

ESG REPORT 2026

A Snapshot of Mining in the Amazon

BASE YEAR 2025

CARTA SANTARÉM

SIMINERAL
SINDICATO DAS INDÚSTRIAS MINERAIS DO ESTADO DO PARÁ

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MESSAGE FROM THE EXECUTIVE PRESIDENT

FOREWORD

The Santarém Charter was born from a partnership between companies in Pará's mineral sector and public authorities, focused on analyzing ESG indicators for mining in the Amazon. It is an unprecedented effort: for the first time, environmental, social and governance data from the region's principal mining operations have been systematically brought together.

This cooperation between the productive sector and public authorities is not new. It is a practice that has been steadily consolidated over time and that now gains another concrete chapter through the preparation of a technical study that establishes a new standard of transparency for the sector. Companies contribute their operational experience and commitment to the continuous improvement of their practices. Public authorities provide the institutional legitimacy needed for the results to carry weight and have practical application.

The Santarém Charter is a starting point. What is presented here is the first reading of a process that should be repeated and deepened in future cycles, tracking year by year how mining in Pará advances in innovation, governance and its relationship with the region's communities.

Making these data available to society reinforces the public commitment to transparency and to the sustainable development of the Amazon. It is also an invitation for other productive value chains in the region to follow the same path.

This foreword closes with the expectation that the Santarém Charter will become an ongoing reference and that each new edition will make it possible to demonstrate an increasingly transparent, innovative mining sector in Pará, committed to the region's future.



Emerson Rocha

Executive President, SIMINERAL

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1 INSTITUTIONAL MESSAGE FROM SIMINERAL

Mining plays a strategic role in the economic, social and industrial development of the State of Pará and Brazil. In a global landscape shaped by the energy transition, rising demand for critical minerals and the strengthening of ESG criteria across international value chains, Pará has consolidated its position as one of the world's most important mineral provinces, with the capacity to contribute decisively to regional development, job creation, public revenues, infrastructure and Brazil's competitive participation in the emerging low-carbon economy.

Operating in a territory of high environmental, social and cultural sensitivity such as the Amazon requires heightened responsibility, technical rigor, territorial-management capacity and an ongoing commitment to improving mining-sector practices. The complexity of the Amazon calls for a mining model capable of integrating economic development, environmental protection, social dialogue and institutional strengthening, while recognizing the territory's historical challenges and the strategic importance of building sustainable, long-term relationships with communities, public authorities and society.

In this context, the Santarém Charter plays a central role as an institutional reference and a guide for the mineral sector's activities in the Amazon. Developed through dialogue among companies, industry organizations, public authorities and a range of social stakeholders, the Charter represents a collective commitment to the continuous advancement of sustainability, governance and socio-environmental responsibility practices in mining in Pará. More than an institutional statement, the Santarém Charter reflects the understanding that strengthening mining's social legitimacy depends on the sector's ability to operate transparently, promote shared development, respect territories and make a concrete contribution to a sustainable-development agenda for the Amazon.

With the aim of providing transparency regarding the continuous evolution of sector practices in Pará, the Sindicato das Indústrias Minerais do Estado do Pará (SIMINERAL – Pará State Mining Industries Association) is launching its first Sectoral ESG Report, referring to 2026 and using 2025 as the base year. The document is an institutional milestone for mining in Pará because it consolidates a structured baseline of environmental, social and governance indicators from member companies, expands sector-wide transparency and strengthens the Amazon mineral sector's capacity for dialogue and accountability.

More than consolidating indicators, this report seeks to reflect a modern, technical and forward-looking sectoral vision of mining's role in the Amazon. In an industry characterized by companies of different sizes, operations, territorial realities and stages of ESG maturity, the report represents the construction of common ground around the shared responsibility to promote mining that is increasingly safe, transparent, sustainable and aligned with international best practices.

By incorporating the principles of the Santarém Charter and structuring this report around the Environmental, Social and Governance pillars, SIMINERAL reinforces its commitment to responsible and resilient mining aligned with the contemporary challenges of the global ESG agenda. The report also seeks to contribute to stronger legal certainty, institutional predictability and trust among the mineral sector, investors, society and public authorities, essential elements for the competitiveness and long-term sustainability of Brazilian mining.

MESSAGE FROM THE CHAIR OF THE BOARD OF DIRECTORS

"The future of mining will be determined by the ability to produce responsibly, create value for society and respond to global sustainability challenges. Pará has all the conditions required to play a leading role, but this position demands a permanent commitment to transparency, innovation and the continuous evolution of sector practices.

This report gives tangible form to that collective commitment. For the first time, we present an integrated view of the progress made by mining in Pará across the environmental, social and governance dimensions, demonstrating that competitiveness and responsibility go hand in hand.

More than recording results, this publication reaffirms the sector's willingness to build trust, strengthen dialogue with society and contribute to a development model that leaves a positive legacy for the Amazon and for Brazil."



Anderson Baranov
Chair of the Board of Directors, SIMINERAL

MESSAGE FROM SEMAS

"The ESG agenda has increasingly consolidated itself as one of the tools for promoting mining that is more transparent, efficient and committed to sustainable development. In this context, initiatives such as Simineral's Sectoral ESG Report, discussed in conjunction with improvements to environmental licensing, strengthen the production of high-quality information and expand dialogue among the productive sector, public authorities and society.

Pará seeks to promote sustainable economic development grounded in effective environmental governance, integrating responsible natural-resource management, intergenerational equity, transparency, public participation, territorial planning and integrated ecosystem management, characteristics that converge with the principles of the ESG agenda.

From this perspective, SEMAS will continue to act with public integrity, technical rigor and collaboration to strengthen environmental governance, legal certainty and effectiveness, seeking to align responsible mining practices with the development needs of the Amazon."



Rodolpho Zahluth
Deputy Secretary for Environmental Management and Compliance, SEMAS

2 THE SANTARÉM CHARTER AND THE COMMITMENT TO RESPONSIBLE MINING IN THE AMAZON

The Santarém Charter represents one of the principal institutional milestones of the ESG agenda for mining in the State of Pará. Structured through dialogue among companies, institutions and specialists, the initiative consolidates principles related to sustainability, transparency, governance, environmental conservation, territorial development and social relations in the Amazon.

The document recognizes that contemporary mining must combine economic competitiveness, socio-environmental responsibility, operational traceability, institutional legitimacy and the capacity to contribute to the global energy transition.

In this context, formal industrial mining is structurally differentiated from unregulated activities because it operates under permanent environmental-licensing systems, continuous monitoring, independent audits, territorial management, regulatory oversight and structured operational governance.

