risks, appoint the owners of risks and processes, and ensure the necessary resources to execute the action plans. Additionally, we have a Risk Management and Internal Controls Executive Committee

(GRCI) that made up composed of four permanent members and coordinated by the vice president of Finance and Administration. The Committee monitors other risks and supports the definition of mitigation strategies.

We also have a Crisis Management Policy that guides the adoption of appropriate and urgent responses to crisis situations, through planning, implementation and adoption of previously defined and evaluated measures.

Aiming to improve risk management and internal controls, we adopted a corporate tool to integrate the processes of all sites. The tool is currently being implemented and is expected to be fully deployed in 2024.

 [Click here](#) to view the Crisis Management Policy and [here](#) to the Risk Management and Internal Controls Policy.



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We conduct our businesses and relationships with our stakeholders based on ethics and integrity. We have an Integrity Policy and a program that includes initiatives to strengthen these values and prevent, detect and address incidents.

To set expected behaviors, we have a Code of Ethics and Conduct that applies to our employees, representatives, suppliers and partners and includes 12 ethical principles that guide our commitment to **Respect for life, People and Sustainability** and to **Integrity and Transparency**.

The Code of Ethics and Conduct reflects our commitment to protecting human rights and creating a work environment where everyone is treated with dignity and respect. We repudiate all forms of exploitation, including child, forced or compulsory labor, and we require the same attitude from our business partners.

The Code of Ethics and Conduct reflects our commitment to protecting human rights and creating a work environment where everyone is treated with dignity and respect. We repudiate all forms of exploitation, including child, forced or compulsory labor, and we require the same attitude from our business partners.

The Compliance area is responsible for improving existing initiatives and managing ethics channels and the Code of Ethics and Conduct, as well as the Integrity Program. To ensure its independence and impartiality, the area reports directly to the Board of Directors, through the Statutory Audit and Risk Committee. This Committee receives monthly reports of the evolution of the Integrity Program in all sites, tracks the quantitative and qualitative ethics indicators, including incidents of fraud and corruption, and sets Compliance goals and targets, which are approved by the Board.

 [Click here to view the Integrity Policy and the Code of Ethics and Conduct.](#)

## OUR ETHICAL PRINCIPLES



### Respect for life, people and sustainability

1. Promotion of health and safety
2. Respect for human rights
3. Respect in work relations
4. Diversity and inclusion
5. Fighting harassment and abusive behavior
6. Commitment to sustainability



### Integrity and transparency

7. Respect for laws and regulations
8. Acting without conflict of interest
9. Responsible relationships with third parties
10. Proper use of company assets
11. Confidentiality, privacy and information security
12. Responsible disclosure of information



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## ANTI-CORRUPTION

Our Anti-Corruption and Anti-Bribery Policy establishes guidelines to fight all forms of corruption and bribery, and provides guidance to employees and other professionals who face situations that may involve or be characterized as acts of corruption when acting on our behalf. It includes guidelines to reinforce our commitment to fighting money laundering and terrorism, and to regulate interactions with government, political contributions and activities, donations and sponsorships, and other aspects.



Click [here](#) to view the Anti-Corruption and Anti-Bribery Policy.



In 2023, we renewed our participation in the Business Pact for Integrity and Against Corruption, established by the Ethos Institute, to reinforce our commitment to integrity.

## COMMUNICATION AND TRAINING

We carry out periodic initiatives to inform and educate on the importance of ethical behavior. Highlights in 2023 included the launch of a training pathway on the Code of Ethics and Conduct and Conflict of Interest and workshop to help leaders prevent moral and sexual harassment.

New employees receive training as part of the onboarding process. After that, it is repeated annually for monthly employees and every two years for hourly employees. In 2023, 100% of employees received information on anti-corruption procedures and policies and more than 6,000 were trained on this topic. **GRI 205-2**

We also continued to communicate with and train suppliers on these guidelines. During the registration process, all suppliers must commit to adhering to and complying with the Code of Ethics and Conduct, and

confirm acceptance of the document on the registration portal annually. Additionally, our General Purchasing Conditions include anti-corruption and social commitments terms (preventing child and forced labor, complying with laws and labor conventions regarding compensation and working hours, fighting discrimination, etc.). Non-compliance may result in consequences varying from warnings and written notices to the termination of commercial relations, as well as necessary legal measures, depending on the severity of the offense.

We also carried out a second round of the Ethics and Integrity Perception Survey with monthly employees. The results pointed to an improvement in perceptions regarding this topic and provided us with information to evaluate new initiatives for the Integrity Program.

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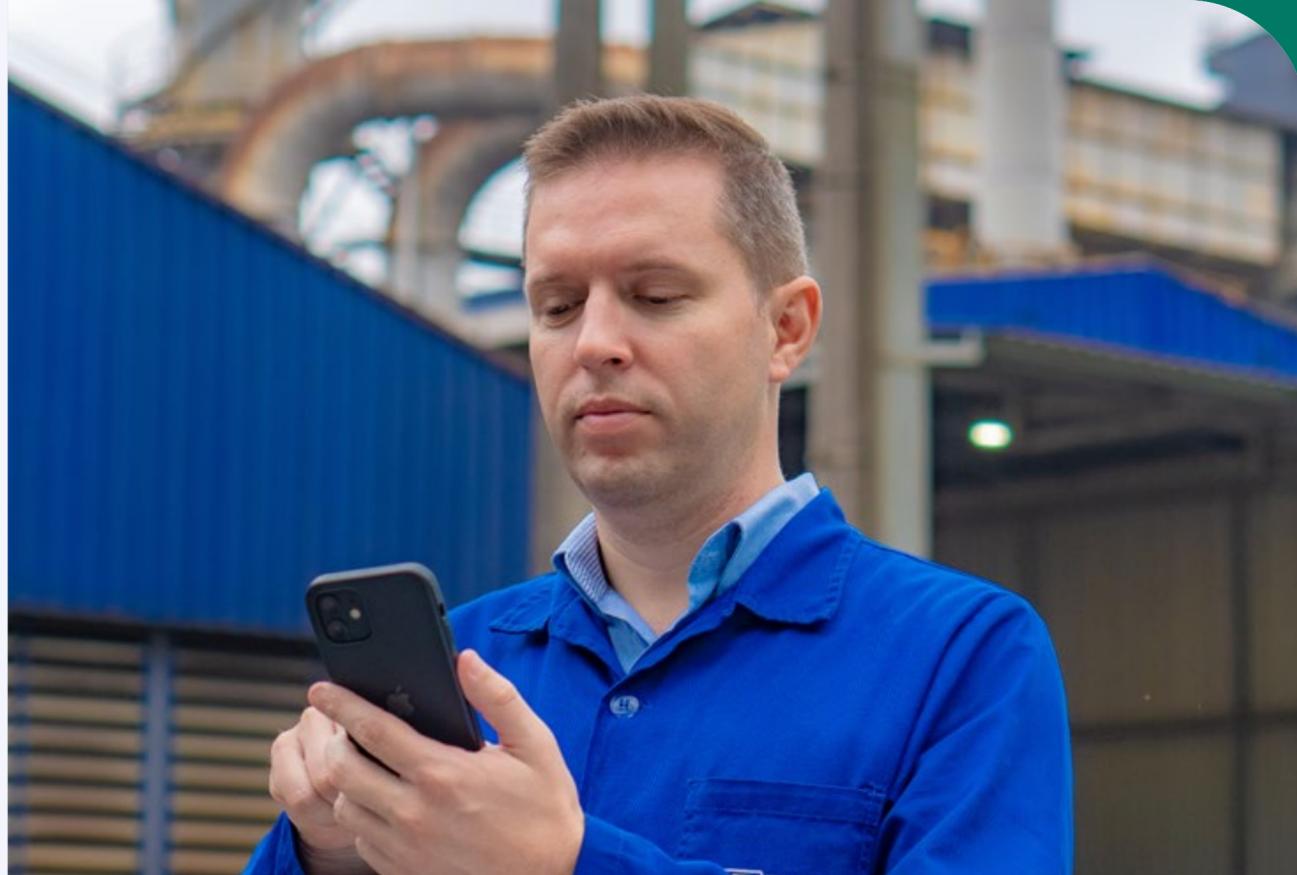
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## ETHICS CHANNELS

GRI 2-26

To receive reports of conduct that may go against legislation, internal standards and our ethical principles, we maintain ethics channels that are managed by an independent, outsourced company and are available to all our stakeholders 24 hours a day. Individuals filing complaints can choose to remain anonymous and are guaranteed confidentiality and non-retaliation, following international investigation standards to ensure the reliability of the process. The Ethics and Conduct Committee, which reports

directly to the Board of Directors, is responsible for investigating the complaints and recommending disciplinary and corrective measures. In the case of employees, these might range from verbal warnings to termination for cause. In the case of contractors or intermediaries acting on our behalf, they may also include warnings and even termination of institutional and/or commercial relationships, as well as legal measures.

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## MECHANISMS FOR SEEKING ADVICE AND RAISING CONCERNS

	2021	2022	2023
Number of complaints filed	486	499	513
Number of complaints addressed	486	499	513
Number of complaints resolved	400	407	401
Number of complaints filed before the reported year and resolved during the year	106	153	190

## MEASURES TAKEN IN 2023

For substantiated or partially substantiated cases, 50 internal processes were reviewed and the following measures were taken:



### Internal audience:

**87** guidance feedback,  
**13** warnings,  
**7** suspensions and  
**21** terminations



### Suppliers:

**5** notifications

### ETHICS CHANNELS

**Website:** [www.tupy.com.br/etica](http://www.tupy.com.br/etica)

**Email:** [etica@tupy.com](mailto:etica@tupy.com)

**Phone number Brasil:** 0800 721 7895

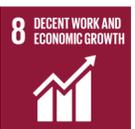
**Phone number Mexico:** 800 288 0150

**Phone number Portugal:** 800 180 431

In addition to the ethics channels, the email address [compliance@tupy.com](mailto:compliance@tupy.com) is available to answer questions or provide advice.

# .06

# HUMAN CAPITAL



### MATERIAL TOPICS

- ▶ Health, safety and well-being
- ▶ People development
- ▶ Diversity and inclusion

# OCCUPATIONAL HEALTH AND SAFETY GRI 3-3

Protecting the health and safety of our employees is a non-negotiable value for us. It ensures that they can prosper, contribute to the company's success and enjoy a better quality of life.

Our initiatives in this area are guided by an Integrated Health, Safety, Environment, Quality and Social Responsibility Policy and by an Occupational Health and Safety Management System that covers all sites, employees, contractors and individuals who enter our facilities. **GRI 403-1, 403-8**

Contracts with outsourced workers include the obligation to comply with legal requirements and internal safety procedures. **GRI 403-7**

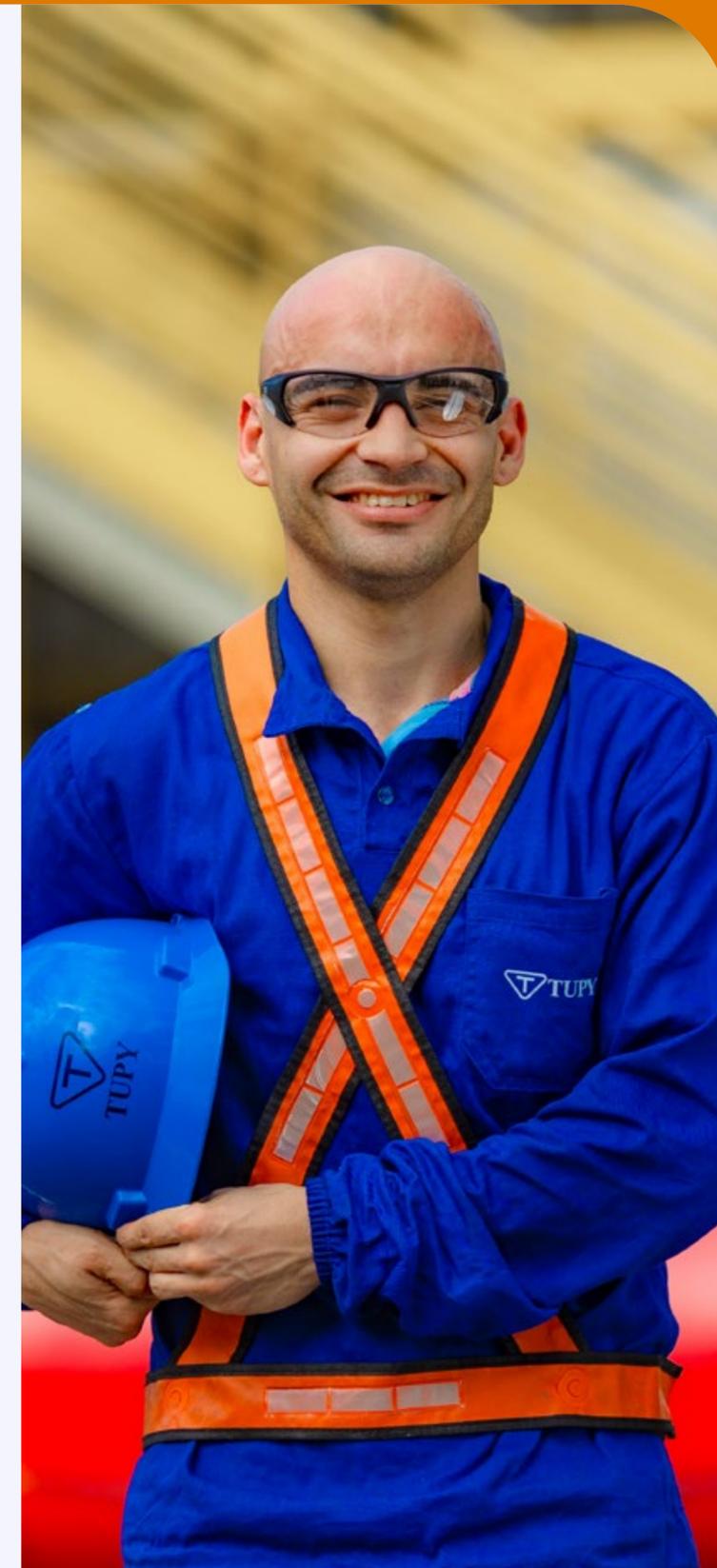
In 2023, we developed 15 new comprehensive handbooks applicable to all sites. They highlight key issues that directly impact the safety and well-being of employees, considering that standardizing procedures improves operational efficiency and strengthens people's trust in the company's management.

During the year, we invested R\$35 million in occupational safety, aimed primarily at process modernization; protection of machines and equipment; improvements to electrical installations and fire protection systems; and acquisition of new equipment, such as a new fire truck for the Joinville site.

In 2024, we plan to invest in new personal protective equipment (PPE) that can reduce user effort by up to 30%. Developed by Exy, a startup accelerated by ShiftT that works with safety, productivity and ergonomics in industrial environments, the solution will be implemented in a finishing line in Betim, Brazil. Click [here](#) to read about other ShiftT initiatives.

We have emergency response plans in all our sites and maintain trained and equipped firefighting teams to prevent and respond to environmental and occupational incidents. In addition, we carry out drills to continuously evaluate and improve our ability to respond to potential emergency situations.

 Click [here](#) to view the Integrated Health, Safety, Environment, Quality and Social Responsibility Policy.



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## ACCIDENT PREVENTION

GRI 403-2, 403-4

To prevent accidents, we follow standards and procedures based on the characteristics of each operation. We identify hazards and assess risks involved in both routine and non-routine activities in all our sites. Our assessments are updated whenever changes in processes may impact the health and safety of employees. We then set priorities and develop action plans to eliminate, minimize or control risks.

One of our highlights in 2023 was the reinforcement of behavioral observation efforts by the Health and Safety area, which helped prevent accidents. We also implemented programs, such as leadership checklists, which consist of inspections of key tasks aimed at preventing high-potential accidents.

In addition to our on-site technicians and analysts who assess safety conditions, process leaders and specialists participate in the process of mapping critical activities, which helps mitigate risks. This work informs the creation of procedures for each critical activity in each site.

### CULTURE

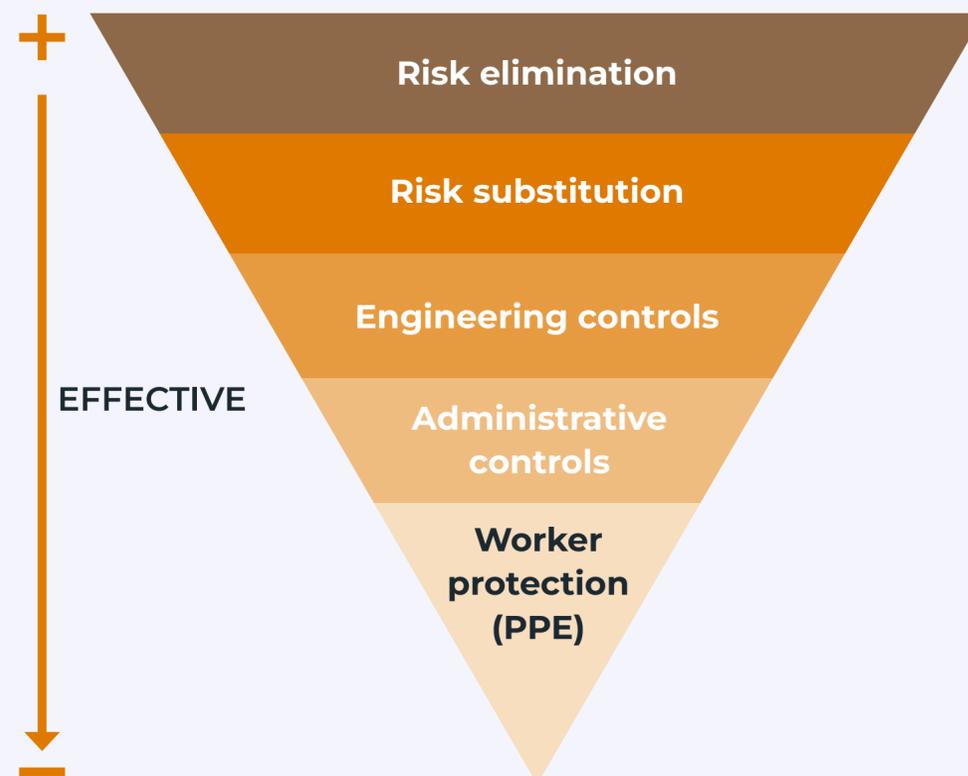
We adopt the Hierarchy of Controls of Occupational Risk (see diagram below) and monitor performance indicators on a monthly basis, including frequency and severity rates, and high potential accidents. These indicators are presented to the Executive Leadership Team on a weekly basis. Believing that life is our most valuable asset, we also have our Golden Rules. Non-compliance with this set of rules is considered a serious offense and subject to consequences, according to the disciplinary code.

Additionally, we promote a culture of transparency and accountability, and encourage employees to actively participate in the identification and resolution of issues related to workplace safety. We have several forums to discuss these topics, such as:

- ▶ Daily Safety Talks, with more than 178,000 meetings held in 2023
- ▶ High-potential Event Prevention Committee
- ▶ Weekly Leadership Meetings
- ▶ Foundry Safety Committee
- ▶ Daily Operational Meetings

We also have routine audit and inspection programs, including: behavioral observations, safety walks, safety checks, and inspection of critical equipment and emergency systems. Employees can also use the ethics channels to raise concerns, with guaranteed confidentiality and anonymity.

### THE HIERARCHY OF CONTROLS



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## TRAINING

GRI 403-5, 403-7

We offer periodic training to enable employees to recognize signs of danger and act proactively to mitigate risks. All workers must complete the necessary training to carry out their activities in accordance with the legislation of each country. New hires participate in health and safety onboarding programs and others receive periodic refresher training on important topics.

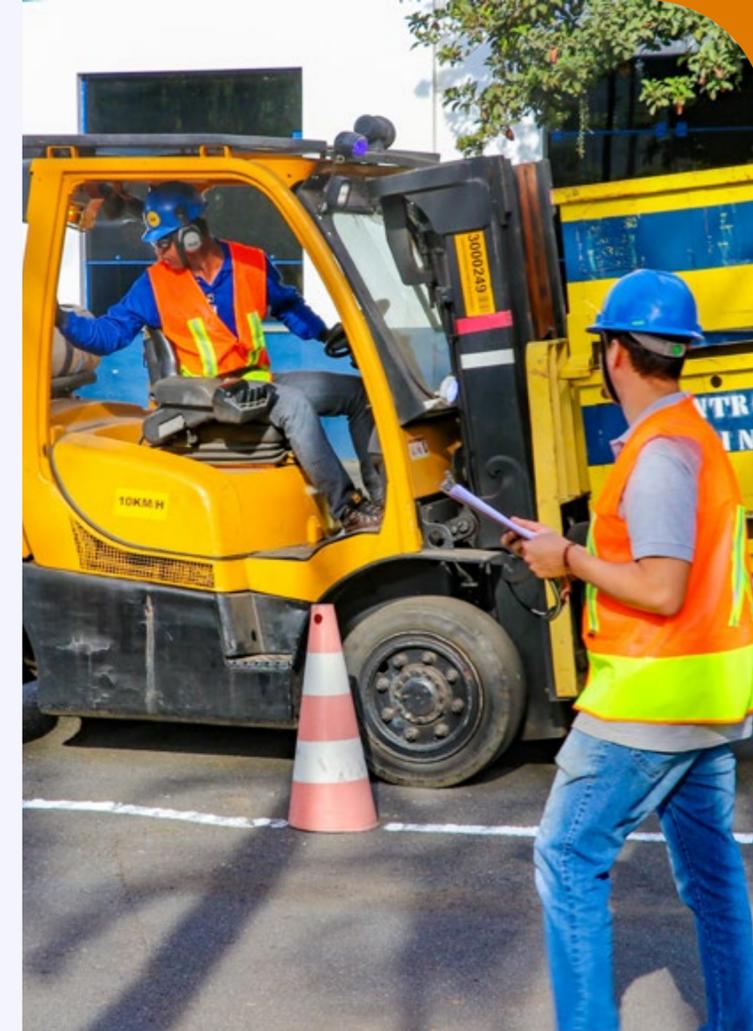
Some operational areas also offer an Acclimatization and Knowledge Fusion Program to review concepts for the safe implementation of our processes. In addition, we carry out periodic awareness campaigns to continuously reinforce important health and safety topics. We also require that contracted companies train their employees.

## SAFETY INDICATORS

In 2023, we had a 29% reduction in our accident frequency rate and a 45% reduction in high potential incidents compared to the previous year.

In 2024, we plan to create a global occupational safety target for statutory directors, which is expected to be cascaded to other levels, related to reducing the rate of recordable work-related incidents. We will also focus on strengthening the safety culture, corporate standards, training and automated indicator management.

Tragically, despite all the measures adopted to promote health and safety and prevent accidents, in 2023, we had a fatal accident in Aveiro (Portugal). We provided support to the family and followed the assessment and investigation protocol that serves to identify measures to enhance our safety controls and safe behavior. We also reinforced our procedures, such as formal audit routines, covering all sites. The Company has strict occupational safety and health controls and audited procedures to create a safe and healthy environment for employees.



### WORK-RELATED INJURIES<sup>1</sup> – EMPLOYEES GRI 403-9

	2021	2022	2023
Number of hours worked	29,781,718	37,619,498	42,174,759
Number of fatalities as a result of work-related injury	2	0	1
Rate of fatalities as a result of work-related injury	0.07	0.00	0.02
Number of high-consequence work-related injuries (except fatalities)	6	1	2
Rate of high-consequence work-related injuries (except fatalities)	0.20	0.03	0.05
Number of recordable work-related injuries (includes fatalities)	398	525	417
Rate of recordable work-related injuries (includes fatalities)	13.36	13.96	9.89

<sup>1</sup>The rate of work-related injuries is calculated by the number of incidents x 1,000,000/number of hours worked. Data on work-related injuries considers only company employees.

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## HEALTH AND WELL-BEING

GRI 403-3, 403-6

We recognize that caring for the health of our employees goes beyond the boundaries of the corporate environment. We are committed to facilitating their access to non-work-related medical and health services to achieve comprehensive well-being.

We offer health insurance plans that include primary care, specialty care and emergency services, and have strategic partnerships with local clinics and health centers to expand the reach of available services. Additionally, we prioritize prevention as the basis for lasting health, through access to vaccination programs and cultural and sport activities, as well as educational initiatives focused on healthy habits.

We have internal outpatient clinics and specialized and trained teams that work 24 hours a day, all year round, to meet the occupational health needs of both company employees and contractors.

In 2023, we implemented campaigns to talk about dengue fever, musculoskeletal diseases, healthy eating, preventing high blood pressure and obesity, eye health, mental health and women's and men's health. In Joinville (BR), employees have access to a health club that includes a gym, sports courts and recreational spaces. Employees also receive assistance from the nursing team during their pregnancy and postpartum period.

## VIVA+

The VIVA+ program reinforces our commitment to the comprehensive health of employees and includes well-being and mental health initiatives. Launched in 2022, it prepares managers to identify abnormal behavior presented by employees on their teams, leading to the implementation of preventive action. The program includes a team of psychologists and social workers, as well as a 24-hour communication channel through which trained nursing professionals refer individuals to internal or external services.

In 2023, VIVA+ started to include physical therapy services. During the year, employees with an identified need for PT were rehabilitated in approximately one month, on average. In Joinville (BR) the service is offered by a clinic located at the Tupy Health Club.

Additionally, through occupational consultations, we identify the most common chronic conditions, such as high blood pressure, diabetes, obesity, respiratory diseases and others. This helps guide our initiatives, such as our health insurance plan for periodic appointments and routine exams.



Physical therapy clinic - Joinville (BR)

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# PEOPLE MANAGEMENT GRI 3-3

Our commitment to people goes beyond legal requirements: we value continuous learning and innovation at all levels of the organization, and we invest in a portfolio of benefits and in individual growth driven by training and qualification.

In 2023, we integrated the new employees from the São Paulo site into the company's culture, standards, policies and benefits.

With the acquisition of MWM, our number of employees in 2023 increased by 9.3%, compared to December 2022, totaling 21,112 at the end of the year (20,801 employees, 225 apprentices and 86 interns). We also had 2,276 contractors, totaling 23,388 people in our workforce.

The strategic medium and long-term objectives of the Human Resources area include issues such as organizational culture and efficiency, employer branding and employee experience. This means that our human capital management policies and processes are constantly reviewed based on new situations, challenges and improvements.

In 2023, our workforce included:  
**23,388**  
 individuals

## Number of employees GRI 2-7

**20,801**  
employees

**18,939**  
Men

**1,862**  
Women



## NEW TALENT

An important initiative through which individuals have the opportunity to join Tupy is the Young Apprentice Program. Since it was implemented in 2014, the program has hired, on average, 20% of its participants. In 2023, 232 positions were made available to candidates between 18 and 22 years old who had a high school diploma or were attending high school in the towns of Betim and Joinville (BR). The initiative allows apprentices to work part-time and, in their off-shift, take courses related to their area of work (e.g., administration, electrical work, quality, machining, foundry and mechanics) offered by our partners, the National Service for Industrial Training (SENAI, in Portuguese) and Ramacrisna. In our Brazilian sites, we also have an internship program that included 86 participants in 2023. In addition, 41 employees had the opportunity to complete their mandatory internship in the company.

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## COMPENSATION AND BENEFITS

GRI 401-2

Our benefits package is aligned with our compensation strategy, market conditions, local culture and obligations as per collective bargaining agreements and/or legislation in each location. We have a specific policy and effective management to ensure that all employees receive fair compensation that considers their responsibilities and impact on the organization, regardless of gender, race, sexual identity or any other personal characteristic.

Additionally, we have performance incentive programs to recognize and reward the achievement of individual and organizational targets, fostering a culture of excellence. In addition to financial compensation, we provide a wide range of benefits and programs to ensure the well-being of our

employees. These include medical and dental insurance, meal and food allowances or on-site cafeterias, pension plans and life insurance.

To offer culture, sport and leisure options to all Tupy employees, their families and the community, we maintain the *Associação Atlética Tupy* (AAT, “Tupy Sports Club”) in Joinville (BR). In 2023, we had more than 12,000 reservations of kiosks and sports courts, more than 800 students registered to play sports and approximately 3,000 participants in events hosted by AAT. In 2024, we plan to expand the offering of activities and improve the infrastructure, with emphasis on the construction of the Inclusion Park, which will have a playground adapted to serve children with reduced mobility.



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# DEVELOPMENT PATHS GRI 3-3

In 2023, we expanded our development efforts and provided 433,000 hours of training, of which 15% were on social and environmental subjects. Other highlights included our continued support for formal education and the expansion of our digital learning platform, GoTupy. Launched in 2022, the platform was given a boost in 2023: it was extended to all sites and got new content for the 23 courses offered.

We also created a training roadmap for our managers. This effort is expected to be further strengthened in 2024, when we plan to launch the Talent Program, which will establish development paths for all hierarchical levels and sites.

During the year, 450 leaders participated in training to develop skills in the areas of management,

safety, environment, compliance, and diversity and inclusion.

We provided 114 scholarships for technical courses in Metallurgy, Foundry, Electrotechnics and Mechanics, in partnership with SENAI, as another way to support formal education. In Mexico, we have partnerships with local institutions that facilitate the access of employees to basic and professional training, including undergraduate and graduate courses.

In total, 1,454 workers completed their primary and secondary education through the Youth and Adult Education program, and 103 employees participated in the Portuguese for Foreigners course carried out in partnership with the Brazilian Industrial Social Services (SESI, in Portuguese).



**We provided 433,000 hours of training — an average of 20.9 hours per employee.**

## AVERAGE HOURS OF TRAINING PER YEAR PER EMPLOYEE GRI 404-1

By gender	2021	2022	2023
Male	30.6	20.3	21.0
Female	18.7	24.0	19.5
By employee category	2021	2022	2023
Director	0	13.9	4.7
Manager	10.3	43.9	19.9
Head/Coordinator	8.8	39.8	73.9
Technician/Supervisor	20.3	32.4	43.0
Administrative	13.6	20.1	11.6
Operational	31.5	19.1	18.9
<b>Total</b>	<b>29.7</b>	<b>20.6</b>	<b>20.9</b>

## PERFORMANCE MANAGEMENT GRI 404-3

The performance of our administrative employees is evaluated annually, based on individual goals and targets, behavioral skills and adherence to our values and challenges. Of the total number of eligible employees, 91% participated in the performance review cycle.

In operational areas, we carry out periodic evaluations that include criteria such as productivity, teamwork, compliance with

safety standards, punctuality and attendance record.

Based on the results of the performance evaluations, we provide structured feedback to employees, create development plans and encourage career discussions between leaders and their teams. They also support decisions about recognition, talent identification, salary reviews and succession planning.

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# DIVERSITY AND INCLUSION GRI 3-3

Our diversity and inclusion practices are strategic organizational guidelines that positively impact the business and are part of the annual targets of our statutory directors. Through them, we seek to create a welcoming work environment, ensuring fair treatment, access and equal opportunity for all.

## OUR FOCUS ON DIVERSITY

Our guidelines aim to:

- **Attract** diverse talent
- **Work** on infrastructure improvements and conditions to guarantee universal access within the company
- **Develop** diverse and inclusive leadership teams
- **Guarantee** freedom to speak up
- **Ensure** career opportunities
- **Guarantee** the well-being of all employees
- **Create** a psychologically safe environment

Our main initiatives in 2023 included a Diversity Census, specific leadership training, rounds of discussion with underrepresented groups, and the development of a map of diversity and inclusion opportunities.

We also created a multidisciplinary group to discuss the inclusion of people with disabilities (PWDs) in selection processes, leveraged by our exclusive hiring process for this group, in addition to identifying opportunities to improve access infrastructure.

To empower employees and create a more inclusive and collaborative environment, since 2022, we have offered a course on Brazilian sign language (Libras), in partnership with the Brazilian Industrial Social Services (SESI). The classes are currently offered in Joinville (BR) and will be extended to other locations in 2024, an effort that includes the development of online modules. Five cycles of the course have already been completed, with 91 employees trained at the basic level and 21 at the intermediate level.

In 2023, we also developed a Diversity and Inclusion (D&I) Standard, which includes guidelines and commitments regarding the implementation of programs, projects and activities to leverage the diversity we already have, eliminate potential entry barriers, support career development and help build an inclusive culture. We want decisions, the environment and relationships to be guided by respect for the dignity of all people, considering who they are and what they are like.

 [Click here](#) to view the Diversity and Inclusion (D&I) Standard.



## MULTINATIONAL TEAM

Diversity also means providing opportunities for employees from other countries. In 2023, we employed people of 29 nationalities. According to our Diversity Census, 5% of our employees are living outside their country of origin, with emphasis on Haitian and Venezuelan citizens, who make up the largest percentage of foreigners in our sites, as a result of the recent increase in immigration of individuals from these countries to Brazil.

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## DIVERSITY CENSUS<sup>1</sup>

Our first Diversity Census gathered data to help the creation of policies, guidelines and affirmative action practices. The census had a 70% participation rate, totaling approximately 14,000 respondents, and enabled us to identify our employee population in categories such as gender, sexual identity, race and ethnicity, marital status, family status, origin, disability status and generations.

The initiative also enabled us to evaluate our people's perception of our culture of inclusion, considering aspects such as respect and equality; opportunity to speak up; work routine; perceptions of and satisfaction with D&I practices; and trust in our ethics channels.

**Gender**

● Male	<b>83.5%</b>
● Female	<b>11.4%</b>
● Non binary	<b>0.3%</b>
● Not declared	<b>4.9%</b>



**1%** self-declared transsexual

**Origin**

● Living in their country of origin	<b>90%</b>
● Outside their country of origin	<b>5%</b>
● Not declared	<b>5%</b>



**75%** of immigrants are from South American countries

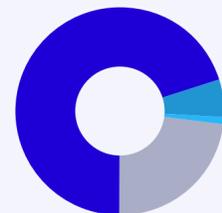
**Race and ethnicity**

	Brazil	México
● White	<b>42%</b>	<b>15%</b>
● Brown	<b>35%</b>	<b>0%</b>
● Mixed-race <sup>2</sup>	<b>2%</b>	<b>37%</b>
● Black	<b>12%</b>	<b>3%</b>
● Indigenous	<b>1%</b>	<b>7%</b>
● Asian	<b>3%</b>	<b>3%</b>
● Not declared	<b>5%</b>	<b>35%</b>

**47%** Black and Brown population in Brazil

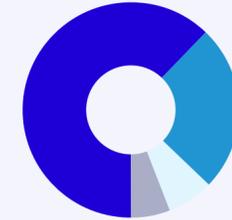
**Sexual identity**

● Heterosexual	<b>70%</b>
● LGBTQIAP+	<b>6%</b>
● Other	<b>1%</b>
● Not declared	<b>23%</b>



**53%** of the LGBTQIAP+ individuals are married or has stable union

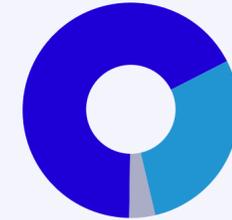
**6%** have Neurodiverse children and/or person with disabilities



**Marital status**

● Married / Stable union	<b>62%</b>
● Single	<b>25%</b>
● Divorced / Separated / Widowed	<b>7%</b>
● Not declared	<b>6%</b>

**3%** are single mothers



**Parental status**

● With children	<b>67%</b>
● No children	<b>29%</b>
● Not declared	<b>4%</b>

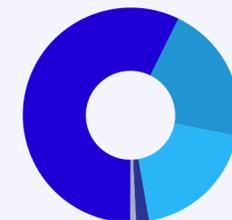
**61%** of the people with disabilities are between 30 and 49 years old



**Disability status**

● Able-bodied individuals	<b>91%</b>
● Persons with disabilities	<b>5%</b>
● Not declared	<b>4%</b>

**More than half** are between 29 and 44 years old



**Generations**

● Millennials (1980)	<b>57%</b>
● Generation Z (1997)	<b>21%</b>
● Generation X (1966)	<b>19%</b>
● Baby boomers (1946)	<b>2%</b>
● Not declared	<b>1%</b>

<sup>1</sup> The gender and disability data presented are based on the total number of survey respondents (13,737) and not on the total number of employees, as reported on pages 75 and 77 of this Report

<sup>2</sup>Mixed-race: according to the Instituto Nacional de Estadística y Geografía (INEGI), from Mexico, are people of mixed ancestry, generally a combination of indigenous and European heritage. In Brazil, this racial-ethnic classification is not used. The respondents who declared themselves mixed-race in Brazil are of a different nationality.

## EMPOWERING WOMEN

- 1 Women in Management Program** – We created a three-year development path for female leaders, with four modules implemented in 2023: Understanding skills; Dealing with emotions; Me as a leader; and Development paths. The training sessions totaled 1,030 hours and were attended by 39 women.
- 2 Gerar Program** – A nursing team provides care and monitors our pregnant employees on a monthly basis until they return from maternity leave. The program has an ergonomics team to assess potential risks and, if they are identified, employees are reassigned to another activity until the end of their pregnancy. It also includes other benefits such as maternity uniforms and lactation rooms for nursing mothers.
- 3 Female operational talent bank** – Created to increase women’s representation in the workforce.

## DIVERSITY OF EMPLOYEES BY EMPLOYEE CATEGORY AND GENDER GRI 405-1

	2021		2022		2023	
	Male	Female	Male	Female	Male	Female
Director <sup>1</sup>	100%	0.0%	100%	0.0%	100%	0.0%
Manager	90.1%	9.9%	89.1%	10.9%	85.2%	14.8%
Head/Coordinator	88.4%	11.6%	88.8%	11.2%	87.0%	13.0%
Technician/Supervisor	97.7%	2.3%	94.5%	5.5%	94.2%	5.8%
Administrative	73.9%	26.1%	70.9%	29.1%	72.5%	27.5%
Operational	93.7%	6.3%	93.9%	6.2%	92.4%	7.6%
Trainees	66.7%	33.3%	0.0%	0.0%	0.0%	0.0%
Interns	54.2%	45.8%	46.7%	53.3%	44.7%	55.3%
Apprentices	38.6%	61.4%	49.0%	51.0%	43.0%	57.0%
<b>Total</b>	<b>91.7%</b>	<b>8.3%</b>	<b>92.0%</b>	<b>8.0%</b>	<b>90.4%</b>	<b>9.6%</b>

<sup>1</sup>Includes statutory and non-statutory directors.



In 2023, we increased the number of women in the company, especially in leadership positions (managers, coordinators and supervisors). In operational positions, the percentage also grew from 6.2% to 7.6%. We also saw parity in terms of interns and apprentices, with 55.3% and 57.0% of women, respectively.

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## INCLUSIVE LEADERSHIP DEVELOPMENT

We have a development path for coordinators and supervisors that includes three diversity and inclusion modules: Unconscious bias; The role of leaders in inclusive cultures; and Harassment and discrimination (this last one was developed together with the Compliance area).

Through the TupyOn, an internal communication app exclusively for employees, we publish a regular section with content related to this topic. In 2023, we made 34 posts recognizing important dates, such as International Women's Day, International Day Against Homophobia, LGBTQIAP+ Pride Month, National Deaf People's Day and National Black Awareness Day.

## ROUNDS OF DISCUSSION

In 2023, we facilitated rounds of discussion with women and underrepresented groups, totaling 300 hours of conversation, covering the perspectives regarding inclusion policies and processes, leadership challenges and people's behaviors in relation to different topics.

- ▶ Race/Ethnicity/Migrants
- ▶ LGBTQIAP+
- ▶ People with Disabilities
- ▶ We listened to parents and/or guardians of neurodiverse and/or disabled children



## INITIATIVES PLANNED FOR 2024

- **Work** with the affinity groups for minorities, after identification via Census
- **Ethnic/racial** self-declaration
- **Inclusive Culture Pathway**, including racial awareness, anti-racism, inclusive leaders and male chauvinism
- **Continuity** of the Women in Management program
- **Development** of empowerment initiatives for underrepresented groups
- **Mentoring and career** paths for women.

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# INTELLECTUAL CAPITAL



#### MATERIAL TOPICS

- ▶ Decarbonization
- ▶ Innovation and product quality

## DEVELOPMENT OF PRODUCTS AND SOLUTIONS

Co-developing solutions with our customers and strengthening partnerships with universities and research centers around the world are part of our strategy. Together, we pursue innovative solutions that meet customer expectations and technical specifications, with quality and safety.

We have 44 company-owned laboratories and employ more than 4,000 technicians and engineers who work in Research and Development (R&D) and production. Processes include product geometry, fault analysis, simulation of the casting process, approval and manufacturing, as well as verification of the raw materials to be used (scrap, pig iron, ferroalloys) and strict quality control. Our team also works on the development of new metal alloys, processes and applications, and strive, among other things, to use resources efficiently.

We have IATF 16949, ISO 9001 and ISO 14001 certifications, which attest to the quality of our management systems.

The pipe fittings and continuous cast iron bars we manufacture and sell also comply with national and international technical standards. Additionally, certain products have specific certifications, which are described on each part (*learn more in [Product and Customer Safety](#)*).



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# R&D, INNOVATION AND DIGITAL TRANSFORMATION GRI 3-3

Innovation and technology are our foundations. They are essential conditions for us to continue offering new products and solutions and for the sustainability of our businesses and of our customers, as we are an important link in their value chain. Our three-dimensional strategy includes research and development (R&D), innovation and digital transformation.



## RESEARCH AND DEVELOPMENT

We engage in initiatives in areas that have synergy with our strategic plan. To do so, we have a team of specialists, masters and doctors, and partnerships with companies, universities and technology institutes. We also engage with organizations that promote technical discussions that enable us to address the challenges of the sectors in which we operate.



In 2023, we invested R\$84.4 million in R&D, up 130% from the previous year. Of this amount, 54% was directed to sustainability projects and solutions

### INNOVATION DIMENSIONS

- **R&D:** Includes technologies that require scientific development to gain market presence and scale in current or new segments.
- **Innovation:** Includes engagement with the ecosystem and Open Innovation, Promotion, Intrapreneurship and New Business.
- **Digital transformation:** Includes our digital journey with a focus on Industry 4.0, digitalization and process automation.

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## PROJECTS UNDER DEVELOPMENT

### ▶ Ultralight Iron Technology

This technology enables the production of structural parts in cast iron that have the same weight as aluminum, combining thin-walled castings with high-strength alloys. It is used in small engines fueled by gasoline, ethanol or synthetic fuels, as well as in hybrid applications. Demonstrated in a series engine, the technology was developed in partnership with the automotive engineering companies Ricardo PLC (United Kingdom) and SinterCast (Sweden).

In 2023, we worked with our customers to carry out specific technology assessments in structural components for light, medium and heavy vehicles. In 2024, these assessments are expected to progress toward commercial and the introduction of this e technology into the market.

The scientific article we published about this technology earned us the Howard F. Taylor Award, a recognition presented by the American Foundry Society.