The Santarém Charter also reinforces the understanding that minerals produced in Pará are strategically important to global value chains associated with infrastructure, electrification, electric mobility and the low-carbon economy.

This report represents one of the main technical implementations of the Santarém Charter by establishing a structured, comparable and auditable sectoral ESG baseline for industrial mining in Pará.



Signing of the Santarém Charter statement of commitment, 2024

3 INTRODUCTION

This technical report presents the positioning of Pará's mineral sector in relation to the principal environmental, social and governance (ESG) dimensions, based on selected indicators, technical analyses and structured sectoral narratives.

The document seeks to promote transparency, comparability and methodological consistency by establishing a sectoral baseline that can serve as a reference for member companies, public authorities, investors, financial institutions, multilateral organizations and other stakeholders.

Specific objectives of this publication:

- Give visibility to practices and initiatives aligned with the ESG pillars that are being implemented in the State of Pará and that contribute to sectoral targets, promoting transparency regarding progress and challenges.
- Support public- and private-sector partners with information on sector practices in the State of Pará.

The technical preparation of this report was conducted by Proactiva Results, an independent consultancy specializing in ESG and sustainability, which was responsible for the methodological structure, consolidation of the sectoral baseline and technical alignment with the principal international references applicable to the mineral sector, including the International Council on Mining and Metals (ICMM), International Finance Corporation (IFC), Global Reporting Initiative (GRI) and GHG Protocol.

The information presented was consolidated from data reported by 10 member companies, Brazilian and international public databases, corporate reports, emissions inventories, regulatory systems, technical publications and ESG frameworks applicable to the mineral sector.

Both Simineral and the work presented here refer to the activities of companies legally established to carry out mining operations and do not condone illegal or predatory mining.

Disclaimer

The information in this report was voluntarily reported by Simineral member companies in order to provide society with information on initiatives contributing to the strengthening of responsible mining. Simineral was responsible for compiling and analyzing the reported data; it was not responsible for auditing those data.

PARÁ

MINERAL POWERHOUSE OF THE AMAZON

MINERAL DIVERSITY THAT DRIVES DEVELOPMENT
AND ADVANCES A SUSTAINABLE FUTURE

2ND LARGEST
MINERAL PRODUCER IN BRAZIL (2024)

302.7
MILLION TONNES
OF MINERAL PRODUCTION IN 2024

US$16.1
BILLION
IN MINERAL EXPORTS IN 2024

~45%
OF BRAZIL'S MINERAL EXPORTS (2024)

KEY MINERAL COMMODITIES AND LOCATION OF OPERATIONS



LEGEND - MINERAL COMMODITIES

- BAUXITE
- IRON ORE
- COPPER
- GOLD
- MANGANESE
- NICKEL
- KAOLIN
- PORT / TERMINAL
- RAILWAYS
- MAIN HIGHWAYS
- MAJOR CITIES

KEY MINERALS ASSOCIATED WITH THE ENERGY TRANSITION

COPPER	NICKEL	BAUXITE / ALUMINUM	IRON
Electrification and renewable energy	High-performance batteries	Lightweighting and energy efficiency	Electrical and solar infrastructure

PARÁ'S SHARE OF BRAZILIAN PRODUCTION - 2024



Source: FAPESPA / ANM

MINING THAT CREATES VALUE, PROMOTES DEVELOPMENT, AND PRESERVES THE AMAZON.

REGIONAL DEVELOPMENT | JOB CREATION | REVENUE AND INVESTMENT | SOCIOENVIRONMENTAL RESPONSIBILITY

PARÁ IS STRATEGIC FOR BRAZIL AND THE WORLD.
MINERAL WEALTH, DIVERSITY, AND A COMMITMENT TO RESPONSIBLE MINING.

Sources: ANM (Brazilian Mineral Yearbook 2024 and Mineral Report, Q2 2025) | FAPESPA (Pará Mining Bulletin 2025) | IBRAM (Information and Analyses of the Brazilian Mineral Economy 2025)

4 METHODOLOGY AND TECHNICAL STRUCTURE OF THE REPORT

This report was prepared by Proactiva Results, an independent consultancy specializing in ESG, sustainability and strategic management for the mining, infrastructure and industrial sectors. The consultancy was responsible for the methodological structure, consolidation of the sectoral baseline and technical alignment with the principal international references applicable to the mineral sector.

The methodology was developed specifically for the context of industrial mining in the State of Pará, taking into account the operational, environmental, social and institutional particularities of the Amazon. The methodological approach combined primary data reported by 10 SIMINERAL member companies, Brazilian and international public databases, documentary analysis, comparative indicators and globally recognized technical references.

The indicator structure was organized according to the Environmental, Social and Governance (ESG) pillars, considering the priority material topics for Amazon mining in 2025 as well as the principal challenges related to territorial management, climate change, operational safety, social relations, human rights and corporate governance.

Whenever applicable, the indicators and consolidation criteria were aligned with the main international sustainability and responsible-mining references, including the GRI Standards, IFC Performance Standards, ICMM Mining Principles, GHG Protocol, Task Force on Climate-related Financial Disclosures (TCFD), CEO Water Mandate, Global Industry Standard on Tailings Management (GISTM) and the UN Guiding Principles on Business and Human Rights.

The methodology was designed to prioritize comparability, conceptual consistency, transparency and the potential for year-on-year development of the indicators, enabling the progressive construction of a sectoral baseline for monitoring the ESG maturity of mining in Pará over time.

Quantitative information was obtained primarily from corporate data reported by member companies, supplemented by public and institutional databases, including the National Mining Agency (ANM), Brazilian Institute of Geography and Statistics (IBGE), Pará Amazon Foundation for Studies and Research (FAPESPA), Pará Secretariat for Environment and Sustainability (SEMAS), Integrated Mining Dam Safety Management System (SIGBM), IDEFLOR-Bio and Brazilian and international technical publications relevant to the mineral sector.



5 SIMINERAL ESG ROADMAP

Since 2019, SIMINERAL has progressively incorporated the ESG agenda into its institutional activities, recognizing sustainability as a central element of the mineral sector's competitiveness and legitimacy.

Beginning in 2025, with the creation of an Executive Board, the organization began strengthening sectoral ESG governance in coordination with its member companies, with the goal of consolidating an integrated position for mining in Pará on sustainability, territorial management and responsible industrial development.

The first cycle focused on the institutional construction of the ESG agenda, including technical workshops, specialized events, sectoral coordination and technical and institutional participation related to COP30.

The second cycle, corresponding to this report, consolidates the technical structure of sectoral ESG reporting, including comparative indicators, a technical glossary, international methodological alignment and the structuring of SIMINERAL's ESG governance bodies.