#### Technology Readiness Level (TRL)



#### ADVANTAGES OF ULTRALIGHT IRON

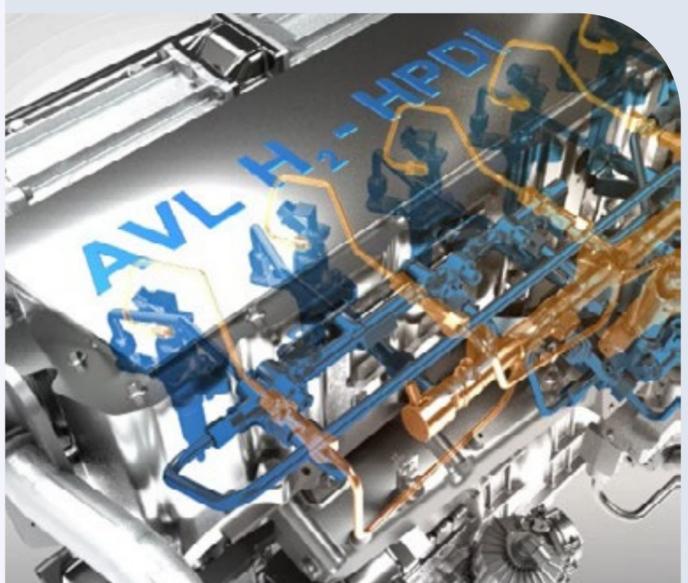
Compared to aluminum:

- Same weight
- Lower noise and vibration
- **50%** lower CO<sub>2</sub> emissions during production
- Approximately **25%** lower cost

### ▶ Hydrogen Engine

Started in 2021, this project involves the conversion of truck engines from diesel to hydrogen, including design, simulation and testing activities using high-pressure hydrogen injection. This concept is a demonstration of high-efficiency technology, serving as a basis for the validation of cast iron alloys for cylinder blocks and heads.

Hydrogen is considered a sustainable alternative for heavy vehicles, since it combines benefits such as lower cost, increased efficiency under high loads, tolerance to the use of impure hydrogen, globally distributed production and maintenance infrastructure, and superior durability compared to all other zero-carbon solutions.



The project was developed in partnership with AVL, an Austrian automotive engineering company, and Westport, a Canadian fuel injection systems company. In 2023, we carried out dynamometer tests to apply high-pressure direct fuel injection technology, which provided hydrogen engines with higher thermal efficiency than diesel engines. These results were presented at the 11th International Engine Congress, held in Baden-Baden, Germany.

In partnership with the Technological Research Institute, we performed resistance tests on iron alloys during hydrogen combustion. The results will serve as a basis for the development of even more resistant alloys.

In 2023, we also signed a contract with MAN to become an exclusive supplier of structural components for hydrogen combustion trucks. For more information, [click here](#).

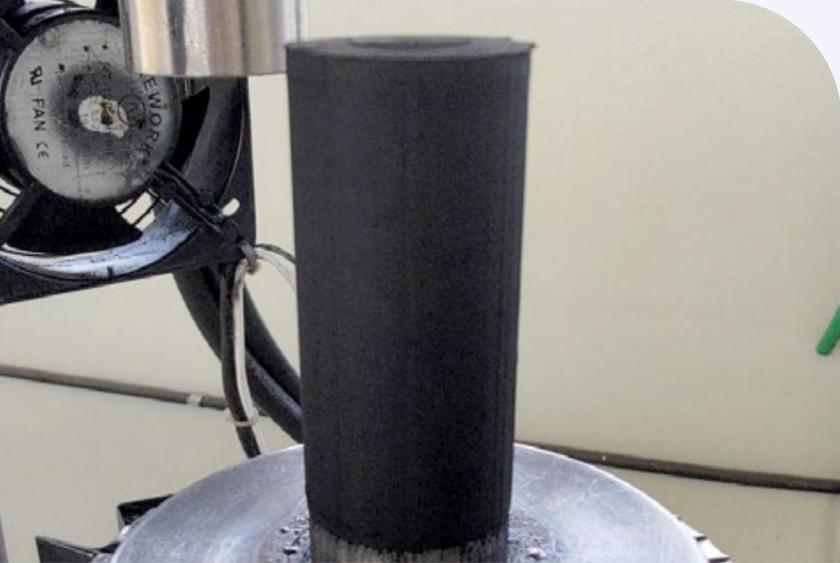
#### Technology Readiness Level (TRL)



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## Biomass Briquettes

The initiative consists of developing biomass briquettes to replace mineral material in cupula furnaces, to reduce the carbon footprint of the production process, while ensuring high competitiveness and intense use of scrap. The project is being carried out in partnership with the SENAI Institute for Biomass Innovation (SENAI-MS), University of São Paulo and Federal University of Rio Grande do Sul. In 2023, progress was made in laboratory-scale development and the identification and selection of high-potential biomass. We also began prospecting for potential partnerships in the raw materials supply chain. Plans for 2024 include the validation of the briquettes on a relevant scale and the establishment of the supply chain for the future industrial development of the technology.

### Technology Readiness Level (TRL)



## Battery Recycling

The battery recycling project is based on hydrometallurgy, a chemical process that uses less energy and enables increased reuse of materials, including lithium, which is not recovered in pyrometallurgy (conventional process). Conducted in partnership with the Polytechnic School of the University of São Paulo (USP), an Embrapii Tecnogreen site, the research has pointed to a reduction of CO<sub>2</sub> emissions in the process by more than 70% and a recovery rate of high purity rare metals of more than 90%.

## Battery Reuse (2<sup>nd</sup> life)

This project consists of repurposing batteries at the end of their first life for use in stationary applications, such as battery power banks and support for intermittent energy (such as solar and wind). Developed in partnership with SENAI-PR and Embrapii, the initiative involves the technical analysis of battery cells or modules to assess the possibility of reuse to extend their life by at least another five years, before they are sent for recycling. In 2023, the conditions of used batteries were assessed and, in 2024, battery aging modeling is planned to perfect the technology.

### Technology Readiness Level (TRL)



In 2023, laboratory tests and the basic engineering project for the demonstration plant were completed, with implementation expected in 2024. During the year, we also plan to complete the hydrometallurgical path for electronic equipment batteries, which will support the maturation of the technology.

### Technology Readiness Level (TRL)



## Material Resynthesis

The goal of this project is to produce battery cells with the same quality as new ones, based on the resynthesis of high-purity metals (lithium, nickel, manganese and cobalt) recovered in the recycling stage. This is critical to ensuring that batteries made from 100% recycled material have the same performance as those made from newly mined minerals. This way, the initiative also contributes to reducing environmental impacts — the hydrometallurgical recycling process is estimated to reduce the carbon footprint of critical minerals that came from mining by 70%. In 2023, we performed the techno-economic-environmental analysis of the technology, and the cell is scheduled to be manufactured in 2024. The project, which is part of Rota 2030, is the result of a partnership with SENAI-PR and BMW.

 Click [here](#) to learn more about *Rota 2030*.

### Technology Readiness Level (TRL)



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## INNOVATION

We believe that innovation is the engine behind a better future, and that there must be a method to enable it. Therefore, we work in coordination with the science, technology and innovation ecosystem to convert and scale new business opportunities. Working through collaboration, we bring together different internal and external experiences and skills, involving universities, research institutes, startups, students, communities, public authorities, partners and suppliers, among others.

As part of our corporate innovation process, we look beyond fundraising and financial opportunities. We believe that ensuring effective processes for each new partner that interacts with Tupy is also a way of fostering innovation. Through our open innovation programs and engagement with the ecosystem, this approach enables us to generate value to be shared between Tupy and its partners. The corporate innovation process includes four dimensions: open innovation; intrapreneurship & collaboration; promotion; and generation of new business & operational improvements.

Focusing on new businesses and operational improvements, In in 2023,

we worked to establish and expand the reach of programs developed over the previous two years.

We increased the number of proofs of concept on the Innovation Portal, executed the second startup acceleration cycle through ShiftT and opened registrations for the third cycle.

### DIMENSIONS OF THE INNOVATION ECOSYSTEM

- Open innovation
- Intrapreneurship & collaboration
- Promotion
- Generation of new business & operational improvements

## OPEN INNOVATION PORTAL

Our portal connects the innovation ecosystem to our strategy. Through this platform, we share important business challenges to attract proposals for viable solutions, which are analyzed and, when approved, taken to a proof-of-concept phase and subsequent implementation.

In 2023, we launched a challenge to improve supply flows in our logistics chain. Our goal is to increase predictability and interchangeability and improve the integrated management of inputs at a global level, in addition to optimizing the continuous flow of these resources in our sites. We also launched challenges related to circular economies and continuous improvement; innovation in the surface protection of sand cores; technological routes for GHG emissions management; use of natural resources; and zero-defect journey.

Eight proofs of concept developed in 2022 and 2023 produced results or advanced to strategic matches, including: ecological solution to decontaminate oily waste using bacteria; nanometric ceramic coating to reduce tool wear in finishing processes; use of artificial intelligence in the metal alloy correction process; use of algorithms to predict defects; and a coating to accelerate the drying of sand cores.

## INNOVATION PORTAL RESULTS

**142** proposals received since 2021, 60 of them in 2023

**8** proofs of concept/tests

### Parties involved:

**44%** startups

**30%** research institutes

**20%** technology companies

**6%** internal employees

**Topics considered:** microbiology; radioscopy; nanomaterials; briquetting; decarbonization; digital transformation; data analysis

[Click here](#) to access our Open Innovation Portal.

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## ShiftT – STARTUP ACCELERATOR

ShiftT is our startup accelerator. Through it, we seek to attract businesses working in the following areas:

 **Energy** – Battery recycling, energy efficiency, new fuels, hydrogen and biofuel innovations.

 **Sustainable development** – Decarbonization, circular economy and social impact solutions.

 **Infrastructure** – Basic sanitation, gas, 5G infrastructure and urban waste technologies.

 **Digital transformation** – Asset management, traceability, data mining, machine learning and model building, artificial intelligence, industry 4.0 and digital workplace.

 **New business models** – Transport, mobility and logistics, manufacturing, metallurgy, agriculture and capital goods solutions.



In 2023, the companies selected in the second cycle went through the acceleration process, which included proofs of concepts and exclusive mentoring provided by our employees — professionals with experience in the different areas of knowledge and especially trained in innovation and the new economy.

During the year, we also started the third acceleration cycle. We received an all-time high number of 128 applications from the five regions of Brazil, an increase of 50% compared to the previous cycle. The solutions are first evaluated by our team of analysts based on the call for proposals, moving on through the pre-selection, pre-pitch, pitch day and pre-acceleration phases. The pitch day includes company executives who grant final approval to startups that will be accelerated the following year.

 ShiftT initiatives can be viewed [here](#).



Nanofábrica startup team

### SELECTED STARTUPS (2<sup>nd</sup> cycle)

Of the 85 businesses registered from around the country, ShiftT selected four to accelerate in 2023:

▪ <b>Microciclo</b>	Use of biotechnology to regenerate waste foundry sand.
▪ <b>nChemi</b>	Nanotechnology application to reduce wear in biomethane combustion engines.
▪ <b>Ópera Dados</b>	Use of internet of things (IoT) sensors to monitor the quality of surface waters.
▪ <b>Nanofábrica</b>	Manufacturing of foundry tools through additive manufacturing of polymers.



We are in the Open Corps Top 10 of the 100 Open Startups Ranking 2023, in the Mining and Metals category.

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## DIGITAL TRANSFORMATION

Our digital transformation includes enabling technologies that allow us to enjoy the benefits of industry 4.0 and digitalization, as well as the development of the knowledge and technological capabilities of our teams. Projects are prioritized according to eight strategic pillars: operations, asset management, sustainability, technological leadership, people and knowledge, quality, customers and business management.

In 2023, we invested in more than 35 digital transformation projects, from process automation and digitalization to the implementation of new controls. We also extended our own control, management and data collection system for the industrial process — the Manufacturing Execution System (MES) — to other lines in Joinville (BR). This is a tool that helps protect our intellectual property, in addition to providing increased agility in customization for various business operations.

The production process traceability module, started in 2022, was also expanded to additional production lines in Joinville (BR). Using QR Code, RFID and laser marking solutions, data for all parts and by-products produced are now indexed by site.

In 2023, we also made progress in the model and scalability of artificial intelligence developments and imagery intelligence capabilities. Additionally, we continued our educational efforts, such as our MBI in foundry 4.0, a specialization course offered in partnership with SENAI-SC. During the year, 42 employees from Betim and Joinville participated in the course, which focused on artificial intelligence.



## COLLABORATIVE ROBOT

At our Joinville (BR) site, we started using a cobot to mark the serial number of parts by laser, avoiding repetitive work and accelerating the industrial process. Developed in partnership with Occupational Safety, it has a disarming system that allows it to work side by side with employees without the risk of accidents.

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With the acquisition of MWM, at the end of 2022, we expanded our operations and have been investing in complete and customizable solutions in energy, decarbonization and circular economy, while also helping fight the effects of climate change.

More than generating value for the business, this effort supports the sustainability strategies of our customers, through work developed by our business areas and Research and Development.

We have a complete portfolio of energy generation solutions for decarbonization that includes:

- Energy generation solutions – natural gas, biogas or biomethane generator sets
- Electrical panels to connect generators
- Biogas treatment systems
- biodigesters, stabilization ponds and accessories
- Dedicated plants for the production of biogas and biomethane
- Vehicle transformation
- Photovoltaic lighting towers
- Motorized pumps for crop irrigation and fertigation
- Engines for boats.

We offer complete or modular projects that help our customers be self-sufficient in the production of clean and renewable energy, with energy predictability, while transforming an environmental liability (waste) into an environmental asset.

## TECHNOLOGICAL CENTER

We have the largest engine research and development center in Latin America, with multi-fuel capability. The structure includes test benches, electronics and instrumentation labs, cold storage and other facilities that support all phases of design and production. We bring together initiatives that already have practical application, such as energy generation, transportation and irrigation using agricultural and livestock waste, and other projects in development, such as technologies based on ethanol and hydrogen.



## BIOMETHANE, ENERGY AND FERTILIZER SOLUTION

We work in the design, construction and operation of bioplants that manage organic waste from the food production chain, generating renewable fuels and fertilizers. Additionally, we develop, produce and sell equipment and solutions that use biofuels. We have a specialized team made up of agronomists, zootechnicians, chemists and commercial engineers, and a technical leadership team that includes professors and doctors in biodigestion and soil nutrition.

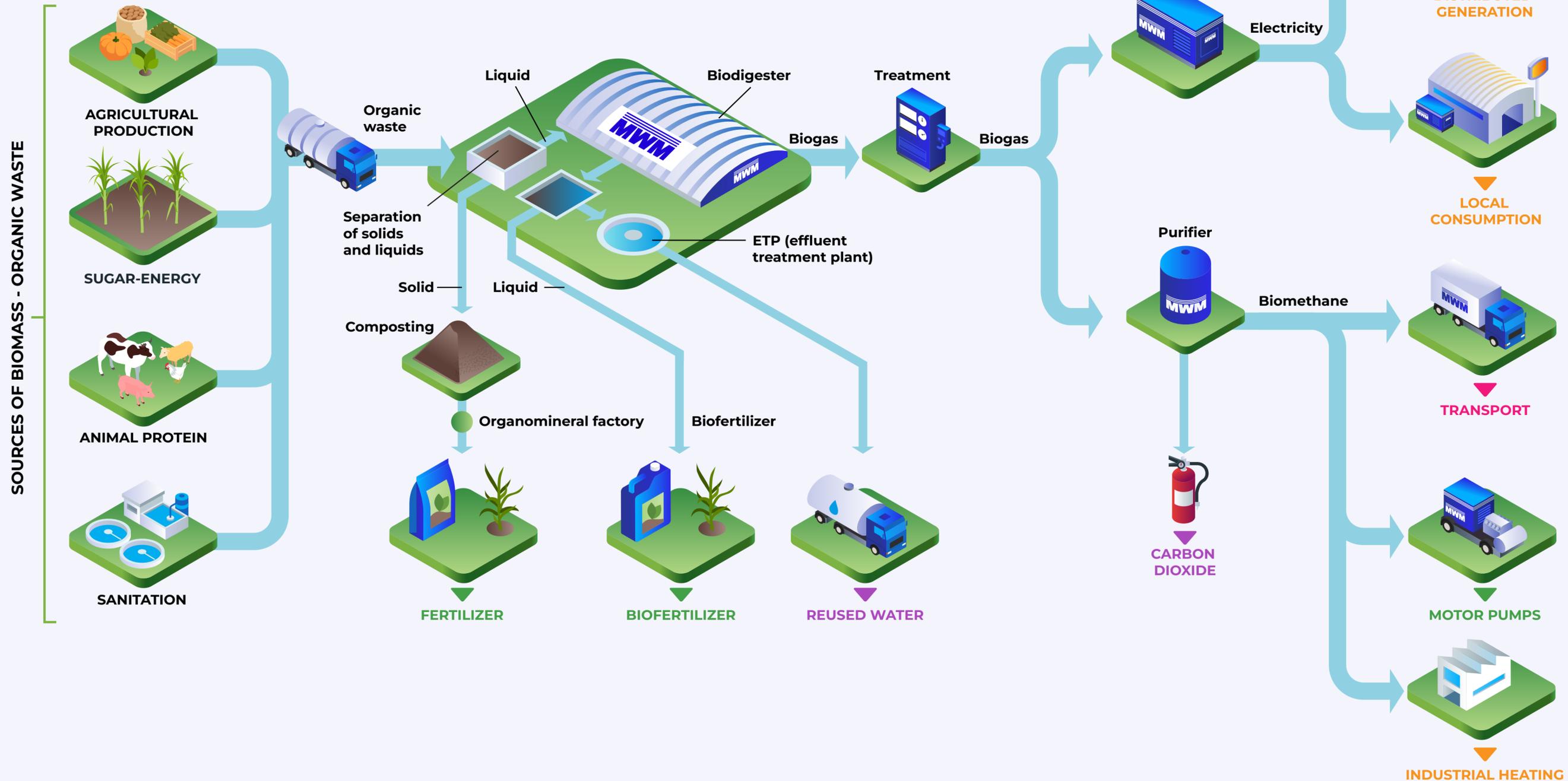
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# BIOPLANTS

Customized solutions in the organic waste biogas chain to develop and offer products and services with economic, social and environmental benefits.



## BIOPLANT'S PRODUCTS AND SERVICES

- ▼ ENERGY
- ▼ TRANSPORT
- ▼ AGRICULTURE
- ▼ OTHER

## BENEFITS

- ▶ Generation of energy, biomethane, carbon dioxide and fertilizers
- ▶ Decarbonization and waste treatment
- ▶ Clean and sustainable agriculture
- ▶ Reduction in electricity cost
- ▶ Safe and high-quality energy

## FRUIT OF PARTNERSHIPS

Our engineering team, made up of specialists with master's and PhD degrees in agronomic engineering, is working in technical cooperation with Embrapa on the development of organomineral fertilizer formulas using organic waste from agriculture and livestock farming and from the food industry. Our lab research and tests, based on real situations on the field, prove to rural producers the quality and performance of our solutions.

Another important work in progress is the implementation of a system for treating digestate, a by-product of the biogas and biomethane production process in biodigesters, to produce reuse water. The technology developed by Embrapa is applied in our energy generation and biofuel production sites, in partnership with Ekodata, a company licensed by Embrapa to apply this type of solution.

## ► Bioplants

### Primato

We are completing the first phase of construction of a plant to treat pig farming waste from the Primato agricultural cooperative, in Ouro Verde do Oeste, in the state of Paraná. The complete project will have two similar phases, in which more than 1.2 million liters of waste will be collected from 27 cooperatives daily, involving a total of 65,000 animals. The bioplant will:

- Extract 12,650 m<sup>3</sup> of biogas from biodigesters daily, which would be enough to generate 6,850 m<sup>3</sup> of biomethane per day to fuel 33 cooperative trucks, currently powered by diesel, or generate 760 MWh of electricity per month, to be used by the cooperative.
- An additional 102 MWh of electricity for the cooperative per month, generated from part of the 6,300 m<sup>3</sup> of biogas extracted daily from the three biodigesters
- Produce 4,560 m<sup>3</sup> of CO<sub>2</sub> daily 1,000 m<sup>3</sup> of renewable CO<sub>2</sub> per day, as a result of biomethane purification, to replace fossil-based CO<sub>2</sub> used in the internal process of meat-packing companies in the region.

- Produce 10,000 tonnes of organomineral fertilizer per year from the organic waste solid fraction

For Primato producerscooperative members, the bioplant will allow them to immediately expand their hog passel, which will translate into increased productivity and family income, in addition to improving the quality of life of family members who work on the property and their prospects for successionand reduce Greenhouse Gas (GHG) emissions. For Primato, it means lower costs and gains in product competitiveness, the use of renewable energy and biofuel, and the possibility of selling high-quality organomineral fertilizer in the region.

### Rancho da Lua Farm

The partnership includes the use of poultry farming waste to generate electricity for the property, which is located in Divinópolis, in the state of Minas Gerais (BR), and has approximately 500,000 egg laying chickens. The agreement also includes the sale of a potential 25,000 tonnes per year of organomineral fertilizer resulting from this process.



In addition to creating direct and indirect jobs, our bioplant projects prevent the emission of approximately 63,000 tonnes of CO<sub>2</sub> per year, the equivalent of more than 500,000 trees, with a direct impact on the emissions inventories of our partnering companies (scopes 1 and 2) and their customers (scope 3).



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## ▶ Vehicle Conversion

This solution consists of replacing original diesel engines of trucks and buses (including, for example, gas storage systems and valves, electronic connection to the cabin, and transmission) with new engines developed to operate 100% on natural gas or biomethane. This enables vehicles to operate with similar torque, power and consumption compared to the original diesel engines, but with lower operating costs per kilometer. The solution preserves 85% of the original engine components, with similar maintenance costs.

Vehicle conversion provides full electronic integration with the new natural gas or biomethane engines and helps mitigate impact on the environment, as it ensures near zero emissions of harmful particles and a 20% reduction in noise. The use of biomethane reduces Greenhouse Gas emissions by 95% and natural gas reduces these emissions by 25%, compared to diesel.