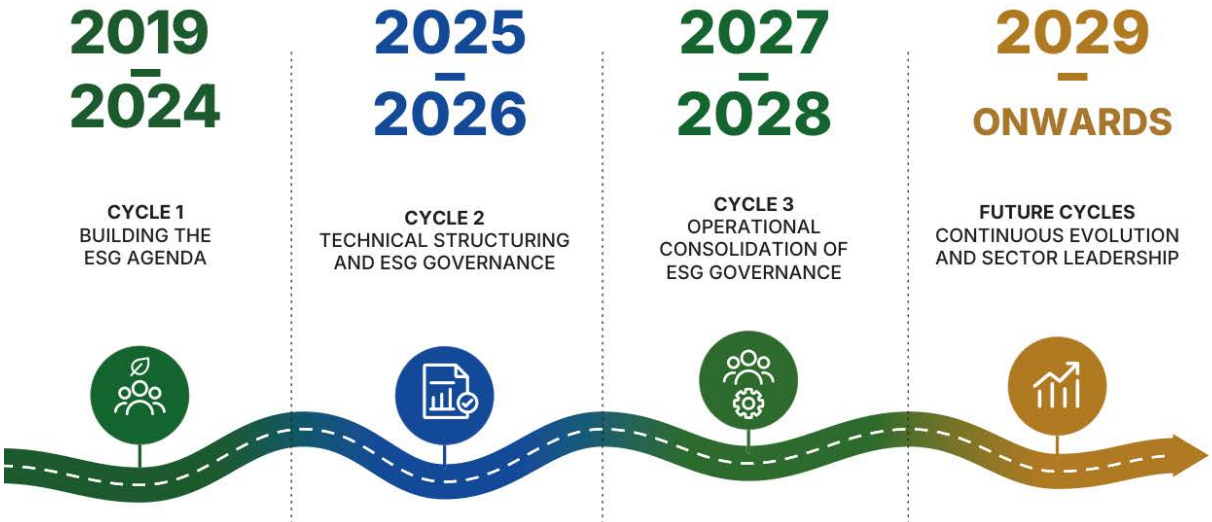
Future cycles are expected to focus on the operational consolidation of ESG governance, expanded data traceability, the evolution of comparative metrics and the continuous strengthening of sectoral transparency.

MINING FOR A SUSTAINABLE FUTURE IN THE AMAZON

SIMINERAL ESG ROADMAP

Since 2019, SIMINERAL has progressively incorporated the ESG agenda into its institutional activities, recognizing sustainability as a central element for the competitiveness and legitimacy of the mining sector.

As of 2025, with the creation of an Executive Board, efforts began to strengthen sectoral ESG governance in coordination with member companies, with the aim of consolidating an integrated position for Pará's mining sector on sustainability, territorial management, and responsible industrial development.



2019 – 2024

CYCLE 1
BUILDING THE ESG AGENDA

Institutional development of the ESG agenda

- Technical workshops
- Specialized events
- Sectoral coordination
- Technical and institutional participation in COP30

2025 – 2026

CYCLE 2
TECHNICAL STRUCTURING AND ESG GOVERNANCE

Consolidation of the technical structure for sectoral ESG reporting

- Comparative indicators
- Technical glossary
- International methodological alignment (ICMM, IFC, GRI)
- Structuring of SIMINERAL's ESG governance bodies

2027 – 2028

CYCLE 3
OPERATIONAL CONSOLIDATION OF ESG GOVERNANCE

ESG governance fully operational and stronger implementation

- Implementation of governance bodies and processes
- Greater integration among member companies
- Enhancement of ESG risk and opportunity management

2029 – ONWARDS

FUTURE CYCLES
CONTINUOUS EVOLUTION AND SECTOR LEADERSHIP

Continuous evolution of the ESG agenda and sectoral transparency

- Increased data traceability
- Evolution of comparative metrics
- Continuous strengthening of transparency and credibility in Pará's mining sector

ESG REPORT 2026
(REFERENCE YEAR 2025)

ESG REPORT 2027
(REFERENCE YEAR 2026)

FUTURE ESG REPORTS
(ANNUAL REFERENCE YEARS)

CONTINUOUS COMMITMENT | SIMINERAL reaffirms its commitment to responsible mining in the Amazon, promoting industrial development, value creation, and sustainability for Pará and Brazil.

6 PARÁ IN THE CONTEXT OF GLOBAL MINING

Over the last decade, the State of Pará has consolidated its position as one of the world's leading mineral provinces and one of the strategic pillars of Brazilian mining. The combination of production scale, mineral diversity, logistics competitiveness and the availability of mineral resources has positioned the state as a global leader in the production of iron ore, copper, bauxite, nickel, manganese, gold, kaolin and other minerals associated with the energy transition and low-carbon infrastructure.

The evolution of mining in Pará in recent years demonstrates a structural increase in the state's relevance in the Brazilian and international context. Data from the National Mining Agency (ANM), systematized by FAPESPA, show that Pará's mineral production recorded cumulative growth of more than 50% between 2010 and 2024, while Brazilian mineral production grew by approximately 18.6% over the same period. By contrast, Minas Gerais, the traditional leader in Brazilian mining, recorded a decline of approximately 8.4% in production volume over the period analyzed.

This trend consolidated Pará as Brazil's second-largest mining state by mineral-production volume and significantly increased its relative share of national mining. In 2024, the state produced approximately 302.7 million metric tons of minerals, representing around 18.4% of Brazilian mineral production. Pará's annual growth of 2.0% occurred in a context in which the national average contracted by 0.6%, reinforcing the resilience and competitiveness of mining in the state.

Pará's relevance is also demonstrated by its high concentration of nationally strategic minerals. In 2024, the state accounted for approximately 89.6% of Brazilian bauxite production, 63.9% of copper production, 60.5% of kaolin production, 43.8% of manganese production and 34.4% of national iron-ore production.

The Role of Mining in the Energy Transition

The acceleration of the climate crisis has placed decarbonization at the center of the global agenda, driving a profound reorganization of energy systems worldwide. In this process, mining plays a structural role: without minerals extracted from the ground, clean-energy technologies simply cannot exist. As a result, countries with large mineral reserves and developed mining sectors have ceased to be merely commodity suppliers and have become key players in the geopolitics of the energy transition.

As the climate crisis intensifies, global demand for critical minerals used in clean-energy technologies is expected to triple by 2030 and quadruple by 2040, according to data from the International Energy Agency (IEA) cited by UN Brazil (2024).1 Lithium for electric-vehicle batteries, copper for power grids, graphite for energy cells and other minerals have become indispensable inputs for decarbonizing the global economy.