## ▶ Motorized Pumps for Agriculture

In the 2023 Agrishow, we launched another solution connected to the biomethane chain: a motorized pump for irrigation and fertigation of agricultural crops. With high yield and low Greenhouse Gas emissions, the equipment achieves high performance and precision. It has an integrated telemetry system and a smart system to replace the gas cylinder platform without having to interrupt the operation, which also significantly reduces operating costs. In places where biomethane is not available, a diesel option is offered.

Compared to diesel, biomethane motorized pumps provide:

- ▶ Up to 95% reduction in Greenhouse Gas (GHG) emissions from fertigation
- ▶ More than 95% reduction in particulate matter emissions
- ▶ Self-sufficiency in the production of biomethane fuel by ethanol and sugar plants
- ▶ Lower operating cost



## ▶ More Sustainable Vessels

Brought to Brazil by MWM in 2023, OXE Diesel engines are a quantum leap in the alternative fuel movement to decarbonize the maritime sector. The product, used essentially in the transport of people, contributes to urban mobility by offering economic, social and environmental advantages compared to conventional engines, operated by gasoline. This solution demonstrates the intelligent use of a fuel with a lower carbon footprint — in this case diesel — when compared to another fossil fuel that has a higher impact on the environment — in this case, gasoline — in addition to operational restrictions due to its volatility, flammability and higher consumption per hour of work. The advantages include:

- ▶ Increased autonomy (+65%)
- ▶ Lower fuel consumption (-42%)
- ▶ CO<sub>2</sub> reduction (-35%)
- ▶ Noise reduction
- ▶ Increased safety (less flammable)

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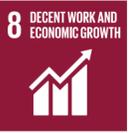
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# SOCIAL AND RELATIONSHIP CAPITAL



## MATERIAL TOPICS

- ▶ Sustainable supply chain
- ▶ Innovation and product quality
- ▶ Impact on local communities

# SUPPLIERS GRI 3-3

Reflecting the nature of our business, our supply chain is diversified, including small, medium and large companies of direct materials (inputs used in manufacturing) and indirect resources (services and other activities that support the production process). The most important categories in terms of volume and complexity of the supply chain are scrap, electricity, logistics, components and services.

At the end of 2023, we had 5,671 active suppliers, of which 91% were local, from the countries where we operate (Brazil, Mexico and Portugal), and 9% were from other locations. Throughout the year, we spent R\$8.3 billion across the supply chain, with indirect local economic impacts in the form of jobs and income. **GRI 2-6**

Our supplier management activities are guided by policies and guidelines aligned with our principles and values,

to which all contracted companies must adhere. We have a Supplier Management Policy, a Supplier Manual and a Code of Ethics and Conduct, which cover, among other issues, child, forced and compulsory labor. By accepting a purchase order in the procurement management portal, all suppliers commit to complying with these documents. In 2023, we did not identify any suppliers with significant risk in these areas.

**GRI 408-1, 409-1**

In 2024, we aim to improve the performance of suppliers with high ESG impacts, implement a new integrated procurement system and portal, and administer a satisfaction survey to evaluate the services provided by Procurement to internal customers.



Read the [Supplier Manual](#) and the [Code of Ethics and Conduct](#).

## THE ORIGIN OF OUR PURCHASES

**GRI 204-1**

**67%**  
national suppliers  
(Brazil, Mexico and Portugal)

**24%**  
local suppliers, near our sites

**9%**  
global suppliers



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## SELECTION AND MONITORING

Our processes for selecting and registering new suppliers include steps to assess risks related to supply, quality and technical capacity. Additionally, all our suppliers must comply with our Code of Ethics and Conduct to advance in the approval process. In 2023, 25.3% of new suppliers were registered with consideration of environmental criteria, according to the nature of the products supplied.

**GRI 308-1, 414-1**

In the monitoring phase, we revise the risk matrix to identify issues related to compliance, financial health, sustainability, and subsidiary responsibility. Based on this assessment, actions are taken to address the identified risks.

In this phase, our negotiation process includes identifying and addressing low performance suppliers (LPS), resulting in corrective measures and on-site audits.

In 2023, we started to perform a more detailed assessment of integrity aspects, including through negative media coverage and transparency portals. We also created a restriction list involving suppliers with compliance issues, contracts for the scrap category (Betim and Joinville, in Brazil) and a scrap delivery quality checklist used in foundry processes.

For suppliers that treat waste generated in our sites, we analyze environmental aspects more rigorously. In 2023, 13 companies were approved with consideration of environmental standards, including in-person audits and monitoring of improvement plans. **GRI 308-2, 414-2**



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## COMMITMENTS

Our General Purchasing Conditions define the terms relating to anti-corruption practices and establish that suppliers must monitor their employees or organizations acting on their or our behalf to ensure compliance with their obligations.

We have ethics channels through which suppliers can report incidents of violation of these guidelines. In cases of non-compliance, appropriate disciplinary measures are taken. In 2023, we terminated commercial relationships and disqualified 14 suppliers that violated our guidelines, in addition to seven suppliers involved in incidents that are still being investigated.

## TRAINING ON SUSTAINABLE PRACTICES

In 2023, we trained more than 600 suppliers on the guidelines of our Code of Ethics and Conduct and on issues related to integrity. We also held the Sustainable Supply Chain workshop involving more than 40 suppliers from Brazil and Mexico. This was an opportunity to present our sustainability journey and the action plan for fulfilling the initial requirements of the sustainability supplier performance assessment questionnaire, to contribute toward the evolution of their practices.

Information about our Integrity Program and our integrity, anti-corruption and anti-bribery policies were sent to 100% of our active suppliers.



## OUTSTANDING SUPPLIER IN SUSTAINABILITY

In 2023, based on the results of the sustainability self-assessment questionnaire administered in 2022, we identified suppliers with outstanding sustainability performance to present their projects in this area. This process culminated in the Outstanding Supplier in Sustainability award, presented to Fiven Brasil, a global leader in the production of silicon carbide, a compound we use in foundry processes.

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We establish long-term relationships based on trust, ethics and transparency, as well as on the pursuit of innovations, solutions and products that add value to the sectors we serve. We offer a customized portfolio that is tailored to the needs of each customer and includes economically viable decarbonization solutions to support their strategies to fight climate change.

We also supply structural components to all machine, equipment and vehicle manufacturers in the western hemisphere. Our partnership with these customers starts at product development and includes casting, machining and assembly, distribution and replacement, in addition to energy, agribusiness and decarbonization solutions that we began to offer after acquiring MWM.

Our customer base is very diverse in terms of applications and locations. With more than 65% of our revenue coming from abroad, we are one of the main contributors to the Brazilian trade balance in the sector in which we operate.

In 2023, we provided structural components and machining, assembly

and engineering services to more than 150 Brazilian and international customers, which demonstrates the diversification of our revenues and the level of customization of the products we develop.

With regard to distribution, iron pipe fittings and continuous cast iron bars are sold to approximately 1,560 domestic and foreign companies (resellers), which in turn sell to end users (factories, construction companies, installers, etc.). For spare parts, we have a well-established and effective distribution network with more than 1,300 points of sale globally and 518 authorized representatives of MWM products, serving different segments such as vehicle, maritime, agricultural, energy and infrastructure.

We assess customer satisfaction and loyalty through direct contact with the sales team and biannual and occasional surveys, and have strategic indicators to support informed decision. Our communication channels have a structure that is fully dedicated to markets and customers to understand and meet their needs.

## OUR CONSUMER EXPERIENCE

We cultivate good relationships, especially in the B2C (business to consumer) line of business, through participation in events and fairs that take place throughout Brazil. These are opportunities to present solutions for different needs and customers from different sectors, and discuss future demands. Some of the highlights in 2023 where the largest agricultural technology fair in Brazil, Agrishow, in Ribeirão Preto, in the state of São Paulo, where we launched motorized biomethane pumps for fertigation; and Rio Boat Show, in Rio de Janeiro, where we presented the first diesel outboard engines on the Brazilian market.

 [Click here](#) to learn more about our products and solutions.

## ENERGY FOR THE TOWN

We supplied the generators that ensured the success of the largest music, culture and art festival in Brazil, The Town, held at the Autódromo de Interlagos, São Paulo, in September. Our 90 MWM generator sets generated more than 30 MVA of energy, enabling 235 hours of concert on six stages.



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## PRODUCT AND CUSTOMER SAFETY

### GRI 416-1

We continuously analyze the safety aspects of 100% of our products, seeking improvements in all lines. Our careful attention to quality is reflected across our production chain, through the control of indicators in the manufacturing process, assembly and use of our products. Failure in this area may affect the image of our customers, relating to possible field actions or recalls, and have financial consequences resulting from replacement of parts, fines and line stoppages, as well as dissatisfaction and losses to end users.

**We have a Recall Policy that describes the activities to mitigate potential risks to the safety and health of consumers or physical damage to their property.**

The measures include monitoring the indicators we have set to reduce the number of customer complaints, internal and external failures and quality-related costs. We also have processes that incorporate lessons learned from similar projects, technical bibliographies and exchange of experiences with customers, research institutes and universities.

## CONTROL POINTS

- Frequent** communication with customers, suppliers, internal processes and regulatory authorities
- Interruption** of the production process, distribution and sale of products upon detection of a failure that may affect customer safety or the environment
- Removal** of affected products from the market, stocks and distribution centers
- Correct** disposal of affected products
- Analysis** of the causes of the defect and implementation of the necessary measures to prevent recurrence
- Critical** post-recall analysis to evaluate the effectiveness of the entire process

## QUALITY REINFORCEMENTS

Focusing on the quality and safety of our products, we invest in training for our employees. In 2023, we offered 1,116 hours of training covering information on audits, standards, ISO 9001 and IATF 16949 certifications, methodologies and procedures, failure prevention tools and problem-solving.

We also reorganized product engineering functions into quality and project development teams to increase communication and customer service efficiency. Additionally, we introduced new inspection methods for safety parts and strengthened the structure of process audits. Furthermore, we monitored the performance of the supply chain, restricting or developing new sources that meet our quality requirements.

We also have an Internal Failure Analysis Group, which meets weekly to ensure continuous product improvement. Thanks to measures we have implemented, in 2023, we did not have any incidents of non-compliance concerning our products, nor cases of recall and costs related to the replacement of components and parts on a large scale. **GRI 416-2**



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Since our foundation in 1938, we have established close relationships with communities, on which, over the years, we have had positive indirect impacts, including job creation, income generation, infrastructure, professional training and movement of the local economy. We have social and environmental impact assessment initiatives, engagement plans and open and transparent communication processes with communities surrounding 100% of our sites.

Local development programs are carried out around 80% of our manufacturing sites, in Betim, Joinville and São Paulo (BR), and Saltillo and Ramos Arizpe (MX). These initiatives are guided by a Private Social Investment Standard, which ensures the alignment of our social programs with our strategic objectives in four focus areas: education; health and safety; environment; and equity and inclusion.

We aim to leverage our positive impact on communities through the continued growth of private social investment. In 2023, we allocated

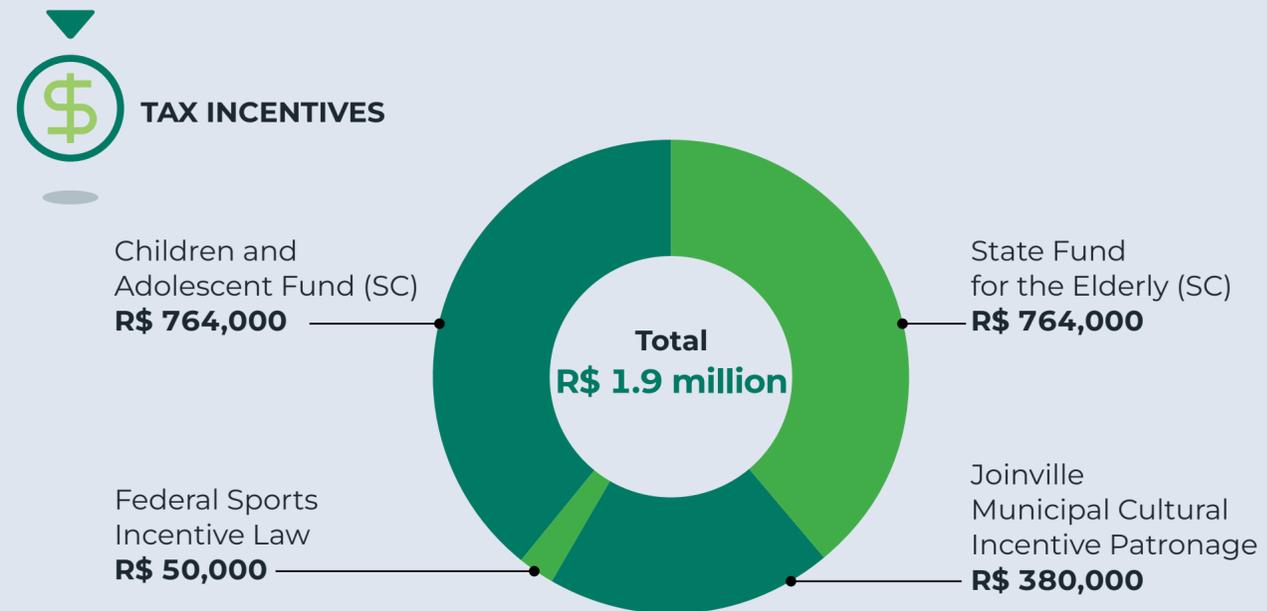
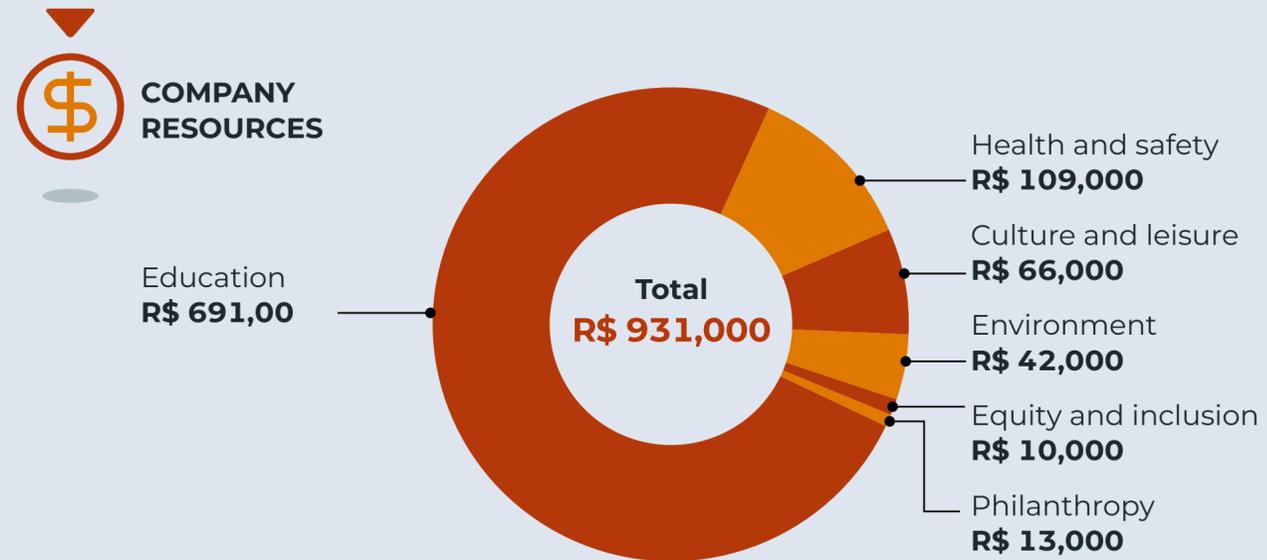
R\$2.8 million to these initiatives, using both company resources and tax incentives, an increase of 33.3% compared to the previous year.

To ensure that donations and sponsorships are in line with best practices, ethical values and our internal regulations, in 2023 we developed our Donations and Sponsorships Standard. The document determines standard procedures for processes of this nature, which includes assessing the integrity of the institutions, signing a contractual instrument, ensuring accountability and assigning approval levels.

R\$ **2.8** million invested in social projects  
**18,676** people benefited from social initiatives  
 R\$ **11.2** billion injected into the economy<sup>1</sup>

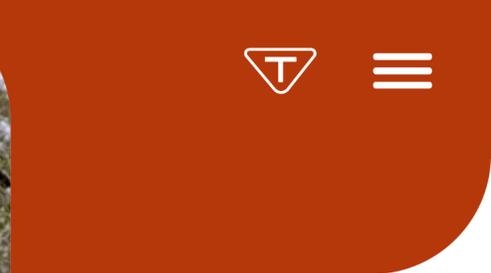
<sup>1</sup>This number was calculated considering: (1) inputs purchased from third parties; (2) employee salaries, social charges, FGTS, profit sharing, management remuneration; and (3) federal, state and municipal taxes, fees and contributions.

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## MAIN INITIATIVES IN 2023:

### EDUCATION

**Formare**, a professional training program for young adults in situations of economic and social vulnerability, involving 60 employees who volunteer to serve as instructors.

**Girls in Technology**, a project carried out by the Federal University of Santa Catarina (UFSC) that promotes the use of and fosters interest in technology and fosters interest in the area among students and teachers at in schools in Joinville (BR).

**Donations** of painting and cleaning supplies to schools in Betim (BR), Joinville (BR) and Saltillo (MX).

### EQUITY AND INCLUSION

**Paralympic Sports School**, led by the Sports Center for People with Special Needs (CEPE, in Portuguese), which engages children with physical disabilities in the practice of paralympic sports.

**Sensory Rooms**, donation of materials to two facilities in Saltillo (MX) that work to develop the social and intellectual skills of children with learning disabilities.

**Female entrepreneurship**, supported through the workshop “Wanting & Doing – the transformational strength of women”, held in Betim and Joinville (BR). The lectures were given by employees and guests.

### HEALTH AND SAFETY

Contribution to the Saltillo **Food Pantry** (MX), which provides food security to malnourished children.

Participation in the Joinville Children’s Hospital’s **Christmas Angels** campaign to help revitalize the Emergency Room.

**Donations** to the Dengue Crisis Committee, Volunteer Fire Department and Civil Police of Joinville (BR), supporting local public safety.

### ENVIRONMENT

**ProFauna**, focused on the conservation of the Sierra Zapalinamé Natural Reserve, implemented by Profauna – Protección de la Fauna Mexicana, from Saltillo (MX).

**SOS Manguezais**, with environmental education workshops for mangrove preservation, carried out by Instituto Comar, in Joinville (BR). In addition to the workshops, we organized volunteer cleaning crews in areas close to the ecosystem, collecting 940 kilos of trash in 2023.

Support for **Zero Waste Week** through the donation of resources and the organization of activities for employees and the community in Joinville (BR).

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## TUPY TRANSFORMERS

In 2023, we conducted 33 activities as part of our volunteer program, *Transformadores Tupy* (“Tupy Transformers”), at our Brazilian and Mexican sites. Our employees dedicated 2,123 hours, almost twice as many as in 2022, to activities to revitalize schools, charity campaigns, and cleaning and recreation efforts. During the year, we also expanded the program to the São Paulo (BR) site.



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## IMPACT MITIGATION

**GRI 203-2, 413-2**

We recognize the actual and potential impacts of our production process and distribution and logistics activities, including increased local traffic, noise and emission of particulate matter. Therefore, we have an incident control procedure, managed by the Communications and Social Responsibility teams, which enables us to address community demands quickly and efficiently. Complaints

filed through our channels (email, website and phone) are monitored and shared with the responsible technical teams to be investigated and properly addressed.

**In addition to corrective measures, we preventively identify, assess, address and communicate potential risks that could have a negative impact on communities.**

In 2023, as a result of these measures, we saw a 40% reduction in the total number of complaints, compared to the previous year, and a meaningful 80% reduction in complaints related specifically to particulate matter emissions.

In 2023, we held a meeting with representatives of the main organizations surrounding the

Joinville (BR) site to exchange information and share our initiatives and data on our environmental performance. Community representatives shared their stories with Tupy and had the opportunity to visit the Tupy Health Club, which is open to the community and houses walking trails, a restaurant, a playground and the Honey Garden, a stingless beekeeping facility.

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# FINANCIAL AND MANUFACTURED CAPITAL



# FINANCIAL RESULTS

In 2023, we continued to execute our strategy for building a new Tupy: a larger, more diversified company exposed to segments with high growth potential. The capture of synergies resulting from acquisitions and various management initiatives aimed at reducing costs and expenses partially mitigated negative factors such as a drop in truck production in Brazil and the appreciation of the Brazilian real and the Mexican peso against the dollar, which impacted our revenues and costs, respectively. The expansion of our service offering for manufacturing contracts helped increase the interest of current and potential customers and enabled our New Business unit to enhance our complete decarbonization solutions.

As a result, in 2023, our net revenue was R\$11.4 billion, an increase of 12% compared to 2022 (R\$10.2 billion).

Adjusted EBITDA totaled R\$1.3 billion, similarly to 2022. Our net profit margin was 11.1%, as a result of exchange rate dynamics and input and labor cost inflation, in addition to the consolidation of MWM indicators, which have smaller margins.

Throughout the year, we took several measures that, despite negatively impacting margins, contributed for strong cash generation, totaling R\$829 million in the reporting period — the highest in the company's history.

## Net revenue (R\$ million)



## EBITDA and Margin (R\$ million)



## Operating cash generation (R\$ million)



## Net profit (R\$ million)



More information can be found in our [financial statements](#).

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# INVESTMENTS

Our investments totaled R\$610 million in 2023, an increase of 28% compared to the previous year. They included primarily new foundry and machining programs, increased operational efficiency and synergies between operations, in addition to investments in health, safety and the environment.

Reflecting our commitment to solid financial management, we ended 2023 with R\$2.2 billion in net debt and a net debt / accumulated adjusted EBITDA ratio of 1.7x.

## Investments (R\$ million)



**28%**  
Increase  
in investments

## PRIORITIES

In 2023, our main projects included the expansion of our manufacturing contracts, primarily for machining projects in Mexico and Joinville (BR), and the start of execution of the decarbonization project (see *Solutions for Decarbonization*). We also invested to improve safety conditions and emissions control.

To improve operational efficiency, we advanced in the implementation of industry 4.0 infrastructure and projects, in addition to investing in projects to replace old and/or inefficient assets and to leverage synergies, especially between the Joinville and Betim (BR) sites. During the year, we completed the construction of a new sand recovery site in Mexico, invested in maintenance in the recovery site in Betim (BR), and replaced furnace heat exchangers in the same site.

We started updating management systems to automate processes, aiming to reduce costs and improve our control and service. Additionally, we worked to optimize our production chain, focusing on maintaining the same production volume while using less raw material, leading to a reduction in costs, energy demand and emissions. In 2024, our focus will be on completing major manufacturing contract projects in Mexico and expanding our portfolio supported by synergies between Tupy and MWM. We will also maintain our critical assets, and optimize current production capacities and projects in new businesses, such as biogas and new technologies.



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# NATURAL CAPITAL



### MATERIAL TOPICS

- ▶ Decarbonization
- ▶ Air emissions
- ▶ Waste management and circular economy

# ENVIRONMENTAL MANAGEMENT



In 2023, we invested R\$52 million in environmental control and monitoring systems, energy efficiency initiatives, technologies to improve the quality of air, soil and surface and underground water, and to increase the recirculation of effluents in our processes.

With a focus on environmental protection, we continuously implement initiatives and invest to reduce the use of natural resources, increase the efficiency of our processes and eliminate or minimize our impact on the environment. Our management approach is guided by an Integrated Environmental Policy and an Environmental Management System (EMS), which has ISO 14001 certification in 100% of our sites.

We monitor air emissions and air quality; groundwater and surface water; noise levels in our sites; waste generation and final disposal; and applicable legal and environmental requirements. Industrial leaders carry out critical analyses of performance indicators and identify measures to improve results or correct potential deviations. We carry out annual internal and external audits, and issues raised through them are addressed through action plans in the sites.

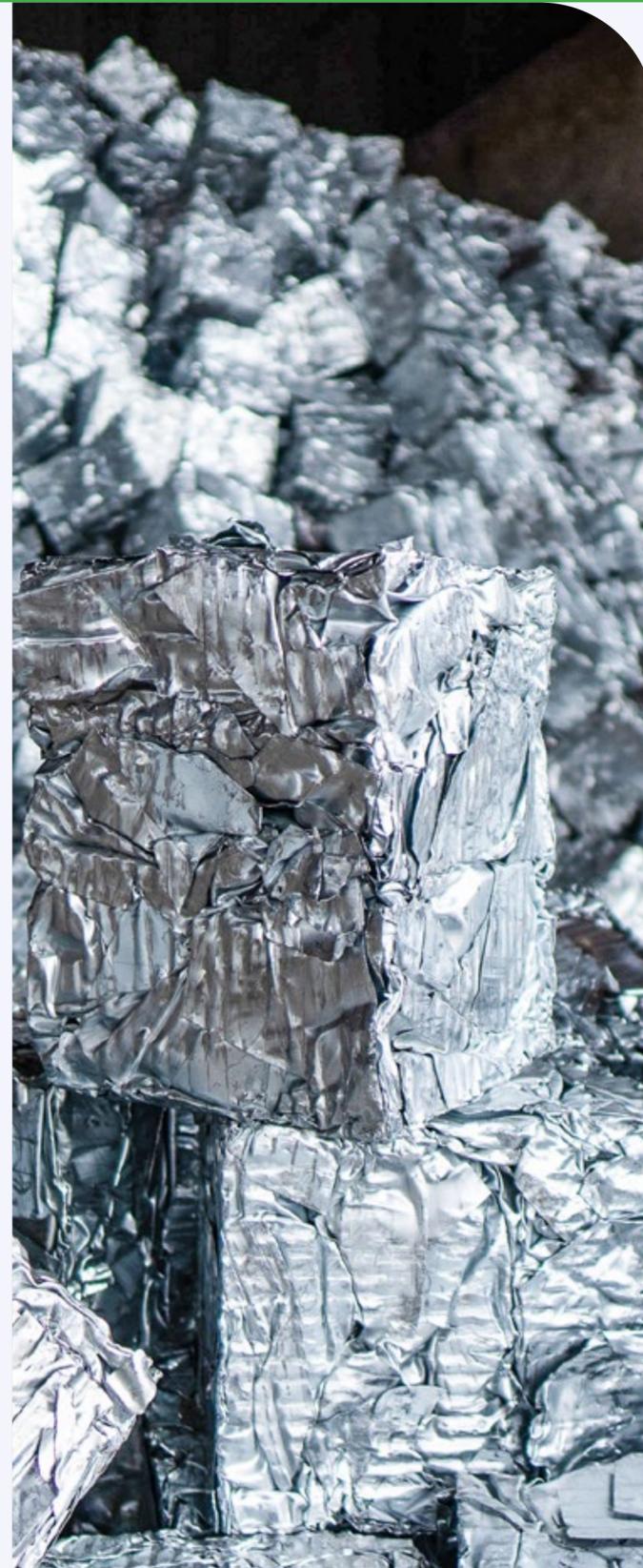
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## GREENHOUSE GAS (GHG) EMISSIONS

Iron is an essential material that is 100% recyclable and is present in the lives of millions of people. It is also our main raw material, used in the manufacture of components used in machines, vehicles and equipment that help improve quality of life by providing access to basic sanitation, drinking water, and food production and distribution.

Industrial operations impact emissions, and we recognize the importance of prioritizing mitigation, adaptation and stakeholder engagement initiatives to fight climate change.

We minimize emissions by recycling a significant volume of ferrous scrap, a material with a carbon footprint 92% smaller than pig iron, a virgin raw material extracted from iron ore. This fact makes our process less emissions-intensive and reflects the principles of circular economies within our operations.



## STRATEGIC ROUTES

We have adopted a series of measures to decarbonize our production process, following three strategic routes:

- 1 Energy efficiency** – Reduce energy consumption in our sites through the use of more efficient equipment, heat reuse and thermal conservation.
- 2 Alternative fuels** – Expand the use of alternative fuels based on studies and investigations, such as replacing mineral coke with biomass briquettes.
- 3 Innovation** – Evaluate and develop low carbon emission processes with superior economic results.

## Our key emissions reduction measures include:

### GRI 305-5

- ▶ Energy efficiency projects (as detailed in *Energy*).
- ▶ Use of recycled coke, which has a lower carbon intensity than mineral coke and prevented the emission of 5,110 tonnes of CO<sub>2</sub> equivalent emissions in 2023.
- ▶ Increased thermal conservation of stored materials, eliminating sources of moisture to ensure more efficient burning.
- ▶ 82% of the energy consumed in the Betim site (BR) has I-REC, an international certificate that tracks and proves the generation of energy through renewable sources, which enabled us to offset 6,000 tonnes of CO<sub>2</sub>.
- ▶ Our power purchasing agreement in Mexico has a CO<sub>2</sub> emissions rate 10.2% lower than energy from the national grid.

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## Emissions Inventory

In 2023, we included the recently acquired São Paulo (BR) site in our emissions scope. And for the second year in a row, our production sites were certified verified according to ISO 14064 standards and the GHG Protocol, which ensures the accuracy of the data used to support our mitigation actions.

Thanks to our efforts to decarbonize our operations, our Greenhouse Gas emissions (scope 1) remained at the same level as 2022. Our scope 2 emissions, related to energy supply, went down 4.4%, as a result of a 5% reduction in electricity consumption and an increase in the use of renewable energy by the Betim site (BR).

Although our emission levels remained stable, we had a decreased in equivalent production, which led to an increase in emissions intensity from 1.08 (2022) to 1.17 tCO<sub>2</sub>e/tonne produced in 2023.

### Direct GHG emissions (scope 1)<sup>1</sup> (tCO<sub>2</sub> equivalent/year) GRI 305-1



### Indirect GHG emissions (scope 2)<sup>1</sup> (tCO<sub>2</sub> equivalent/year) GRI 305-2



### Other indirect GHG emissions (scope 3)<sup>1</sup> (tCO<sub>2</sub> equivalent/year) GRI 305-3



### GHG emissions intensity<sup>1</sup> (tCO<sub>2</sub> equivalent/year) GRI 305-3



<sup>1</sup> The São Paulo subsidiary, MWM do Brasil, was not included in the calculation, since it does not have a common denominator regarding unit of measure of production.

## ABOVE THE GLOBAL AVERAGE

The emission intensity of our sites is lower than the global average for the steel industry. In 2023, it was 1.17 tCO<sub>2</sub>e per tonne produced, compared to the global average of 1.91 tCO<sub>2</sub>e per tonne of steel, published by the World Steel Association (WSA), considering producers that account for 85% of global production. In 2024, we plan to establish an internal target to lower the direct emission (scopes 1 and 2) intensity of our sites.

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## OUR FORESTS STORE CO<sub>2</sub>

We maintain more than 5,000 hectares of preserved forests close to our Joinville (BR) site. In 2023, our forests enabled us to store 1.8 million tonnes of CO<sub>2</sub>. This volume does not offset our Greenhouse Gas emissions, but reinforces our commitment to biodiversity and environmental preservation.

## PROJECTS FOR 2024

We have a portfolio of decarbonization projects focusing on the main sources of CO<sub>2</sub> emissions (coke, natural gas and electricity), building on initiatives implemented in 2023.

In Mexico, we will invest in the recovery of refractory material from furnaces to increase efficiency, and will continue to work on contracts to acquire cleaner electricity, expected to be signed by the end of 2024.

In Betim (BR), we will increase the amount of renewable energy with international certification used by the site from 82% to 100%.

We are also working in partnership with our suppliers and MWM to transform our external and internal supplier fleet. Our goal is to convert diesel engines to biomethane, which will neutralize the carbon footprint of vehicles in use, and to compressed natural gas (CNG), with a 20% to 25% reduction in GHG emissions.

## NEW DECARBONIZATION TECHNOLOGIES

We have made progress toward the decarbonization of our foundry furnaces by using innovative technologies that we study in partnership with research institutes and startups we interact with through our Open Innovation Portal and ShiftT. We have been carrying out pilot experiments to analyze the decarbonization potential and economic viability of potential solutions.

The first approach of our decarbonization process involves the use of biomass to partially replace coke in foundry furnaces. Our Research & Development area is conducting studies to replace up to 30% of the mineral coke used in our furnaces with biomass briquettes, which could potentially reduce direct emissions by 20% (*more information about this project can be found in Intellectual Capital*).

In the long term, we are evaluating the combination of biomethane and hydrogen as fuels for our furnaces. We are also studying carbon capture and storage (CCS) technologies; changes in the core making process (process of forming “cores” to shape parts) to reduce the drying time of sand cores; injection of pulverized coal in combustion zones; reusing heat from furnaces; and the use of alternative fuels in furnaces, including natural gas, biomethane and hydrogen.

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## ENERGY

In 2023, we consumed a total of 8,712,414 GJ of energy from different sources, including electricity, natural gas and coke. Despite the slight increase in our energy intensity, as a result of operating even in periods of low production, we reduced our net fuel use and increased the percentage of renewable sources by 9%.

### Energy intensity<sup>1</sup>

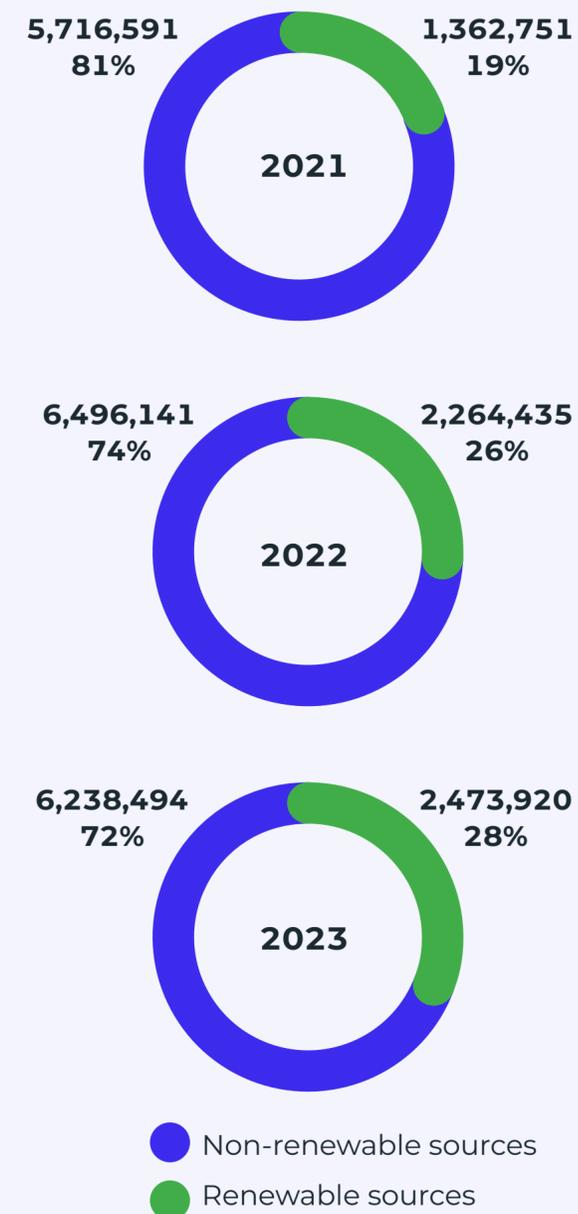
(GJ/tonne produced) [ GRI 302-3]



<sup>1</sup>The São Paulo subsidiary, MWM do Brasil, was not included in the calculation, since it does not have a common denominator regarding unit of measure of production.

### Energy consumption within the organization

GRI 302-1



The energy management system at the Aveiro (PT) site have ISO 50001 certification, which helps manage costs and reduce GHG emissions

## PRIORITIZING EFFICIENCY

GRI 302-4

In 2023, we invested R\$5 million to prioritize the execution of projects to improve operational energy efficiency, saving 40,590 GJ in the period. The main initiatives included:

- ▶ Expansion of the natural gas monitoring network for drying furnaces
- ▶ Renovation of the compressor plant
- ▶ Replacement of light bulbs with more efficient options
- ▶ Installation of devices that help reduce electricity consumption
- ▶ Redesign of a section of one of the coke furnaces in Joinville (BR), which will increase efficiency in the use of fuel and, consequently, reduce GHG emissions

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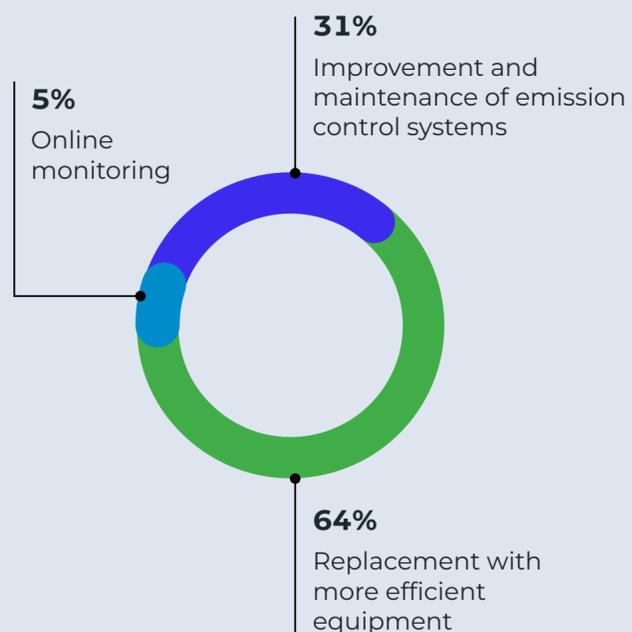
# AIR EMISSIONS GRI 3-3

We take action to continuously improve our processes and mitigate and monitor the impact of air emissions. In 2023, we invested R\$26.1 million to support this objective. The main initiatives were the continuous monitoring and support of our exhaust systems, especially in Brazil. In Joinville (BR), we replaced emissions control systems with more efficient ones and expanded our air quality monitoring network. We also carried out an innovation project to consolidate chimney, air quality and weather monitoring data.



We invested R\$26.1 million to control and mitigate air emissions, an increase of 11% compared to the previous year

## INVESTMENTS IN AIR EMISSIONS CONTROL



We evaluate the effectiveness of our control of particulate matter emissions, including periodic monitoring of fixed sources carried out by specialized companies. Using calibrated equipment, we control air quality daily in Betim and Joinville (BR), Saltillo and Ramos Arizpe (MX). This work is done by cameras in Joinville and Saltillo, and through inspections in the other sites. We also monitor meteorological data to improve air quality analyses and plan preventive measures.

Our mechanism for receiving complaints and feedback from stakeholders, especially from surrounding communities, also helps us analyze issues related to air emissions. When anomalies are detected, our approach includes immediately stopping the process and addressing the problem.

In 2023, we achieved an 18% reduction in particulate matter (PM) emissions compared to 2022. Considering volatile organic compounds (VOC), the reduction was 34%. Associated with lower emissions, the Joinville (BR) site, for example, we saw an 80% drop in the number of community complaints related to this issue.



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## MATERIAL RECYCLING

In 2023, 95% of all metal materials used to manufacture our products came from recycling. We used 592,000 tonnes of ferrous scrap that was transformed into high-value-added products. This is our main raw material, which comes from items discarded by people (including stoves, refrigerators and cars) and by the metalworking and automobile industries, in addition to parts, machines and equipment. The use of scrap reduces the need to mine new mineral resources, reduces Greenhouse Gas emissions and prevents materials from being sent to landfills. Per year, each tonne of scrap used in our processes prevents the emission of 1.2 tonnes of CO<sub>2</sub>, since its carbon footprint is 92% smaller than pig iron, a metallic raw material produced from iron ore.

## FROM SCRAP TO OUR PRODUCTS

**590,000+**  
tonnes/year of scrap  
transformed into products

**1**  
**SOURCE OF RAW MATERIAL**

**Domestic items discarded:** stoves, refrigerators and cars

**2**  
**SUPPLY CHAIN**  
**177 scrap suppliers**  
**R\$ 800 million+**  
paid per year to this category

**Industrial waste:** metalworking and automobile industries, in addition to parts, machines and equipment

**3**  
**TRANSFORMATION**  
Development of our products from scrap.

### BENEFITS OF USING SCRAP:

- Reduces the mining of virgin metal raw materials
- Minimizes Greenhouse Gas emissions
- Creates employment and generates income
- Diverts waste from landfills

**Each tonne of scrap used in the process prevents the emission of 1.2 tonnes of CO<sub>2</sub>**

## RECYCLING BEYOND SCRAP

### Sand

In 2023, we transformed 385,000 tonnes of waste foundry sand from the manufacture of sand cores into new sand, which was returned to the process as raw material. We have 10 regeneration facilities in our plants, which in 2023 recycled more than a third of the sand we used. In three years, we expanded four regeneration sites and increased the mineral's reuse capacity and circularity.

### Iron chip briquettes

100% of the metal chips generated in the machining process of our automotive components are compacted and transformed into raw material. This material has better quality than pig iron, a raw material from a non-renewable source.

### Coke

In 2023, 13% of the coke used in our kilns came from recycling, which prevented the direct emission of 5,110 tonnes of CO<sub>2</sub> equivalent and the mining of approximately 11,700 tonnes of non-renewable natural resources.

### Catalysts

The Ramos Arizpe and Saltillo (MX) sites use catalysts from the recycled solution generated in the treatment of gases from core making processes. In 2023, 21% of the volume of catalyst was recovered.

### Water

In 2023, we reused 83% of industrial and sewage effluents, which are treated and returned to our processes and used to cool ovens, in cooling towers and to prepare inputs. Through water reuse—which, in some of our sites, reaches 100%—we avoid the consumption of 1.3 billion liters of water per year.

### Packaging

In 2023, we recycled 32% of post-consumer packaging of our pipe fitting, structural components and MWM product lines, totaling 807 tonnes of plastic and cardboard. Part of this process was implemented in partnership with Eureciclo, which has presented us with a seal granted to companies that invest in recycling. **GRI 301-3**

## RECOGNITION FOR CONSERVATION

Our initiative to use coke from recycled sources at the Betim (BR), Joinville (BR) and Saltillo (MX) sites, described in the case study “Development of an alternative for partially replacing coke” was recognized with the 29<sup>th</sup> *Expressão de Ecologia* (“Ecology Expression”) Award, in the Conservation of Mineral Resources category. Our initiative was chosen among the 3,269 initiatives entered in the award competition, promoted by the Santa Catarina Environmental Institute.



## RECYCLED INPUT MATERIALS USED **GRI 301-2**

	2021	2022		2023	
		All sites	Excludes Aveiro and Betim	All sites	Excludes Aveiro and Betim
Metallic materials <sup>1</sup>	97%	93%	97%	95%	97%
Sand	36%	35%	34%	39%	39%
Coke	12%	18%	15%	13%	13%
Catalyst	28%	20%	24%	21%	25%

<sup>1</sup> The percentages published in the previous report (“93%” and “96%”) were revised due to a correction in the metallic material base.