In this scenario, Brazil emerges as a key actor. Technologies such as batteries, wind turbines, solar panels and power grids will require up to six times more mineral inputs in coming decades than they do today, and demand for certain elements, such as lithium, could increase fifteen-fold by 2050 (ANM, 2025).2 With one of the planet's greatest levels of geological diversity and a predominantly renewable electricity mix, Brazil is identified in international studies as a country with a major competitive advantage in the new global clean-energy industry.

The Brazilian Mining Institute (IBRAM) recognizes this dimension by describing critical and strategic minerals as a true "passport to the future." These minerals support key applications in healthcare, connectivity, defense, energy and precision agriculture, and the global dynamics of clean technologies represent a source of opportunity that, if it is to be fully captured, requires the organization of domestic value chains capable of adding value, stimulating innovation and spreading productivity (IBRAM/CETEM, 2025).[3]

Governance of this process has therefore become central to Brazilian and international debates. In Brazil, legislative seminars have discussed Bill No. 2780/2024, which would establish the National Policy on Critical and Strategic Minerals, with the objective of aligning industrial, regulatory and environmental policies to transform the country's mineral potential into technological sovereignty (ANM, 2025). The underlying assessment is that the country has unique advantages, including an electricity mix that is 85% renewable, institutional stability and large mineral reserves, but still lacks integrated planning and efficient mechanisms for attracting investment (ANM, 2025).

The message emerging across these fronts is that there can be no energy transition without responsible mining. The challenge for Brazil and the world is to ensure that critical minerals are developed with fairness, sustainability and a long-term vision, transforming underground wealth into development for present and future generations.

In the specific case of copper, a mineral considered critical for electrification, electric mobility, renewable energy and digital infrastructure, Pará quadrupled its production between 2011 and 2023, rising from approximately 15 million to almost 58 million metric tons per year. Pará's iron-ore production grew by around 46% over the same period, reinforcing the state's consolidation as one of the world's leading mineral frontiers.

From an economic perspective, mining has consolidated its position as the principal driver of Pará's exports and one of the main engines of the state economy. According to data from FAPESPA, ANM and IBRAM, Pará accounted for approximately 44.8% of Brazilian mineral exports in 2024, led by iron ore, copper, alumina, bauxite and manganese.

In 2025, the state maintained a prominent position in international mineral trade, remaining among Brazil's leading exporters. ANM data indicate that Pará accounted for approximately 44% of Brazilian mineral exports in the second quarter of 2025, maintaining national leadership in the sector.

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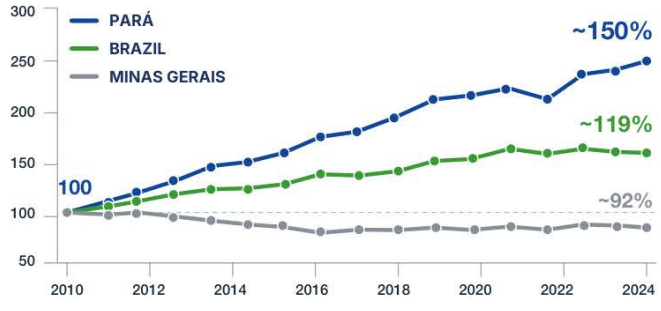
[1] **UNITED NATIONS (UN). Principles to guide critical energy transition minerals.** UN Secretary-General's Panel on Critical Energy Transition Minerals. Brasília: UN Brazil, September 16, 2024. Available at: https://brasil.un.org/pt-br/278791-princípios-para-orientar-mineração-de-elementos-críticos-para-transição-energética. Accessed June 9, 2026.

[2] **NATIONAL MINING AGENCY (ANM). Mining and the energy transition: Brazil discusses strategic policy for minerals of the future.** Brasília: ANM, July 10, 2025. Available at: https://www.gov.br/anm/pt-br/assuntos/noticias/mineracao-e-transicao-energetica-brasil-discute-politica-estrategica-para-minerais-do-futuro. Accessed June 9, 2026.

[3] **BRAZILIAN MINING INSTITUTE (IBRAM); CENTER FOR MINERAL TECHNOLOGY (CETEM).** Critical and Strategic Minerals in Brazil: A Passport to the Future. Brasília: IBRAM, 2025. Available at: https://ibram.org.br/wp-content/uploads/2025/10/IBRAM_MINERAIS-CRITICOS-E-ESTRATEGICOS-NO-BRASIL_WEB.pdf. Accessed June 9, 2026.

PARÁ IN THE CONTEXT OF GLOBAL MINING
A DECADE OF GROWTH AND LEADERSHIP

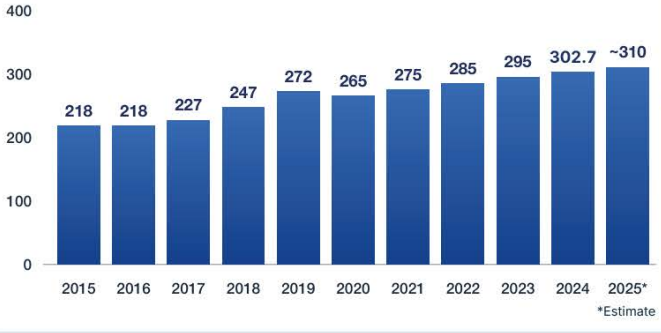
EVOLUTION OF MINERAL PRODUCTION
INDEX 2010 = 100



2010–2024 CUMULATIVE GROWTH

- **+50%** PARÁ
- **+18.6%** BRAZIL
- **-8.4%** MINAS GERAIS

PARÁ MINERAL PRODUCTION
MILLION TONNES



2024

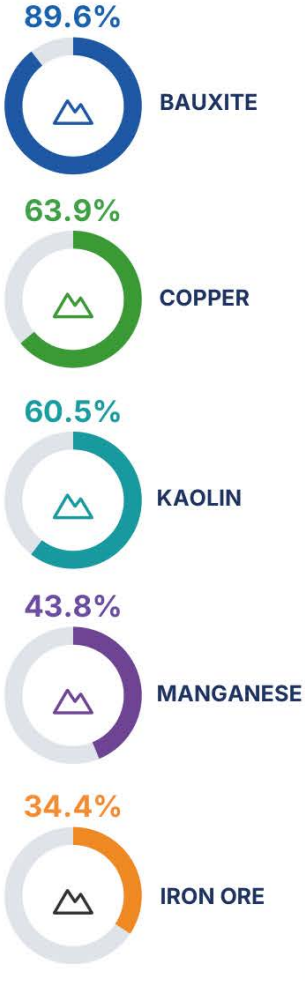
302.7 MILLION TONNES

18.4% OF BRAZILIAN MINERAL PRODUCTION

PARÁ MINERAL EXPORTS
US$ BILLION AND SHARE OF BRAZIL'S TOTAL



PARÁ'S SHARE OF BRAZILIAN MINERAL PRODUCTION – 2024



STRATEGIC MINERALS FOR THE ENERGY TRANSITION

- **COPPER** — Electrification and renewable energy
- **NICKEL** — High-performance batteries
- **BAUXITE / ALUMINUM** — Lightweighting and energy efficiency
- **IRON** — Sustainable infrastructure



PARÁ PLAYS A LEADING ROLE IN RESPONSIBLE MINING AND IN THE GLOBAL SUPPLY OF CRITICAL MINERALS.