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## WASTE AND CO-PRODUCTS

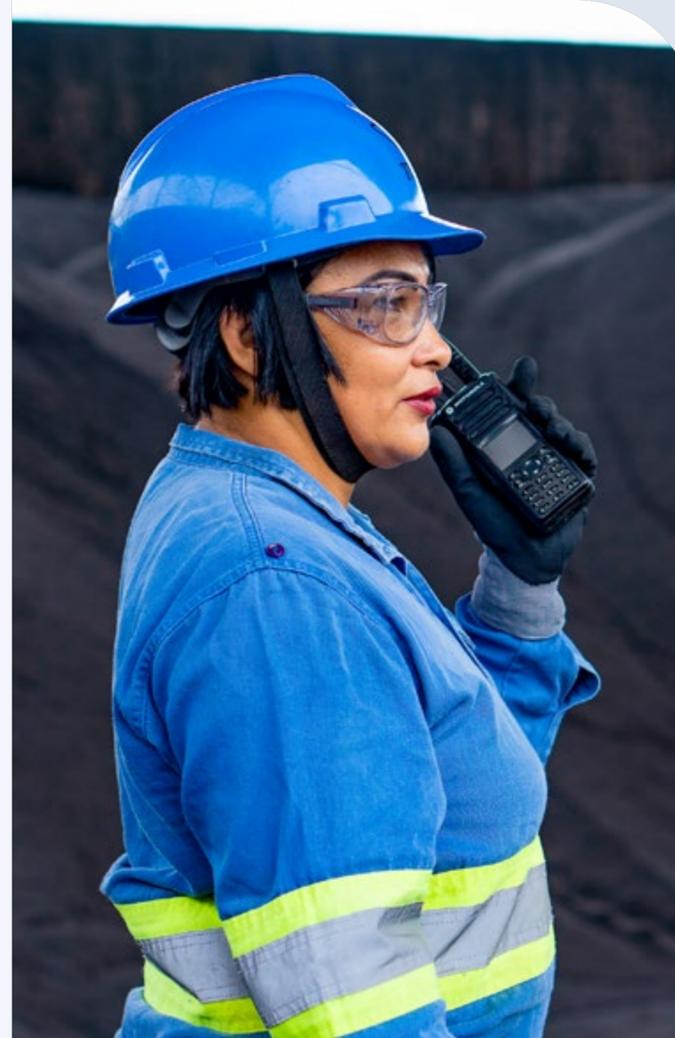
GRI 306-1, 306-2

We are a transformation industry. Therefore, our sites produce a significant volume of waste, which can have a negative impact on the environment and human health. To mitigate these effects, all our sites have solid waste management plans that focus on reduced consumption, efficient use of resources, recycling, and proper waste treatment and disposal.

Our initiatives go beyond compliance with regulatory requirement, including also including response to emergencies, audits and internal targets for reducing the volume of waste sent to landfills. Our governance covers monitoring through waste generation and disposal indicators, as well as compliance with legal requirements.

We have sought to develop pathways to enable us to increase our percentage of recycled waste per tonne produced. This means reducing, reusing and recycling waste from our operations or making it available for use in other internal processes or by other industries.

In 2023, we increased the percentage of recycled waste per tonne produced by approximately 11%. This improvement resulted from initiatives such as the increase in recycling/ reuse in processes in Joinville (BR) and Mexico, recycling practices existing in the new sites in Aveiro (PT) and Betim (BR); and improvements in the waste sorting process in Betim (BR), with increased waste recovery. In 2023, we sent approximately 1.1 million tonnes of waste to recycling.



### REUSE OF WASTE FOUDRY SAND

Due to its mineral origin and high compaction capacity, waste foundry sand has great potential for use in civil construction. In 2023, we reused 63,000 tonnes in construction projects, with 44,000 tonnes used on the base and sub-base of our company-owned landfill, to where we have sent a total of 220,000 tonnes of waste foundry sand in recent years. This volume is equivalent to the amount of solid waste generated in the town of Joinville (BR) over the course of a year and a half.

### ZERO WASTE

The MWM plant, in São Paulo (BR), was certified as Zero Waste based on the Zero Waste International Alliance methodology. This zero-landfill project began in 2021, with a review of best practices in waste management and reuse of materials before final disposal. Following internal changes, the plant achieved 95.1% zero waste, a percentage that is considered high for proper disposal processes.

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## PROGRESS IN CO-PRODUCTS

Part of the waste generated in the industrial process becomes raw material in non-iron value chains. These are called co-products, secondary items produced in the manufacturing process that are used by other industries, such as cement, chemical, steel and automobile. They include slag, foundry dust, wood waste and iron chips, among others.

Our co-products are the result of the work of a team dedicated to finding waste disposal alternatives based on the principles of the circular economy. They offer environmental benefits, as they help divert waste from landfills and reduce the consumption of natural resources. They also guarantee economic results for Tupy. In 2023, our revenue from the sale of co-products was R\$29 million, double the revenue in 2019, when we created an area dedicated to this business.



## MAIN CO-PRODUCTS

### Foundry dust

Produced during the fusion process, foundry dust is sold to different sectors, especially the chemical industry, which reuses zinc extracted from it.

### Used lubricating oil

We send it for re-refining, for the production of base oil. This process, in addition to resulting in a new product, emits seven times less CO<sub>2</sub>.

### Iron chip

Originating from the machining of pipe fittings, it is sold to the automotive and steel industries, adding value in a new production chain.

### Ground granulated blast furnace slag

Resulting from the production process, it is reused as a mineral admixture in cement. In 2023, our site in Saltillo (MX) also started using this co-product.

### Zinc waste sludge and ash

It is recycled and reincorporated as raw material in the galvanizing process of our iron pipe fittings and by other chemical segments.

### Wood waste

We use wood waste in internal processes, primarily in packaging, and send what is left to companies that transform it into biomass used as fuel in other processes.

### Ink sludge

A co-product incorporated into our portfolio in 2023, it is processed by a supplier that transforms it into new paint, which is returned to us to be used in conservation and maintenance services at our sites.

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# ANNEX – ADDITIONAL INDICATORS

## Human Capital

### NUMBER OF EMPLOYEES GRI 2-7

	2021		2022		2023	
	Permanent	Temporary	Permanent	Temporary	Permanent	Temporary
<b>By gender</b>						
Male	14,292	0	17,480	35	18,857	82
Female	1,184	0	1,420	12	1,851	11
<b>By region</b>						
Brazil	10,272	0	13,842	0	15,271	2
Mexico	5,183	0	4,694	0	5,041	0
Europe	9	0	354	47	383	91
United States	12	0	10	0	13	0

### NUMBER OF WORKERS WHO ARE NOT EMPLOYEES<sup>1, 2</sup> GRI 2-8

Type of contract	2022		2023 - Consolidado	
	Direct hire	Indirect hire (through a contractor)	Direct hire	Indirect hire (through a contractor)
Apprentices	153	22	208	17
Interns	55	21	76	10
Contractors	0	1,047	99	1,900
Temporary worker	0	139	9	157
Subcontractors	0	155	0	111
<b>Total<sup>3</sup></b>		<b>1,592</b>		<b>2,587</b>

<sup>1</sup> 2021 data unavailable. Gender is not reported for contract workers.

<sup>2</sup> Contractors are hired to work in various areas of the company, such as: administrative, maintenance, engineering, cafeterias, cleaning, security, health and others.

<sup>3</sup> Increase due to the inclusion of the number of contractors in Mexico and MWM.

### RATIOS OF STANDARD ENTRY LEVEL WAGE COMPARED TO LOCAL MINIMUM WAGE<sup>1</sup> GRI 202-1

	2022				2023			
	Employees		Workers who are not employees		Employees		Workers who are not employees	
	Male	Female	Male	Female	Male	Female	Male	Female
<b>Brazil</b>								
Joinville	1.31	1.33	1.28	0.92	1.38	1.33	1.26	1.26
Betim	1.55	1.55	0.69	0.69	1.68	1.68	0.69	0.69
São Paulo <sup>2</sup>	-	-	-	-	2.09	1.74	1.01	1.01
<b>Mexico</b>								
Saltillo	1.3	1.3	0.75	0.75	1.78	1.78	1.39	1.39
Ramos Arizpe	1.23	1.23	1.05	1.05	1.32	1.86	1.32	1.32
<b>Portugal</b>								
Aveiro	1.00	1.00	1.00	1.00	1.08	1.08	1.06	1.06

<sup>1</sup> The indicator only considers manufacturing sites. Only interns and apprentices (minors) earn less than the minimum wage.

<sup>2</sup> The São Paulo site was incorporated in 2023.

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### NEW EMPLOYEE HIRES GRI 401-1

	2021		2022		2023	
	Number	Rate	Number	Rate	Number	Rate
<b>By gender</b>						
Male	7,183	0.50	5,351	0.31	5,426	0.29
Female	371	0.31	470	0.33	777	0.42
<b>By region</b>						
Brazil	4,286	0.42	3,966	0.29	3,480	0.23
Mexico	3,267	0.63	1,787	0.38	2606	0.52
United States	1	0.08	1	0.10	3	0.23
Europe	0	0	67	0.17	114	0.24
<b>By age group</b>						
Under 30 years old	4,468	0.89	3,179	0.58	3,485	0.63
Between 30 and 50 years old	3,000	0.33	2,491	0.23	2560	0.21
Over 50 years old	86	0.06	151	0.06	158	0.05
<b>Total</b>	<b>7,554</b>	<b>0.49</b>	<b>5,821</b>	<b>0.31</b>	<b>6,203</b>	<b>0.30</b>

### PARENTAL LEAVE GRI 401-3

	2022 <sup>1</sup>			2023		
	Male	Female	Total	Male	Female	Total
Employees entitled to parental leave	17,515	1,432	18,947	18,939	1,862	20,801
Employees who took parental leave in the reporting period <sup>2</sup>	671	56	727	654	59	713
Employees who returned to work in the reporting period after parental leave ended <sup>3</sup>	671	54	725	651	52	703
Return to work rate <sup>4</sup>	100%	96%	99%	100%	91%	99%

<sup>1</sup> We stated reporting this indicator in the 2022 reporting cycle. Therefore, there was no historical basis for calculating the retention rate.

<sup>2</sup> Includes everyone who took parental leave in 2023, regardless of the return date.

<sup>3</sup> Includes everyone who returned to work in 2023 and remained with the company for at least one month.

<sup>4</sup> Total number of employees who returned to work after parental leave / Total number of employees who were expected to return to work after parental leave x 100.

### EMPLOYEE TURNOVER GRI 401-1

	2021		2022		2023	
	Number <sup>1</sup>	Rate <sup>2</sup>	Number <sup>1</sup>	Rate <sup>2</sup>	Number <sup>1</sup>	Rate <sup>2</sup>
<b>By gender</b>						
Male	5,325	0.37	5,322	0.30	5,819	0.31
Female	249	0.21	444	0.31	514	0.28
<b>By region</b>						
Brazil	3,195	0.31	3,674	0.27	3,467	0.23
Mexico	2,378	0.45	2,053	0.44	2,823	0.56
United States	1	0.08	3	0.30	0	0.00
Europe	0	0.00	36	0.09	43	0.09
<b>By age group</b>						
Under 30 years old	3,020	0.60	2,866	0.52	3,318	0.60
Between 30 and 50 years old	2,338	0.26	2,785	0.25	2,666	0.22
Over 50 years old	216	0.14	115	0.05	349	0.11
<b>Total</b>	<b>5,574</b>	<b>0.36</b>	<b>5,766</b>	<b>0.30</b>	<b>6,333</b>	<b>0.30</b>

<sup>1</sup> Employees who left the company.

<sup>2</sup> Calculation methodology: total number of employees terminated in the year, divided by the total number of employees at the end of the year.

### WORK-RELATED ILL HEALTH<sup>1</sup> 403-10

	2021	2022	2023
	6	29	24

<sup>1</sup> Diseases caused by exposure to physical, chemical and ergonomic agents.

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## PERFORMANCE REVIEW<sup>1,2</sup> GRI 404-3

Employee category	2021			2022			2023		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Director	100%	0.0%	100%	100%	0.0%	100%	94.7%	0.0%	94.7%
Manager	100%	100%	100%	100%	100%	100%	93.9%	83.3%	92.6%
Head/Coordinator	100%	100%	100%	100%	100%	100%	95.3%	95.5%	95.3%
Technician/Supervisor	100%	100%	100%	100%	100%	100%	81.1%	93.8%	81.7%
Administrative	100%	100%	100%	100%	100%	100%	94.2%	91.8%	93.5%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>90.8%</b>	<b>91.9%</b>	<b>91.0%</b>

<sup>1</sup> Includes active employees working in different categories (director, manager, coordination, monthly technician, supervisor and administrative positions) hired or promoted on or before August 31.

<sup>2</sup>MWM did not participate in the process in 2023, since the evaluation system had not been integrated yet.

## EMPLOYEES WITH DISABILITIES BY EMPLOYEE CATEGORY (%)<sup>1</sup> GRI 405-1

	2021		2022 <sup>4</sup>		2023	
	N°	%	N°	%	N°	%
Board of Directors <sup>2</sup>	0	0%	0	0%	0	0.0%
Director <sup>3</sup>	0	0%	0	0%	0	0.0%
Manager	0	0%	1	0.9%	1	0.9%
Head/Coordinator	1	0.68%	1	0.6%	1	0.5%
Technician/Supervisor	4	1.51%	19	1.3%	18	1.1%
Administrative	9	0.87%	15	1.3%	31	2.1%
Operational	134	0.96%	298	1.9%	371	2.1%

<sup>1</sup> Data on disability status is not collected in Mexico, Aveiro and offices in Europe and United States.

<sup>2</sup> Considers effective members of the Board of Directors.

<sup>3</sup> Considers both statutory and non-statutory directors.

<sup>4</sup>Data from 2022 was corrected due to improvements in data collection by the Human Resources area. **GRI 2-4**

## RATIO OF BASIC SALARY AND REMUNERATION OF WOMEN TO MEN GRI 405-2

	2021		2022 <sup>1</sup>		2023	
	Basic salary	Compensation	Basic salary	Compensation	Basic salary	Compensation
Manager	74%	73%	110%	110%	125%	125%
Head/Coordinator	86%	89%	100%	100%	95%	95%
Technician/Supervisor	91%	90%	96%	96%	94%	94%
Administrative	85%	85%	96%	97%	101%	101%
Operational	87%	86%	98%	98%	96%	96%

<sup>1</sup> Since 2022, the calculation method, which used to consider the different positions, has also included a comparison between levels within the same position.

<sup>2</sup> Remuneration includes fixed and variable compensation, and bonuses.

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# Corporate Governance

## COMMUNICATION AND TRAINING ABOUT ANTI-CORRUPTION<sup>1, 2</sup> GRI 205-2

	2022				2023			
	Communication		Training		Communication		Training	
	Number	%	Number	%	Number	%	Number	%
<b>By employee category</b>								
Board of Directors <sup>4</sup>	15	100%	15	100%	15	100%	15	100%
Director <sup>5</sup>	27	100%	22	82%	28	100%	28	100%
Manager	110	100%	90	82%	115	100%	97	84%
Head/Coordinator	179	100%	150	84%	215	100%	171	80%
Technician/Supervisor	1,493	100%	1,346	92%	1,590	100%	365	23%
Administrative	1,139	100%	1,043	92%	1,477	100%	1,149	78%
Operational	15,976	100%	13,668	91%	16,170	100%	4,051	25%
Interns	75	100%	70	93%	85	100%	77	91%
Apprentices	153	100%	78	51%	217	100%	131	60%
<b>By region</b>								
Brazil	14,042	100%	11,550	89%	14,415	100%	4,661	32%
Mexico	4,714	100%	4,714	100%	5,009	100%	1,242	25%
United States	10	100%	3	30%	13	100%	7	54%
Europe	401	100%	215	54%	475	100%	174	37%
<b>Total</b>	<b>19,167</b>	<b>100%</b>	<b>16,482</b>	<b>91%</b>	<b>19,912</b>	<b>100%</b>	<b>6,084</b>	<b>31%</b>
<b>Business partners<sup>6</sup></b>								
Brazil	ND	ND	ND	ND	6,117	100%	71	1%
Mexico	ND	ND	ND	ND	919	100%	0	0
United States	ND	ND	ND	ND	0	0%	0	0
Europe	ND	ND	ND	ND	134	100%	0	0
<b>Total</b>	<b>ND</b>	<b>ND</b>	<b>ND</b>	<b>ND</b>	<b>7,170</b>	<b>100%</b>	<b>71</b>	<b>1%</b>

<sup>1</sup> The calculation considers the percentage of employees, apprentices and interns trained as of 12/31/2023. Does not include expatriates and employees on leave.

<sup>2</sup> This indicator started to be reported in 2022. Therefore, three-year historical data is not available. The business partner category started to be reported in 2023.

<sup>3</sup> Based on the frequency of this training, new and monthly employees were eligible to participate in 2023.

<sup>4</sup> Includes members of the Board of Directors, Supervisory Board and committee members.

<sup>5</sup> Considers statutory and non-statutory directors.

<sup>6</sup> For training purposes, we prioritize suppliers classified as critical — that is, those whose products or services have a direct impact on our operation or the final quality of our products.

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# Natural Capital

## MATERIALS USED GRI 301-1

	2022	2023
Metallic materials (various scrap metals, return, briquettes and pig iron) <sup>1</sup>	1,344,427	1,211,098
Sand	1,016,916	972,974
Coke	88,474	89,937
Catalyst	1,458	1,330
Coal dust	20,903	17,864
Bentonite	74,287	62,069
Limestone	45,091	43,992
Resin	12,762	12,101
Iron alloys	51,472	49,981
<b>Total</b>	<b>2,655,790</b>	<b>2,461,345</b>

<sup>1</sup> The amount published in the previous report ("1,187,006") was revised due to a correction in the metallic material base. **GRI 2-4**

## RECLAIMED PRODUCTS AND THEIR PACKAGING MATERIALS (tonnes)<sup>1</sup> GRI 301-3

	Paper/cardboard	Plastic	Total
Volume of products sold	2,416.8	102.7	2,519.5
Volume of packaging materials reclaimed	707.7	99.5	807.2
Percentage of packaging materials reclaimed (excluding returns and recalls) (%)	29.3%	96.9%	32%

<sup>1</sup> Considers packaging materials from the Joinville plant (BR) and the MWM subsidiary (BR).

## ENERGY CONSUMPTION WITHIN THE ORGANIZATION<sup>1</sup> GRI 302-1; SASB EM-MM-130a.1

	2021	2022	2023
<b>Fuel consumption from non-renewable sources</b>	<b>5,716,591</b>	<b>6,496,140</b>	<b>6,238,494</b>
Coke	2,277,976	2,556,014	2,549,397
Electricity	1,734,434	1,961,862	1,604,447
Natural gas	1,537,144	1,809,053	1,890,906
Diesel	141,540	169,211	193,743
<b>Total of electricity consumed from the grid</b>	<b>3,072,100</b>	<b>4,231,503</b>	<b>4,078,367</b>
Percentage of electricity consumed from the grid	43%	48%	47%
<b>Fuel consumption from renewable sources</b>	<b>1,362,751</b>	<b>2,264,435</b>	<b>2,473,920</b>
Percentage of energy consumption from renewable sources	19%	26%	28%
<b>Total</b>	<b>7,079,342</b>	<b>8,760,576</b>	<b>8,712,414</b>

<sup>1</sup> The reference used for the renewable energy factor in electricity was the Chamber of Electric Energy Commercialization (CCEE, in Portuguese) -- baseline year: 2023 for sites in Brazil; and EDP Commercial – baseline year 2023 – for the Portugal site.

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## WATER WITHDRAWAL (megaliter) GRI 303-3

Water withdrawal by source	2022 <sup>1</sup>		2023	
	All areas	Areas with water stress	All areas	Areas with water stress
Surface water (total)	101	0	97.8	0.0
Groundwater (total)	624	181	697.1	220.0
Third-party water (total)	992	441	1,001.9	483.2
<b>Total water consumption</b>	<b>1,716</b>	<b>622</b>	<b>1,796.8</b>	<b>703.2</b>

<sup>1</sup> The indicator started to be reported in 2022. All water withdrawn is freshwater ( $\leq 1,000$  mg/L total dissolved solids).

## WATER DISCHARGE BY DESTINATION (megaliter) GRI 303-4

	2022 <sup>1</sup>		2023	
	All areas	Areas with water stress	All areas	Areas with water stress
Surface water	119.37	119.37	177.1	177.1
Third-party water sent for use in other organizations	65.3	54.01	98.3	52.7
<b>Total discharge</b>	<b>184.67</b>	<b>173.88</b>	<b>275.3</b>	<b>229.8</b>

<sup>1</sup> The indicator started to be reported in 2022. All water is discharged to freshwater ( $\leq 1,000$  mg/L total dissolved solids).

## WATER CONSUMPTION (megaliter) GRI 303-5

	2021	2022 <sup>1</sup>		2023	
		All sites	Excluding Aveiro and Betim	All sites	Excluding Aveiro and Betim
Total water consumption	904	1,531	1,075	1,537	1,046
Total water consumption from all areas with water stress	382	448	448	473	473

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## OTHER SIGNIFICANT AIR EMISSIONS GRI 305-7; SASB EM-MM-120a.1

	2021 <sup>2</sup>		2022		2023	
	tonne/year	tonne/tonne produced	tonne/year	tonne/tonne produced	tonne/year	tonne/tonne produced
Volatile organic compound (VOC) <sup>1</sup>	199.00	0.00061	254.5	0.00050	210.48	0.00033
Particulate matter (PM)	1,069.00	0.00199	790.5	0.00114	588.68	0.00093

<sup>1</sup> Considers only the Joinville (BR) site.

<sup>2</sup> The particulate matter indicator considers the Joinville and Mauá sites, in Brazil, and the Saltillo and Ramos Arizpe sites, in Mexico.