- **MINERAL SECURITY**
- **SUPPLY CHAIN TRACEABILITY**
- **SUSTAINABILITY AND INNOVATION**
- **DEVELOPMENT FOR THE AMAZON**

Sources: FAPESPA (Pará Mining Bulletin 2025) | ANM (Brazilian Mineral Yearbook 2024; Mineral Report, Q2 2025) | IBRAM (Information and Analyses of the Brazilian Mineral Economy 2025)

The strategic importance of mining in Pará is expected to grow in coming decades as global demand expands for critical minerals associated with the energy transition, electrification of the economy, renewable energy, digitalization and low-carbon infrastructure. Studies by the International Energy Agency, World Bank and International Council on Mining and Metals (ICMM) point to substantial growth in global demand for copper, nickel, aluminum and steel over the coming decades, increasing the geopolitical centrality of regions that produce these minerals.

In this context, Pará plays a strategic role in the international debate on responsible mining, mineral security, value-chain traceability and sustainable development in regions of high socio-environmental sensitivity. The state's growing relevance to the global supply of critical minerals also increases the responsibility of Pará's mineral sector in relation to environmental management, stronger governance, operational safety and the development of sustainable relationships with Amazon territories and communities.

Sources: *National Mining Agency – ANM (Brazilian Mineral Yearbook 2024; Mineral Report, 2nd Quarter 2025); FAPESPA – Pará Mining Bulletin 2025; IBRAM – Information and Analysis on the Brazilian Mineral Economy 2025; International Energy Agency – Critical Minerals Outlook.*

MESSAGE FROM THE TECHNICAL DIRECTOR

"ESG is an integral part of Artemyn's global strategy and guides the way we do business. Our commitment goes beyond developing more sustainable products for our customers: we also seek to establish high standards of responsibility, ethics and excellence in our relationships with all stakeholders. In 2026, Artemyn celebrated its second anniversary, published its first Sustainability Report and retained its silver medal in the EcoVadis rating. These are initiatives that make us believe we are on the right path in our ESG journey."



Anderson Rocha

Operations Director, Artemyn, and Technical Director, SIMINERAL

7 MEMBER COMPANIES AND MINERAL PRODUCTION

SIMINERAL's member companies include some of the leading integrated mining companies in Brazil and worldwide, with companies from countries such as Australia, Canada, the United States and the United Kingdom operating across different mineral segments and industrial value chains associated with mining. Operations in Pará principally encompass iron ore, copper, bauxite, nickel, gold, manganese and industrial minerals, positioning the state as one of the world's most relevant mineral provinces.

Over the last several years, the ESG management structures of member companies have shown consistent development, including stronger environmental-management systems, climate governance, human-rights programs, operational-risk management, community relations, tailings-dam management and corporate transparency. This process accompanies growing demand from investors, consumer markets and financial institutions for mineral supply chains that are more responsible, traceable and aligned with international sustainability best practices.

Pará's mineral sector combines operations of different scales, high economic relevance and strong international integration. The state's mineral production is integrated into global supply chains related to steelmaking, aluminum, energy infrastructure, electrification, electric mobility and the transition to a low-carbon economy. Minerals produced in Pará, including iron ore, copper, bauxite and nickel, play a strategic role in the production of steel, batteries, transmission lines, electric vehicles, renewable energy and global industrial infrastructure.

According to public data from ANM, FAPESPA and IBRAM, Pará remains among Brazil's leading mineral hubs in terms of production volume, generation of economic value and collection of the Financial Compensation for the Exploitation of Mineral Resources (CFEM).

MINING IN PARÁ IN 2025

SECTOR PERFORMANCE AND CONTRIBUTION TO THE ECONOMY AND TO BRAZIL



BASE YEAR 2025

PARÁ: NATIONAL LEADER IN VALUE GENERATION AND MINING TAX REVENUE

LEADING ROLE IN THE GLOBAL MINERAL SUPPLY CHAIN

KPI 1 • PRODUCTION

TOTAL MINERAL PRODUCTION VOLUME IN PARÁ IN 2025

+300
MTPA
MILLION TONNES PER YEAR

PARÁ'S SHARE OF BRAZIL'S MINERAL PRODUCTION
~27%
OF BRAZIL'S TOTAL

KPI 2 • ECONOMY

VALUE OF MINERAL PRODUCTION (VPM) IN PARÁ **IN 2025**

~BRL 103
BILLION
MINING REVENUE

PARÁ'S SHARE OF BRAZIL'S MINING REVENUE
~34.5%
OF BRAZIL'S TOTAL

CUMULATIVE VPM GROWTH OVER THE LAST 10 YEARS
>150%
(NOMINAL VALUES)

KPI 3 • PUBLIC RETURN

COLLECTION OF THE FINANCIAL **COMPENSATION FOR THE USE OF MINERAL RESOURCES (CFEM) IN PARÁ IN 2025**

~BRL 3.1
BILLION

PARÁ'S SHARE OF BRAZIL'S CFEM COLLECTION
~39%
OF BRAZIL'S TOTAL

THE STRATEGIC ROLE OF MINING IN PARÁ

Mining in Pará combines large-scale production, strong generation of economic value and a significant fiscal contribution, establishing the state as Brazil's leading mining hub.

The sector drives essential production chains such as logistics, energy, infrastructure, services and foreign trade, while also creating jobs and fostering regional development.

The 2025 results reinforce Pará's leading role in Brazilian mining and its strategic importance for supplying critical minerals to the world.

MINING THAT CREATES VALUE, DEVELOPMENT AND A FUTURE FOR PARÁ AND FOR BRAZIL.

SOURCES:
National Mining Agency (ANM) • Brazilian Mining Institute (IBRAM) • Brazilian Institute of Geography and Statistics (IBGE) • Pará State Department of Economic Development, Mining and Energy (SEDEME-PA) • Pará State Mineral Industries Union (SIMINERAL)



In 2025, consolidated sector estimates based on public data from ANM, FAPESPA and IBRAM indicate that Pará's mineral production exceeded 300 million metric tons per year (Mtpa), representing approximately 27% of Brazilian mineral production by volume. The economic value of mineral production in the state was estimated at around BRL 103 billion, equivalent to approximately 34.5% of Brazilian mineral-sector revenue. During the same period, CFEM collections in Pará reached approximately BRL 3.1 billion, corresponding to roughly 39% of national mineral-sector collections.

Part of the economic indicators presented for 2025 consists of consolidated estimates prepared by combining public historical series, partial ANM data, IBRAM sector information and SIMINERAL institutional consolidations. The use of estimates is common in sectoral and economic analysis, particularly where consolidated official data for the relevant period are still being finalized or updated by the competent public agencies.

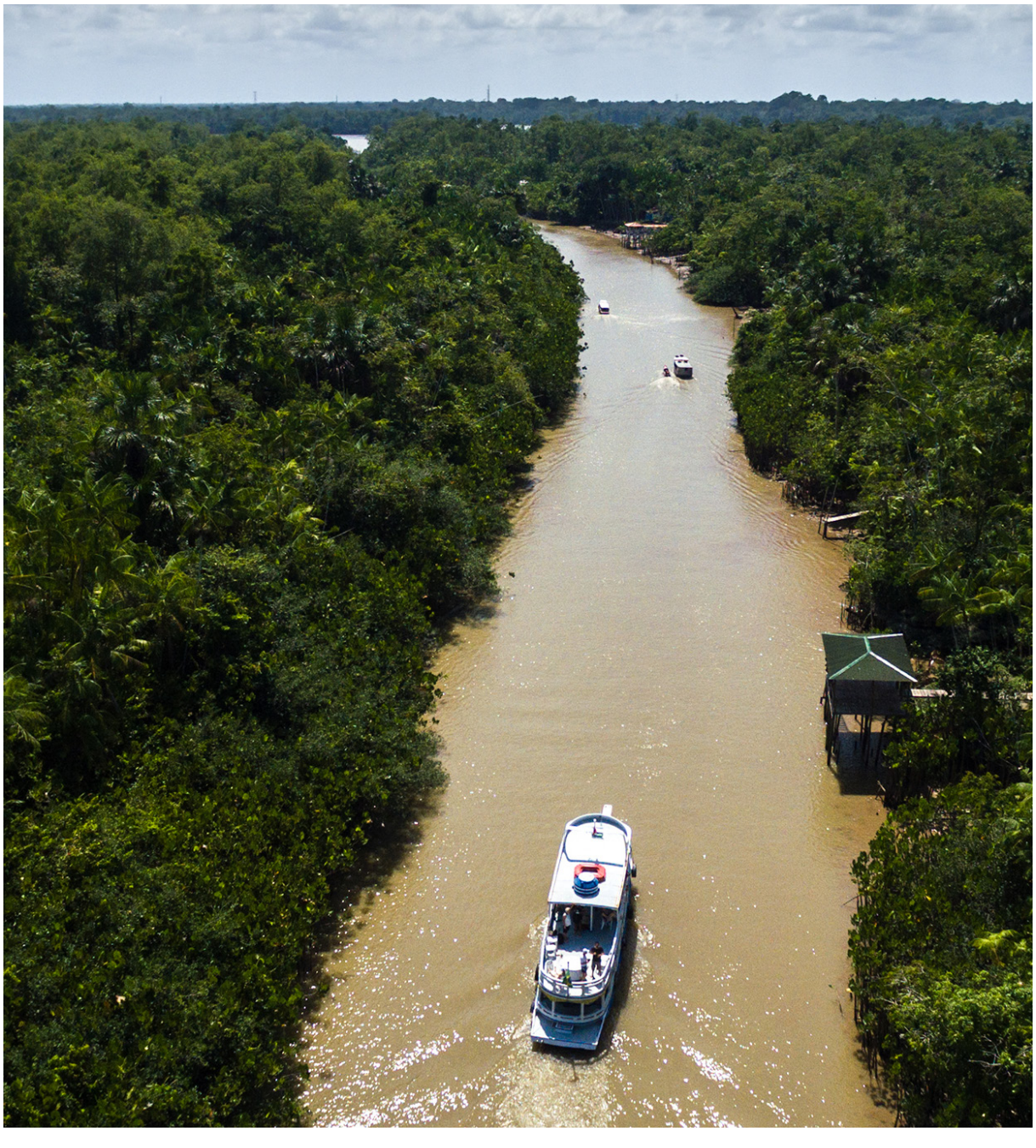
The data demonstrate that mining in Pará combines large-scale production, strong generation of economic value, significant fiscal contributions and a strategic role in strengthening Brazil's industrial value chains and the global market for critical and industrial minerals. The sector also has a structural influence on logistics, energy, infrastructure, services and foreign-trade value chains, reinforcing its relevance to the economic and industrial development of both the state and the country.

Sources: *National Mining Agency (ANM); FAPESPA – Pará Mining Bulletin 2025; IBRAM – Brazilian Mineral Economy 2025; Brazilian Institute of Geography and Statistics (IBGE); Pará State Secretariat for Economic Development, Mining and Energy (SEDEME-PA); SIMINERAL institutional consolidation 2025.*

8 ESG DIMENSIONS

The report was structured around the Environmental, Social and Governance pillars, taking into account the material topics considered most relevant to mining in Pará in 2025, according to the technical alignment carried out among SIMINERAL, 10 member companies and the technical team responsible for methodological consolidation.

The following sections present information organized by pillar and ESG indicators, including highlights and selected case studies illustrating identified best practices.



MESSAGE FROM THE FINANCE DIRECTOR

"Mining in the Amazon will only be sustainable if it can combine environmental excellence, operational safety, transparency and concrete social development in the territories where it operates. Under the environmental pillar, this requires technically robust licensing processes, responsible water-resource management, biodiversity protection, progressive rehabilitation of the areas used and a consistent path toward energy efficiency and decarbonization.

One of the most important advances of this report is precisely its expansion of sectoral transparency. Many companies are still reluctant to disclose indicators, share data and expose challenges. Responsible mining, however, must move in the opposite direction: open its figures, strengthen information traceability, submit results to external verification and allow society to objectively monitor its progress. Transparency is not improper exposure; it represents credibility, knowledge generation and a genuine commitment to continuous improvement.

In the social dimension, we must also move beyond the idea that mining is merely inserted into a particular territory. Today, a large share of the workforce at mining operations is made up of local people who were born, live and raise their families in these regions. In many operations, this share exceeds 90%. We are therefore not merely in the territory: we are the territory. Community development, the quality of public services, the creation of opportunities and the strengthening of the local economy directly affect our employees, our suppliers and our own operations.