## WASTE GENERATED GRI 306-3

	2021	2022 <sup>1</sup>		2023	
		Excluding Aveiro and Betim	All sites	Excluding Aveiro and Betim	All sites
<b>Non-hazardous waste (tonne)</b>					
Reused internally (steel shots)	2,558	2,085	3,103	1,352	3,655
Recycled/recovered internally (sand, waste, scrap, iron chips)	578,679	727,584	972,311	765,709	985,155
Directed to external recycling (recycling/reuse)	75,090	114,216	150,659	105,715	154,150
Landfilled	692,156	626,719	839,337	614,169	802,857
<b>Hazardous waste (tonne)</b>					
Landfilled	2,042	1,904	1,904	2,228	2,229
Directed to external recycling (recycling/reuse)	10,342	8,714	9,398	9,565	10,329
Temporarily stored within the sites <sup>2</sup>	22,600	31,100	54,469	1500	-4,545
Incinerated	0	0	0	0	0
<b>Total waste<sup>2</sup></b>	<b>1,383,467</b>	<b>1,512,322</b>	<b>2,031,182</b>	<b>1,500,239</b>	<b>1,953,830</b>
<b>Total waste generated per tonne of equivalent production (tonne/tonne produced)</b>	<b>2.58</b>	<b>2.86</b>	<b>2.92</b>	<b>3.07</b>	<b>3.07</b>

<sup>1</sup>2022 data revised for all sites. **GRI 2-4**

<sup>2</sup>Represents the variation in waste temporarily stored within the sites. A positive variation indicates that there was additional waste accumulated in the year and a negative variation indicates the removal of waste that had been accumulated in past years.

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### WASTE DIVERTED FROM DISPOSAL (tonne) GRI 306-4

	2021			2022			2023		
	On-site	Off-site	Total	On-site	Off-site	Total	On-site	Off-site	Total
<b>Non-hazardous waste</b>									
Preparation for reuse	2,558	0	2,558	3,103	0	3,103	3,655	0	3,656
Recycling	578,679	75,090	653,769	972,311	150,659	1,122,971	985,155	154,150	1,139,306
<b>Total</b>	<b>581,237</b>	<b>75,090</b>	<b>656,327</b>	<b>975,414</b>	<b>150,659</b>	<b>1,126,073</b>	<b>988,811</b>	<b>154,150</b>	<b>1,142,961</b>
<b>Hazardous waste</b>									
Recycling	0	10,342	10,342	0	9,398	9,398	0	10,329	10,329
<b>Total</b>	<b>0</b>	<b>10,342</b>	<b>10,342</b>	<b>0</b>	<b>9,398</b>	<b>9,398</b>	<b>0</b>	<b>10,329</b>	<b>10,329</b>
<b>Overall total</b>	<b>581,237</b>	<b>85,432</b>	<b>666,669</b>	<b>975,414</b>	<b>160,058</b>	<b>1,135,472</b>	<b>988,811</b>	<b>164,479</b>	<b>1,153,290</b>

<sup>1</sup> 2022 data revised, due to a correction in the metallic material base. **GRI 2-4**

### WASTE DIRECTED TO DISPOSAL (tonne) GRI 306-5

	2021			2022			2023		
	On-site	Off-site	Total	On-site	Off-site	Total	On-site	Off-site	Total
<b>Non-hazardous waste</b>									
Landfill	489,171	202,984	692,155	666,994	177,924	844,918	586,555	216,300	802,857
<b>Total</b>	<b>489,171</b>	<b>202,984</b>	<b>692,155</b>	<b>666,994</b>	<b>177,924</b>	<b>844,918</b>	<b>586,555</b>	<b>216,300</b>	<b>802,857</b>
<b>Hazardous waste</b>									
Landfill	0	2,042	2,042	0	1,904	1,904	0	2,229	2,229
<b>Total</b>	<b>0</b>	<b>2,042</b>	<b>2,042</b>	<b>0</b>	<b>1,904</b>	<b>1,904</b>	<b>0</b>	<b>2,229</b>	<b>2,229</b>
<b>Overall total</b>	<b>489,171</b>	<b>205,026</b>	<b>694,167</b>	<b>666,994</b>	<b>179,828</b>	<b>846,822</b>	<b>586,555</b>	<b>218,529</b>	<b>805,085</b>

<sup>1</sup> 2022 data revised, due to a correction in the amount of furnace slag sent to company-owned landfill. **GRI 2-4**

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# Social and Relationship capital

## Membership associations GRI 2-28

- Allianz Wassertoffmotor;
- Associação Brasileira do Biogás (ABiogás);
- Associação Brasileira da Indústria de Autopeças (Sindipeças/Abipeças);
- Associação Brasileira do Hidrogênio (ABH2);
- Associação Brasileira de Fundação (Abifa);
- Associação Brasileira de Internet Industrial (Abii);
- Associação Brasileira de Máquinas e Equipamentos (Abimaq);
- Associação de Engenharia Automotiva (AEA);
- Associação Empresarial de Joinville (Acij);
- Associação Nacional de Pesquisa e Desenvolvimento das Empresas Inovadoras (Anpei);
- Câmara Nacional de la Industria de Transformación (Canacindra);
- Clúster de la Industria Automotriz de Coahuila (CIAC);
- Confederación Patronal de la República Mexicana (Coparmex);
- Confederação Nacional da Indústria (CNI);
- Federação das Indústrias do Estado de Minas Gerais (Fiemg);
- Federação das Indústrias do Estado de Santa Catarina (Fiesc);
- Federação das Indústrias do Estado de São Paulo (Fiesp);
- Instituto Brasileiro de Governança Corporativa (IBGC)
- Industria Nacional de Autopartes (INA).

## Member of governance bodies

- Associação Brasileira da Indústria de Autopeças (Sindipeças/Abipeças);
- Associação Brasileira de Internet Industrial (Abii);
- Associação Empresarial de Joinville (Acij);
- Associação Nacional de Pesquisa e Desenvolvimento das Empresas Inovadoras (Anpei);

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## STAKEHOLDER ENGAGEMENT GRI 2-29

We seek to establish long-term relationships with our stakeholders, contribute to local development and ensure transparency and effectiveness in our communication with our stakeholders. For each group (employees, customers, suppliers, communities, government, shareholders and regulatory bodies), we have communication channels to receive requests or disseminate information on relevant topics, such as: impacts resulting from our operations; requests for support, sponsorship, donations and partnerships; economic performance; strategy and perspectives; global consumption scenarios; and service, support and quality specifications.

## STAKEHOLDER ENGAGEMENT GRI 2-29

Stakeholder groups	Communication channels	Topics addressed
<b>Employees</b>	TupyOn app, which offers varied internal communication content   Direct communication – we encourage leaders to talk to teams about topics that are relevant to us   Daily Safety Talks   Weekly environmental talks   Social media	Health and safety   Benefits   Career   Ethics   Environment   Innovation and technology   Quality   Brands and products   Sustainability   Diversity and inclusion   Operational excellence   Recognition   Social Responsibility   HR
<b>Customers</b>	Direct contact with the sales team   Biannual customer satisfaction survey   Specific surveys, with specific objectives   Website, via Contact Us   Emails and meetings   Social media	Global consumption scenarios   Quality specifications   Innovation and technology   Sales planning   Value chain partnerships
<b>Suppliers</b>	Supplier Portal   Phone   Email	Cost of materials and services – continuous monitoring of inflation and exchange rate variations   Value chain partnerships
<b>Communities</b>	Phone   Email   Meetings   Website, via Contact Us   Social media	Impacts from our activities   Requests for support, sponsorship, donations and other social partnerships
<b>Governments</b>	Meetings   Official visits and communications	Common issues that contribute for the development of the regions where we operate, always guided by our Code of Ethics and Conduct, which contains guidelines on relationships with government officials
<b>Shareholders</b>	Phone   Conferences   Email   Website	Economic performance   Business strategy   Perspectives   ESG agenda

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# Materiality

## OUR MATERIAL TOPICS GRI 3-2

Topic	Scope	Impact boundaries	Related GRI and SDG disclosures
<b>Decarbonization</b>	Research and Development (R&D) investments and partnerships to offer products and services that help reduce the carbon footprint of current and potential customers, in addition to initiatives to reduce energy consumption in our sites, expand the use of alternative fuels and limit emissions of Greenhouse Gases (GHG) in the production process.	Internal and external (customers, suppliers, employees, governments and society)	Economic performance: GRI 201-2 – SDG 13.1 GHG emissions: GRI 305-1, 305-2, 305-3, 305-4, 305-5 – SDG 3.9, 12.4, 13.1, 14.3, 15.2 Energy: GRI 302-5 – SDG 7.3, 8.4, 12.2, 13.1
<b>Air emissions</b>	Considers local emissions of particulate matter (PM) from the production process and initiatives to increase the efficiency of sites in terms of environmental control.	Internal and external (customers, suppliers, employees, governments and society)	Air emissions: GRI 305-7 – SDG 3.9, 12.4, 14.3, 15.2
<b>Waste and resources management and circular economy</b>	Sustainable use of non-renewable natural resources through the use of raw materials from recycled sources in the production process, as well as business development and efficiency gains related to waste recycling, reuse and treatment.	Internal and external (customers, suppliers, employees, contractors, society, communities and governments)	Materials: GRI 301-1, 301-2, 301-3 – SDG 8.4, 12.2, 12.5 Waste: GRI 306-1, 306-2, 306-3, 306-4, 306-5 – SDG 3.9, 6.3, 6.4, 6.6, 11.6, 12.4, 12.5, 14.1, 15.1, 15.5
<b>Governance</b>	Best practices in corporate governance, which involves transparency and integrity, risk management, accountability, and fair and equal treatment of stakeholders.	Internal and external (all stakeholders)	General disclosures: GRI 2-9 to 2-21 – SDG 5.5, 16.6, 16.7
<b>Ethics and compliance</b>	Measures to prevent ethical misconduct, non-compliance with laws and regulations, labor violations and corruption, striving for transparency and ethical relationships with all stakeholders.	Internal and external (all stakeholders)	General disclosures: 2-23, 2-24, 2-27 – SDG 16.3 Anti-corruption: GRI 205-1, 205-2, 205-3 – SDG 16.5 Anti-competitive behavior: GRI 206-1 – SDG 16.3 Public policies: GRI 415-1 – SDG 16.
<b>Innovation and product quality</b>	Initiatives to ensure the quality and safety of products across the value chain and create opportunities through innovation, digital transformation and solutions connected to our strategy.	Internal and external (customers, suppliers, partners, startups, universities and others)	SDG 9.4; 9.5 (Investment in R&D) Customer health and safety: GRI 416-1, 416-2; SDG 16.3
<b>People development</b>	Initiatives to attract, engage and develop talent, which includes creating an inclusive work environment and offering growth opportunities to all people	Internal and external (employees and society)	Employment: GRI 401-1, 401-2, 401-3 – SDG 3.2, 5.1, 5.4, 8.5, 8.5, 8.6, 10.3 Training and education: GRI 404-1, 404-2, 404-3 – SDG 5.1, 8.5, 10.3
<b>Diversity and inclusion</b>	Foster the creation of a diverse and inclusive work environment, ensuring fair treatment, access and equal opportunities, at all levels of the organization.	Internal and external (employees and contractors)	Diversity and equal opportunity: GRI 405-1, 405-2 – SDG 5.1, 5.5, 8.5, 10.3 Non-discrimination: GRI 406-1 – SDG 5.1, 8.8

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Topic	Scope	Impact boundaries	Related GRI and SDG disclosures
<b>Safety, health and well-being</b>	Management of the safety and health of employees and contractors, including measures to prevent accidents and improve quality of life.	Internal and external (employees, contractors and suppliers)	Occupational health and safety: GRI 403-1 to 403-10 – SDG 3.3, 3.7, 3.8, 3.9, 8.8, 16.1, 16.7
<b>Sustainable supply chain</b>	Responsibility for the supply chain, by requiring compliance with environmental, social and ethical impact legislation and guidelines, as well as by encouraging the adoption of sustainable practices.	Internal and external (suppliers, contractors and partners)	Procurement practices: GRI 204-1 – SDG 8.3 Environmental assessment: GRI 308-1, 308-2 Social assessment: GRI 414-1, 414-2 – SDG 5.2, 8.8, 16.1 Child labor and forced or compulsory labor: GRI 408-1, 409-1 – SDG 5.2, 8.7, 16.2
<b>Impact on local communities</b>	Creation of direct and indirect jobs in the locations where we operate, private social investment, dialogue with neighboring communities to identify and reduce potential impacts, and other initiatives.	External (communities and governments)	General disclosures: GRI 2-7, 2-8 – SDG 8.5, 10.3 Market presence: GRI 202-1 – SDG 1.2, 5.1, 8.5 Indirect economic impacts: GRI 203-1, 203-2 – SDG 1.2, 1.4, 3.8, 5.4, 8.2, 8.3, 8.5 9.1, 9.4, 11.2 Local communities: GRI 413-2 – SDG 1.4, 2.3

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# Financial Capital

TUPY S.A. AND SUBSIDIARIES

STATEMENT OF VALUE ADDED

YEAR ENDED DECEMBER 31, 2023 AND 2022

(All amounts in thousands of reais, except earnings per share) **GRI 201-1**

	Consolidated	
	12/31/2023	12/31/2022
<b>Origination of value added</b>	12,392,473	10,820,115
Sale of products , net of returns and rebates	12,336,961	10,845,276
Other operating expenses, net	29,103	-14,298
Provision for impairment of trade receivables	26,409	-10,862
<b>Inputs acquired from third parties</b>	-8,327,745	-7,217,678
Raw materials and processing material consumed	-5,469,915	-4,872,907
Materials , energy, third party services and other	-2,857,830	-2,344,771
<b>GROSS VALUE ADDED</b>	4,064,728	3,602,437
<b>Retentions</b>	-354,817	-348,551
Depreciation and amortization	-366,540	-348,551
Impairment		
<b>Net value added generated by the Company</b>	3,709,911	3,253,886
<b>Value added received through transfer</b>	108,104	99,360
Share of results of subsidiaries	0	0
Finance income	108,104	99,360
<b>VALUE ADDED TO DISTRIBUTE</b>	<b>3,818,015</b>	<b>3,353,246</b>

	Consolidado	
	12/31/2023	12/31/2022
<b>Distribution of value added</b>		
<b>Personnel</b>	2,267,866	1,911,260
Employees	1,853,862	1,539,215
Social charges - Government Severance Indemnity Fund for Employees (FGTS)	78,226	43,130
Profit sharing	122,101	153,231
Management fees	24,057	29,717
Workplace healthcare and safety	107,374	65,648
Food	27,727	14,675
Professional education, qualification and development	4,394	2,649
Other amounts	50,125	62,995
<b>Government</b>	633,537	698,551
Federal taxes and contributions	498,961	491,078
State taxes and rates	124,618	197,849
Municipal taxes, rates and other	9,958	9,624
<b>Third party capital</b>	399,599	241,214
Finance costs	340,075	221,484
Monetary and foreign exchange variations , net	59,524	19,730
<b>Own capital</b>	517,013	502,221
Acionis tas (dividendos)	22,071	65,378
Retained earnings (losses)	494,942	436,843
<b>TOTAL VALUE ADDED</b>	<b>3,818,015</b>	<b>3,353,246</b>

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**Statement of use** Tupy has reported in accordance with the GRI Standards for the period January 1, to December 31, 2023.  
**GRI 1 used** GRI 1 – Foundation 2021  
**Applicable GRI Sector Standard(s)** -

GRI Standard	Disclosure	Location	Omission	Global Compact	SDG
<b>General disclosures</b>					
<b>GRI 2:General disclosures 2021</b>	2-1 Organizational details	7, 8, 102	-	-	-
	2-2 Entities included in the organization’s sustainability reporting	About the report	-	-	-
	2-3 Reporting period, frequency and contact point	4	-	-	-
	2-4 Restatements of information	77, 79, 81, 82	-	-	-
	2-5 External assurance	This report has not been externally assured.	-	-	-
	2-6 Activities, value chain and other business relationships	7, 52	-	-	-
	2-7 Employees	32, 75	-	-	8,5, 10,3
	2-8 Workers who are not employees	75	-	-	8,5
	2-9 Governance structure and composition	18, 19	-	-	5,5, 16,7
	2-10 Nomination and selection of the highest governance body	21	-	-	5,5, 16,7
	2-11 Chair of the highest governance body	19	-	-	16,6
	2-12 Role of the highest governance body in overseeing the management of impacts	21, 23	-	-	16,7
	2-13 Delegation of responsibility for managing impacts	23	-	-	-
	2-14 Role of the highest governance body in sustainability reporting	4	-	-	-
	2-15 Conflicts of interest	20	-	-	16,6
	2-16 Communication of critical concerns	23	Item b. We do not control the number of critical concerns reported to the Board of Director.	-	-
	2-17 Collective knowledge of the highest governance body	Didn't happen	-	-	-

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GRI Standard	Disclosure	Location	Omission	Global Compact	SDG
	2-18 Evaluation of the performance of the highest governance body	20	-	-	-
	2-19 Remuneration policies	21	-	-	-
	2-20 Process to determine remuneration	22	-	-	-
	2-21 Annual total compensation ratio	Information on the remuneration of the Board of Directors, Statutory Board and Supervisory Board is available in section 13 (Managerial Remuneration) of the company's Reference Form	Data related to executive compensation is considered strategic and, therefore, is not presented in this report.	-	-
	2-22 Statement on sustainable development strategy	3	-	-	-
	2-23 Policy commitments	12, 22	-	10	16,3
	2-24 Embedding policy commitments	22	-	-	-
	2-25 Processes to remediate negative impacts	23	-	-	-
	2-26 Mechanisms for seeking advice and raising concerns	26	-	-	16,3
	2-27 Compliance with laws and regulations	Considering our size, there were no significant incidents of non-compliance with laws and regulations during the reporting period.	-	-	16,3
	2-28 Membership associations	83	-	-	-
	2-29 Approach to stakeholder engagement	84	-	-	-
	2-30 Collective bargaining agreements	In Brazil, 100% of employees are covered by collective bargaining agreements. Portugal has 100% of employees covered by the agreement with the workers' committee. In Mexico, this percentage is 89%. For employees not covered by a collective bargaining agreement, we follow terms and conditions similar to those established for other employees. These agreements are reviewed annually.	-	3	8,8
<b>Material topics</b>					
<b>GRI 3: Material Topics 2021</b>	3-1 Process to determine material topics	5	-	-	-
	3-2 List of material topics	5, 85	-	-	-

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GRI Standard	Disclosure	Location	Omission	Global Compact	SDG
<b>Economic performance – Material topic: Decarbonization</b>					
<b>GRI 3: Material topics 2021</b>	3-3 Management of material topics	65	-	-	-
<b>GRI 201 – Economic performance 2016</b>	201-2 Financial implications and other risks and opportunities due to climate change	100	-	7	13,1
<b>Market presence – Material topic: Impact on local communities</b>					
<b>GRI 3: Material topics 2021</b>	3-3 Management of material topics	57	-	-	-
	202-1 Proporção entre o salário mais baixo e o salário mínimo local com discriminação de gênero	75	-	6	1,2, 5,1, 8,5
<b>GRI 202 – Market presence 2016</b>	201-2 Financial implications and other risks and opportunities due to climate change	22 members of the Executive Leadership Team were hired from the local community (79%). For this indicator, we consider both statutory and non-statutory directors, hired in the countries where we operate.	-	6	8,5
<b>Indirect economic impacts – Material topic: Impact on local communities</b>					
<b>GRI 3: Material topics 2021</b>	3-3 Management of material topics	57	-	-	-
<b>GRI 203: Indirect economic impacts 2016</b>	203-1 Infrastructure investments and services supported	57	-	-	5,4, 9,1, 9,4, 11,2
	203-2 Significant indirect economic impacts	59	-	-	1,2, 1,4, 3,8, 8,2, 8,3, 8,5
<b>Procurement practices – Material topic: Sustainable supply chain</b>					
<b>GRI 3: Material topics 2021</b>	3-3 Management of material topics	52	-	-	-
<b>GRI 204: Procurement practices 2016</b>	204-1 Proportion of spending on local suppliers	52	-	-	8,3
<b>Anti-corruption – Material topic: Ethics and compliance</b>					
<b>GRI 3: Material topics 2021</b>	3-3 Management of material topics	24	-	-	-
<b>GRI 205: Anti-corruption 2016</b>	205-1 Operations assessed for risks related to corruption	In 2023, we began assessing integrity risks in 100% of our sites.	-	10	16,5
	205-2 Communication and training about anti-corruption policies and procedures	25, 78	-	10	16,5

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GRI Standard	Disclosure	Location	Omission	Global Compact	SDG
	205-3 Confirmed incidents of corruption and actions taken	No incidents in 2023.		10	16,5
<b>Anti-competitive behavior – Material topic: Ethics and compliance</b>					
<b>GRI 3: Material topics 2021</b>	3-3 Management of material topics	24	-	-	-
<b>GRI 206: Anti-competitive behavior 2016</b>	206-1 Legal actions for anti-competitive behavior, anti-trust, and monopoly practices	No incidents in 2023.	-	-	16,3
<b>Materials – Material topic: Waste management and circular economy</b>					
<b>GRI 3: Material topics 2021</b>	3-3 Management of material topics	70	-	-	-
<b>GRI 301: Materials 2016</b>	301-1 Materials used by weight or volume	79	-	7, 8	8,4, 12,2
	301-2 Recycled input materials used	71	-	8	8,4, 12,2, 12,5
	301-3 Reclaimed products and their packaging materials	71, 79		8	8,4, 12,2, 12,5
<b>Energy – Material topic: Decarbonization</b>					
<b>GRI 3: Material topics 2021</b>	3-3 Management of material topics	65	-	-	-
<b>GRI 302: Energy 2016</b>	302-1 Energy consumption within the organization	68	-	7, 8	7,2, 7,3, 8,4, 12,2, 13,1
	302-3 Energy intensity	68	-	8	7,3, 8,4, 12,2, 13,1
	302-4 Reduction of energy consumption	68		8, 9	7,3, 8,4, 12,2, 13,1
	302-5 Reductions in energy requirements of products and services	-	Information not included in the GHG emissions inventory. It will be reported starting in the next reporting cycles.	8, 9	7,3, 8,4, 12,2, 13,1
<b>Emissions – Material topics: Decarbonization and Air emissions</b>					
<b>GRI 3: Material topics 2021</b>	3-3 Management of material topics	65	-	-	-
<b>GRI 305: Emissões 2016</b>	305-1 Direct (Scope 1) GHG emissions	66	-	7, 8	3,9, 12,4, 13,1.14,3, 15,2