For this reason, the value generated by mining must be used strategically to prepare these territories for the future. Mining activity has a defined life cycle, but its capacity for transformation should endure. Our commitment is to help ensure that investment, vocational training, stronger institutions and the development of local suppliers consolidate new economic and social capabilities, enabling the territory to be prepared for a new development cycle when mining comes to an end.

This report establishes an important baseline for that journey. More than presenting indicators, it reinforces that environmental performance, transparency and territorial development are inseparable dimensions of competitive, legitimate and responsible mining. In the Amazon, our role is to transform mineral resources into shared prosperity, preserve natural capital and leave a lasting legacy for people and territories."



Eduardo Leão

Vice President of Sustainability,
G Mining Ventures

President, G Mining Ventures Brazil
Finance Director, SIMINERAL



8.1 E PILLAR – ENVIRONMENTAL

The environmental dimension is one of the principal structural pillars of industrial mining in the Amazon. Operating in a territory of high ecological sensitivity requires robust environmental-management systems, territorial monitoring, operational controls and risk governance.

Over recent years, the environmental practices of SIMINERAL member companies have shown consistent improvement, including progress in environmental licensing, water management, biodiversity protection, environmental rehabilitation, climate monitoring and the energy transition.

The indicators presented in this chapter were structured on the basis of international references applicable to industrial mining, including the GRI Standards, IFC Performance Standards, ICMM Mining Principles, CEO Water Mandate, GHG Protocol and TCFD. They comprise:

- **Environmental Licensing**
- **Protected Areas and Biodiversity**
- **Water Use**
- **Climate and Energy.**

8.1.1 ENVIRONMENTAL LICENSING

The consolidated indicators point to a highly predictable regulatory environment and to the progressive strengthening of environmental-management structures for mining in Pará.

With regard to environmental licensing conditions, consolidated data indicate that 100% are either fulfilled or in the process of being fulfilled, demonstrating structured environ-



mental-management systems and continuous monitoring of regulatory obligations. On social matters, around 60% of companies identify potential applicability of FPIC (Free, Prior and Informed Consent) protocols, and 100% of those companies are either implementing such protocols or already have structures in place.

At the state level, stronger regional environmental licensing has been increasing the technical quality of processes, promoting greater regulatory predictability, alignment with best practices and decisions better adapted to the territorial specificities of the Amazon.

Taken together, these indicators demonstrate that mining in Pará operates under a structured system of licensing, management of licensing conditions and socio-environmental governance aligned with international references on risk management and environmental performance, including IFC Performance Standard 1 and the ICMM principles.

Mineração Rio do Norte (MRN) stands out as the most mature benchmark within the group in implementing FPIC. The company has conducted structured consultation processes with Quilombola and riverine communities since the earliest studies for its expansion projects. These processes are internally formalized through guideline RC.NORM-0001, an instrument that integrates FPIC commitments, cultural-heritage protection and respect for sacred areas into the company's territorial-management system.

In September 2024, MRN obtained the Preliminary License for the Novas Minas Project (PNM) following an FPIC process conducted with communities in the Oriximiná region. The process involved multiple consultation rounds, strengthening of the "FALAÍ Comunidade!" dialogue channel and participatory seminars with representatives of Quilombola and riverine communities.



ENVIRONMENTAL LICENSING FOR MINING IN PARÁ

Regulatory predictability, responsible management and commitment to environmental protection.

HIGHLIGHTS OF THE MINING SECTOR IN PARÁ

82.6%
of environmental conditions currently being addressed

60%
of companies with potential applicability for FPIC protocols[2]

100%
of companies prepared or in the process of preparing to implement FPIC

ROBUST SYSTEMS
for environmental management and socioenvironmental governance

ENVIRONMENTAL PERFORMANCE



100%
of environmental conditions fulfilled or in the process of being fulfilled within the established timeframe.

82:5%
of environmental conditions being fulfilled on schedule.

Evidence of structured environmental management systems and continuous monitoring.

SOCIAL ENGAGEMENT AND HUMAN RIGHTS

60% of companies identify potential applicability for FPIC protocols[2]

100% of companies already have structures in place or are in the process of preparing to adopt FPIC.

Commitment to qualified dialogue and respect for the rights of traditional peoples and communities.

BRAZIL'S ENVIRONMENTAL LICENSING SYSTEM IS ROBUST AND TRANSPARENT

EIA/RIMA
Environmental Impact Studies required by law

PUBLIC HEARINGS
Social participation and transparency in the process

TECHNICAL ANALYSIS
Multidisciplinary assessment by competent environmental agencies

DECISION AND CONDITIONS
Definition of control measures, environmental programs and commitments

CONTINUOUS MONITORING
Monitoring compliance with conditions and continuous improvement

REGIONAL HIGHLIGHT – PARÁ

The strengthening of regional environmental licensing promotes continuous technical improvement, the exchange of experiences between developers and licensing agencies, more context-specific decisions, and greater alignment with best practices, contributing to environmental protection, regulatory predictability, and the technical development of the mining sector in Pará.

ALIGNED WITH INTERNATIONAL STANDARDS

IFC Performance Standard 1 Management of environmental and social risks and impacts

ICMM International Council on Mining & Metals

Good governance, risk management, and socioenvironmental performance

[1] Considers the average total time required to obtain LP, LI, and LO.
[2] FPIC: Free, Prior and Informed Consent – Consentimento Livre, Prévio e Informado.

Sources: IBAMA; SEMAS/PA; Brazilian environmental licensing legislation; IFC PS1; ICMM; consolidated data from companies participating in the 2025 sectoral ESG survey.

8.1.2 PROTECTED AREAS AND BIODIVERSITY

Biodiversity conservation is one of the central dimensions of industrial mining activity in the Amazon. The State of Pará lies within the Amazon biome—the largest biome in Brazil, covering 4,212,472 km².

From the perspective of territorial protection, Pará contains one of Brazil's largest concentrations of protected areas, including federal conservation units managed by ICMBio, such as national parks, national forests and extractive reserves, as well as extensive Indigenous lands.

According to IDEFLOR-Bio data, approximately 75 million hectares in the State of Pará are under public protection, equivalent to 60% of the state's territory, including federal, state and municipal conservation units, Indigenous lands, Quilombola territories and military areas. Of this total, 38.99 million hectares correspond exclusively to conservation units registered in the National Registry of Conservation Units (CNUC/MMA) within the Amazon biome in Pará, excluding Indigenous lands and other territorial categories.

The company's activities are associated with maintaining the environmental integrity of these areas, which contain high biodiversity, significant carbon stocks and water resources of strategic importance to the region. The model adopted in Carajás is frequently cited as an international benchmark for reconciling environmental conservation and mining activity, demonstrating how mining can coexist with the protection of ecosystems of high ecological relevance.