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GRI Standard	Disclosure	Location	Omission	Global Compact	SDG
	305-2 Energy indirect (Scope 2) GHG emissions	66	-	7, 8	3,9, 12,4, 13,1.14,3, 15,2
	305-3 Other indirect (Scope 3) GHG emissions	66	-	7, 8	3,9, 12,4, 13,1.14,3, 15,2
	305-4 GHG emissions intensity	66	-	7, 8	3,9, 12,4, 13,1.14,3, 15,2
	305-5 Reduction of GHG emissions	65	-	7, 8	13,1, 14,3, 15,2
	305-7 Nitrogen oxides (NOx), sulfur oxides (SOx), and other significant air emissions	81	-	7, 8	3,9, 12,4.14,3, 15,2
<b>Waste – Material topic Waste management and circular economy</b>					
<b>GRI 3: Material topics 2021</b>	3-3 Management of material topics	70	-	-	-
<b>GRI 306: Waste 2020</b>	306-1 Waste generation and significant waste-related impacts	72	-	8	3,9, 6,3, 6,6, 11,6, 12,4, 12,5
	306-2 Management of significant waste-related impacts	72	-	8	3,9, 6,3, 8,4, 11,6, 12,4, 12,5
<b>GRI 306: Waste 2020</b>	306-3 Waste generated	81	-	8	3,9, 6,6, 11,6, 12,4, 12,5, 15,1
	306-4 Waste diverted from disposal	82	-	8	3,9, 11,6, 12,4, 12,5
	306-5 Waste directed to disposal	82	-	8	3,9, 11,6, 12,4, 12,5
<b>Supplier environmental assessment – Material topic: Sustainable supply chain</b>					
<b>GRI 3: Material topics 2021</b>	3-3 Management of material topics	52	-	-	-
<b>GRI 308: Supplier environmental assessment 2016</b>	308-1 New suppliers that were screened using environmental criteria	53	-	8	
<b>GRI 308: Supplier environmental assessment 2016</b>	308-2 Negative environmental impacts in the supply chain and actions taken	53	-	8	
<b>Employment – Material topic: People development</b>					
<b>GRI 3: Material topics 2021</b>	3-3 Management of material topics	32, 34	-	-	-
<b>GRI 401: Employment 2016</b>	401-1 New employee hires and employee turnover	76	-	6	5,1, 8,5, 8,6, 10,3
	401-2 Benefits provided to full-time employees that are not provided to temporary or part-time employees	33	-	6	3,2, 5,4, 8,5
	401-3 Parental leave	76	-	6	5,1, 5,4, 8,5

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GRI Standard	Disclosure	Location	Omission	Global Compact	SDG
<b>Occupational health and safety – Material topic: Health, safety and well-being</b>					
<b>GRI 3: Material topics 2021</b>	3-3 Management of material topics	28	-	-	-
<b>GRI 403: Occupational health and safety 2018</b>	403-1 Occupational health and safety management system	28	-	-	8,8
	403-2 Hazard identification, risk assessment, and incident investigation	29			
	403-3 Occupational health services	31	-	-	8,8
	403-4 Worker participation, consultation, and communication on occupational health and safety	29	-	-	8,8
	403-5 Worker training on occupational health and safety	30	-	-	8,8, 16,7
	403-6 Promotion of worker health	31	-	-	8,8
	403-7 Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	30	-	-	3,3, 3,5, 3,7, 3,8
	403-8 Workers covered by an occupational health and safety management system	28	-	-	8,8
	403-9 Work-related injuries	30		Item b. Currently, we do not manage data regarding accidents with contractors working for Tupy.	8,8
	403-10 Work-related ill health	76	-	-	3,6, 3,9, 8,8, 16,1
<b>Training and education – Material topic: People development</b>					
<b>GRI 3: Material topics 2021</b>	3-3 Management of material topics	34	-	-	-
<b>GRI 404: Training and education 2016</b>	404-1 Average hours of training per year per employee	34	-	6	4,3, 4,4, 4,5, 5,1, 8,2, 8,5, 10,3
	404-3 Percentage of employees receiving regular performance and career development reviews	34, 77	-	6	5,1, 8,5, 10,3
<b>Diversity and equal opportunity – Material topic: Diversity and inclusion</b>					
<b>GRI 3: Material topics 2021</b>	3-3 Management of material topics	35	-	-	-

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<b>GRI 405: Diversity and equal opportunity 2016</b>	405-1 Diversity of governance bodies and employees	19, 37, 77	-	6	5,1, 5,5, 8,5
	405-2 Ratio of basic salary and remuneration of women to men	77	-	6	5,1, 8,5, 10,3
<b>Non-discrimination – Material topic: Diversity and inclusion</b>					
<b>GRI 3: Material topics 2021</b>	3-3 Management of material topics	35	-	-	-
<b>GRI 406: Non-discrimination 2016</b>	406-1 Incidents of discrimination and corrective actions taken	In 2023, there were eight incidents of discrimination. For all of them, we applied the measures established by our Disciplinary Code.	-	6	5,1, 8,8
<b>Freedom of association and collective bargaining – Material topic: Sustainable supply chain</b>					
<b>GRI 3: Material topics 2021</b>	3-3 Management of material topics	52	-	-	-
<b>GRI 407: Freedom of association and collective bargaining 2016</b>	407-1 Operations and suppliers in which the right to freedom of association and collective bargaining may be at risk	The right to freedom of association and collective bargaining is guaranteed by the local laws that apply to the vast majority of our suppliers (99%).	-	3	8,8
<b>Child labor – Material topic: Sustainable supply chain</b>					
<b>GRI 3: Material topics 2021</b>	3-3 Management of material topics	52	-	-	-
<b>GRI 408 Child labor 2016</b>	408-1 Operations and suppliers at significant risk for incidents of child labor	52	-	5	5,2, 8,7, 16,2
<b>Forced or compulsory labor – Material topic: Sustainable supply chain</b>					
<b>GRI 3: Material topics 2021</b>	3-3 Management of material topics	52	-	-	-
<b>GRI 409: Forced or compulsory labor 2016</b>	409-1 Operations and suppliers at significant risk for incidents of forced or compulsory labor	52	-	4	5,2, 8,7
<b>Local communities– Material topic: Impact on local communities</b>					

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<b>GRI 3: Material topics 2021</b>	3-3 Management of material topics	57	-	-	-
<b>GRI 413: Local communities 2016</b>	413-1 Operations with local community engagement, impact assessments, and development programs	57	-	1	-
	413-2 Operations with significant actual and potential negative impacts on local communities	59	-	1	1,4, 2,3
<b>Supplier social assessment – Material topic: Sustainable supply chain</b>					
<b>GRI 3: Material topics 2021</b>	3-3 Management of material topics	52	-	-	-
<b>GRI 414: Supplier social assessment 2016</b>	414-1 New suppliers that were screened using social criteria	53	-	2	5,2, 8,8, 16,1
	414-2 Negative social impacts in the supply chain and actions taken	53	-	2	5,2, 8,8, 16,1
<b>Public policy – Material topic: Ethics and compliance</b>					
<b>GRI 3: Material topics 2021</b>	3-3 Management of material topics	24	-	-	-
<b>GRI 415: Public policy 2016</b>	415-1 Political contributions	No incidents in 2023	-	10	16,5
<b>Customer health and safety – Material topic: Innovation and product quality</b>					
<b>GRI 3: Material topics 2021</b>	3-3 Management of material topics	55	-	-	-
<b>GRI 416: Saúde e segurança do consumidor 2016</b>	416-1 Assessment of the health and safety impacts of product and service categories	56	-	-	-
	416-2 Incidents of non-compliance concerning the health and safety impacts of products and services	No incidents in 2023	-	-	16,3
<b>Innovation – Material topic: Innovation and product quality</b>					
<b>GRI 3: Material topics 2021</b>	3-3 Management of material topics	41	-	-	9,4

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### Content related to non-material topics that Tupy monitors and reports annually

Disclosure	Location	Global Compact	SDG
201-1 Direct economic value generated and distributed	87		8,1, 8.2, 9,1, 9,4, 9,5
201-3 Defined benefit plan obligations and other retirement plans	We offer a defined contribution private pension plan, with no liability for the company, in all of our industrial sites and offices, with the exception of our plant in Portugal, where no pension plan is offered, as per the practices of the acquired company.		
303-3 Water withdrawal	80	7, 8	6,4
303-4 Water discharge	80	8	6,3
303-5 Water consumption	80	7, 8	6,4

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# ANNEX – SASB SUMMARY

## Sustainability disclosure topics & metrics

### METALS & MINING

Topic	Code	Metric	Location
Greenhouse Gas Emissions	EM-MM-110a.1	Gross global Scope 1 emissions, percentage covered under emissions-limiting regulations (t CO <sub>2</sub> -e, %)	66
	EM-MM-110a.2	Discussion of long- and short-term strategy or plan to manage Scope 1 emissions, emissions reduction targets, and an analysis of performance against those targets	65
Air Quality	EM-MM-120a.1	Air emissions of the following pollutants: (1) CO, (2) NOx (excluding N <sub>2</sub> O), (3) SOx, (4) particulate matter (PM <sub>10</sub> ), (5) mercury (Hg), (6) lead (Pb), and (7) volatile organic compounds (VOCs) – tons	81
Energy Management	EM-MM-130a.1	(1) Total energy consumed, (2) percentage grid electricity and (3) percentage renewable (GJ, %)	68, 79
Water Management	EM-MM-140a.1	(1) Total water withdrawn, (2) total water consumed; percentage of each in regions with High or Extremely High Baseline Water Stress (thousand cubic metres (m <sup>3</sup> ), %)	80
		Number of incidents of non-compliance associated with water quality permits, standards and regulations	Strategic confidential information.
Waste & Hazardous Materials Management	EM-MM-150a.4	Total weight of non-mineral waste generated (tons)	Does not apply to Tupy
	EM-MM-150a.5	Total weight of tailings produced (tons)	Does not apply to Tupy
	EM-MM-150a.6	Total weight of waste rock generated (tons)	Does not apply to Tupy
	EM-MM-150a.7	Total weight of hazardous waste generated (tons)	81
	EM-MM-150a.8	Total weight of hazardous waste recycled (tons)	82
	EM-MM-150a.9	Number of significant incidents associated with hazardous materials and waste management	Strategic confidential information.
	EM-MM-150a.10	Description of waste and hazardous materials management policies and procedures for active and inactive operations	70
Biodiversity Impacts	EM-MM-160a.1	Description of environmental management policies and practices for active sites	Does not apply to Tupy
	EM-MM-160a.2	Percentage of mine sites where acid rock drainage is: (1) predicted to occur, (2) actively mitigated, and (3) under treatment or remediation (%)	Does not apply to Tupy
	EM-MM-160a.3	Percentage of (1) proved and (2) probable reserves in or near sites with protected conservation status or endangered species habitat	Does not apply to Tupy

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Topic	Code	Metric	Location
<b>Security, Human Rights &amp; Rights of Indigenous Peoples</b>	EM-MM-210a.1	Percentage of (1) proved and (2) probable reserves in or near areas of conflict	Does not apply to Tupy
	EM-MM-210a.2	Percentage of (1) proved and (2) probable reserves in or near indigenous land	Does not apply to Tupy
	EM-MM-210a.3	Discussion of engagement processes and due diligence practices with respect to human rights, indigenous rights, and operation in areas of conflict	Does not apply to Tupy
<b>Community Relations</b>	EM-MM-210b.1	Discussion of process to manage risks and opportunities associated with Community rights and interest	57
	EM-MM-210b.2	Number and duration of non-technical delays (Number, days)	No non-technical delays occurred
<b>Relações trabalhistas</b>	EM-MM-310a.1	Percentage of active workforce covered under collective bargaining agreements, broken down by U.S. and foreign employees	In Brazil, 100% of employees are covered by collective bargaining agreements. Portugal has 100% of employees covered by the agreement with the workers' committee. In Mexico, this percentage is 89%. For employees not covered by a collective bargaining agreement, we follow terms and conditions similar to those established for other employees. These agreements are reviewed annually.
	EM-MM-310a.2	Number and duration of non-technical delays	There were no strikes and lockouts involving 1,000 or more workers in 2023.
<b>Saúde e segurança da força de trabalho</b>	EM-MM-320a.1	(1) MSHA all-incidence rate, (2) fatality rate, (3) near miss frequency rate (NMFR) and (4) average hours of health, safety, and emergency response training for (a) full-time employees and (b) contract employees	30
<b>Business Ethics &amp; Transparency</b>	EM-MM-510a.1	Description of the management system for prevention of corruption and bribery throughout the value chain	24
	EM-MM-510a.2	Production in countries that have the 20 lowest rankings in Transparency International's Corruption Perception Index	We do not produce in any of the countries that have the 20 lowest ratings on the 2023 Transparency International Corruption Perceptions Index.
<b>Tailings Storage Facilities Management</b>	EM-MM-540a.1	Tailings storage facility inventory table: (1) facility name, (2) location, (3) ownership status, (4) operational status, (5) construction method, (6) maximum permitted storage capacity, (7) current amount of tailings stored, (8) consequence classification, (9) date of most recent independent technical review, (10) material findings, (11) mitigation measures, (12) site-specific EPRP	Does not apply to Tupy
	EM-MM-540a.2	Summary of tailings management systems and governance structure used to monitor and maintain the stability of tailings storage facilities	Does not apply to Tupy
	EM-MM-540a.3	Approach to development of Emergency Preparedness and Response Plans (EPRPs) for tailings storage facilities	Does not apply to Tupy

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Code	Activity metric	Location
EM-MM-000.A	Production of (1) metal ores and (2) finished metal products (tons)	Information not available.
EM-MM-000.B	Total number of employees, percentage contractors	32, 75

### INDUSTRIAL MACHINERY & GOODS

Topic	Code	Activity metric	Location
<b>Energy Management</b>	RT-IG-130a.1	(1) Total energy consumed, (2) percentage grid electricity and (3) percentage renewable (GJ, %)	68, 79
	RT-IG-320a.1	(1) Total recordable incident rate (TRIR), (2) fatality rate, and (3) near miss frequency rate (NMFR)	30
<b>Fuel Economy &amp; Emissions in Use-phase</b>	RT-IG-410a.1	Weighted fleet fuel efficiency by sales for medium and heavy vehicles (liters per 100 ton-kilometers)	We do not currently calculate sales-weighted fuel efficiency data. The complexity involved in how the company's engines are sold and how they are used by customers creates a high degree of uncertainty in obtaining a single number for each category.
	RT-IG-410a.1	Sales-weighted fleet fuel efficiency for medium- and heavy-duty vehicles (Litres per 100 tonne-kilometres)	
	RT-IG-410a.2	Sales-weighted fuel efficiency for non-road equipment (Litres per hour)	
	RT-IG-410a.3	Sales-weighted fuel efficiency for stationary	
	RT-IG-440a.1	Description of the management of risks associated with the use of critical materials	
<b>Material sourcing</b>	RT-IG-440a.1	Description of the management of risks associated with the use of critical materials	The components and materials used by MWM are not part of the list of critical materials by the National Research Council.
<b>Remanufacturing Design &amp; Services</b>	RT-IG-440a.1	Revenue from remanufactured products and remanufacturing services (R\$)	Information not available.

Code	Activity metric	Location
RT-IG-000.A	Number of units produced by product category	Information not available.
RT-IG-000.B	Number of employees	32, 75

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## Task Force on Climate-Related Financial Disclosures

### Governance

a. Board's oversight of climate-related risks and opportunities.	The Board, assisted by the Audit and Risk Committee, evaluates the framework and management process for risks of a strategic nature, in addition to financial, operational, environmental (including climate change), legal and reputational, and the effectiveness of existing monitoring controls. Additionally, assisted by the Strategy, Innovation and Sustainability Committee, the Board evaluates, in a way that is integrated with the company's strategy, opportunities for practices related to sustainability and climate change. The work of the committees is reported monthly to the Board of Directors and, periodically, risks and opportunities related to climate change are presented by the Executive Leadership Team and discussed directly with the Board of Directors.
b. Management's role in assessing and managing climate-related risks and opportunities.	The Board of Directors is responsible, among things, for approving guidelines for risk management and control; monitoring prioritized risks, including those related to climate change; periodically evaluating the Risk Map and the corresponding control and mitigation action plans; and ensuring that the risk management process and the internal control system are supported by the necessary resources. Additionally, the Board approves the company's multi-year plan, which establishes, among other aspects, short and long-term strategic guidelines. In this context, the Board considers opportunities focused on ESG aspects, including climate change.

### Strategy

a. Climate-related risks and opportunities the organization has identified over the short, medium, and long term. <b>GRI 201-2</b>	We assess the risks and opportunities of climate change according to the recommendations from TCFD and CDP, and complete questionnaires from these organizations on an annual basis. The risks with highest potential impact are the changes in weather patterns, with intense rains or prolonged droughts, tropical cyclones and/or storms, with the following effects: higher operating costs due to damage to transport and energy infrastructure, with total or partial interruption of manufacturing and logistics activities, in addition to an increase in energy costs; and increase in energy generation from non-renewable sources, causing an increase in Greenhouse Gas emissions. Our assessments have also identified regulatory risks based on limits set for CO <sub>2</sub> emissions in the manufacturing process and in the products sold, with an added impact on costs. We have also mapped risks in the transition to low GHG emission technologies; reduction in demand as a result of consumer preference for low-carbon products; increase in the cost of inputs due to the decarbonization of the supply chain; and reputational risks caused by the stigmatization of the industry, which can lead to lower demand and challenges in attracting and retaining talent. Regarding opportunities, we have identified competitive advantages in the development and expansion of our portfolio of products and services with low carbon emissions, including projects we are already developing (biogas, biomass and hydrogen), which address the need to tackle climate change or the accelerated transition to a low-carbon economy.
b. Impact of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning. <b>GRI 201-2</b>	Impacts related to the risks identified: increase in direct and indirect costs. Impacts related to the opportunities identified: (1) generation of carbon credits based on the conservation of our forestry assets and (2) gains from generating additional volume and blocking competitors, and intangible communication and image gains.
c. Resilience of the organization's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario.	We do not currently consider climate-related scenarios, but we have a transition plan that will be implement over the next two years.

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## Risk Management

a. Organization's processes for identifying and assessing climate-related risks.	<p>To assess the likelihood of climate risks, we use the following criteria: (1) occurrence of physical or transition phenomena in previous years; (2) indications that the assessed events may occur; (3) influence and variation of temperature.</p> <p>To assess the potential impact of the identified risks, we use the following criteria: (1) potential financial impacts if the risk materializes; (2) consequences on our production system if the event occurs; (3) potential impacts on the image of our company or the sectors in which we operate; and (5) consequences for our strategies if the risk materializes.</p>
b. Organization's processes for managing climate-related risks.	<p>Our risk management process is based on best practices in corporate governance practices and follows the guidelines of the Committee of Sponsoring Organization of Treadway Commission (COSO); ERM: 2017 – Corporate Risk Management Integrated with Strategy and Performance; ISO 31000:2018 – Risk Management Guidelines; and the Control Objectives for Information and Related Technology (CobIT) standards and methodology.</p> <p>We also consider the three line model defined by The Institute of Internal Auditors. The first line is made up of the business areas, which are directly responsible for processes and risk management in accordance with policies and mitigation strategies approved by the Board. The second line is made up of the Risk Management and Compliance areas, which supervise the implementation, verify compliance and support the business areas in risk management. The third line is Internal Audit, which carries out independent assessments and makes control recommendations.</p>
c. How processes for identifying, assessing, and managing climate-related risks are integrated into the organization's overall risk management.	<p>The Risk Management team, together with Sustainability, assesses e risks considering their inherent and residual effects, as well as their likelihood and impact, to set priorities in the management processes. We consider potential financial, social, environmental and regulatory impacts.</p> <p>Integrated risk management incorporates climate aspects. Our climate risk and opportunity assessment process is carried out in line with the recommendations of the Task Force for Climate Disclosure (TCFD) and CDP.</p>

## Metrics and targets

a. Metrics used by the organization to assess climate-related risks and opportunities in line with its strategy and risk management process.	<p>Net GHG emissions (tCO<sub>2</sub>e)            GHG emissions intensity: Scopes 1 and 2 (tCO<sub>2</sub>/tonne of iron)            GHG emissions intensity: Scope 1 and 2 per revenue (tCO<sub>2</sub>/R\$)            Energy consumption (GJ)            Energy intensity: energy consumption in GJ/tonne produced</p>
b. Disclosure of scope 1, 2 and 3 emissions	<p>Scope 1: 560,113 tCO<sub>2</sub>e            Scope 2: 187,596 tCO<sub>2</sub>e            Scope 3: 140,803 tCO<sub>2</sub>e</p>
c. Targets used by the organization to manage climate-related risks and opportunities and performance against targets.	<p>We have not set any targets yet.</p>

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## Coordination

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## Tupy on Social Media



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*\_MWM Engines*

*\_ShiftT Accelerator*

*\_MWM Generators*



*\_TupySA*

*\_MWM Engines and Generators*



*\_MWM Engines*

*\_MWM Generators*

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