Vale is the group's principal benchmark for the conservation of protected areas. For more than four decades, the company has contributed to the protection of the Carajás Mosaic in southeastern Pará, a group of six federal Conservation Units totaling approximately 800,000 hectares of preserved Amazon forest—an area equivalent to around 1.1 million soccer fields. In one of the regions historically most pressured by deforestation in the Amazon, the mosaic constitutes one of the country's largest continuous blocks of protected native vegetation.

Consolidated data indicate that SIMINERAL member companies directly and indirectly manage approximately 940,000 hectares under different territorial-management instruments. This total includes operational areas, legal reserves, permanent preservation areas, ecological corridors, areas undergoing environmental rehabilitation, and protected areas whose conservation is supported by companies through investment, environmental monitoring, scientific research, territorial control and institutional partnerships.

At several operations, the area physically occupied by mining represents only a fraction of the territory under socio-environmental management. In addition to the areas directly controlled by operations, companies contribute to maintaining the ecological integrity of extensive adjacent territories, including conservation units, protected-area mosaics and forest landscapes that are strategically important to Amazon biodiversity and water resources.

Of this total, approximately 77,000 hectares are subject to direct physical intervention associated with mining activities under the Mining Code (Decree-Law No. 227/1967) and National Mining Agency regulations, representing around 50% of the total area under mineral-sector management.

The data point to an approximate ratio of 10 hectares protected, conserved or subject to environmental-management mechanisms for every hectare directly affected by mining operations. Although some of these areas are not under direct corporate ownership, their maintenance depends on continuous investment, monitoring programs, conservation actions and shared-governance arrangements developed in partnership with environmental agencies, research institutions and civil-society organizations.

This result demonstrates a territorial-management pattern aligned with the mitigation hierarchy established in IFC Performance Standard 6 (Biodiversity Conservation and Sustainable Management of Living Natural Resources) and with the principles of the International Council on Mining and Metals (ICMM), reinforcing the sector's contribution to conserving strategic ecosystems, maintaining essential ecosystem services and preserving the connectivity of natural landscapes at a regional scale.



MINING IN PARÁ: PRODUCTION AT SCALE, CONSERVATION AS A PRIORITY.

Responsible mining, integrated with the conservation of the Amazon and the protection of biodiversity.

CONSERVATION IS A PRIORITY

Protected areas are more than 10 times the impacted areas.

RESPONSIBLE MANAGEMENT

Planning, control, and environmental recovery at every stage.

COMMITMENT TO THE AMAZON

Mining that contributes to the protection and sustainable development of the region.

TERRITORIAL MANAGEMENT OF MEMBER COMPANIES (SIMINERAL)

OPERATIONAL AREA (DIRECT MANAGEMENT)

154

Thousand hectares area with mining activity intervention

AREA DISTURBED BY MINING ACTIVITY

77

thousand hectares

50%

of the operational area

AREA UNDER ENVIRONMENTAL RECOVERY (PRAD)

5

thousand hectares

PROTECTED, CONSERVED OR MONITORED AREA [1]

786

thousand hectares

10x

the operational area

2025 RATIO PROTECTED AREAS VS. IMPACTED AREAS

10:1

Reference aligned with the IFC PS6 Mitigation Hierarchy and ICMM practices.



~75 million hectares

of areas protected through public instruments in the State of Pará.[1]

1.1%

Protected areas under management, influence, or connectivity associated with SIMINERAL mining operations represent approximately 1.1% of the state total.

STATE CONTEXT – PARÁ

(COMPARATIVE REFERENCE)

Formal mining as an ally in conservation, territorial monitoring and biodiversity protection in the Amazon.

MINING'S CONTRIBUTION TO THE AMAZON

CONSERVES LARGE AREAS OF FOREST

Protected, conserved, or monitored areas are 10 times larger than the impacted area.

RECOVERS AND RESTORES AREAS

More than 5 thousand hectares under active environmental recovery (PRAD).

MANAGEMENT ALIGNED WITH INTERNATIONAL STANDARDS

Commitment to IFC PS6, ICMM, and best practices in socioenvironmental management.

CREATES SHARED VALUE FOR SOCIETY

Protects biodiversity, strengthens territories and contributes to the sustainable development of the Amazon.

MINING THAT DELIVERS POSITIVE RESULTS FOR TODAY AND FOR THE FUTURE.

RESPONSIBLE PRODUCTION
Compatibility between production scale and environmental conservation

PROTECTED BIODIVERSITY
Territorial management that preserves ecosystems and essential environmental services.

SUSTAINABLE FUTURE
Mining integrated with the sustainable development of the Amazon.

CONTINUOUS COMMITMENT
Continuous improvement in governance, innovation and environmental performance.

[1] Includes legally protected areas, legal reserves, voluntary conservation areas, areas of influence and ecological connectivity under the management or monitoring of member companies.

Sources: Consolidated data from companies participating in the 2025 sector survey; IBGE; SEMA/PA; National Register of Conservation Units (CNUC); IFC PS6; ICMM Mining Principles.

In addition, approximately 5,000 hectares are currently undergoing active environmental rehabilitation through Degraded Area Recovery Plans (PRADs), mandatory instruments for mining activity and essential to the progressive restoration of vegetation, ecological functionality and ecosystem services in areas previously used by operations.

The results observed among member companies demonstrate consistent progress in the rehabilitation of degraded areas, ecosystem restoration and the conservation of extensive natural landscapes, reinforcing the sector's commitment to responsible territorial management throughout the full life cycle of mining projects.

Taken together, the indicators demonstrate that mining in Pará is not limited to managing the areas directly occupied by operations, but also contributes to the maintenance, rehabilitation and protection of significantly broader territories, including protected areas, ecological corridors and ecosystems strategically important to Amazon biodiversity.

This outlook reinforces the sector's capacity to reconcile mineral production at a global scale with environmental conservation, establishing territorial management as one of the principal vectors for generating socio-environmental value and protecting natural capital in the Amazon.

Mineração Paragominas, operated by Hydro, is the group's leading benchmark for this indicator. Since its rehabilitation program began in 2009, the company has restored more than 3,759 hectares in the municipality of Paragominas, equivalent to approximately 5,250 soccer fields. The program adopts a 1:1 ratio, committing the company to rehabilitate one hectare for every hectare made available for mining, in compliance with a commitment signed with the Pará Secretariat for the Environment.

In 2025, Mineração Paragominas completed the actions under the PRADA (Project for the Restoration of Degraded and Altered Areas) 11 years ahead of the established deadline, converting 891 hectares of previously impacted land into a legal reserve with restored native flora. The program combines nucleation techniques, traditional seedling planting, assisted natural regeneration and, since 2024, drone-assisted planting—an initiative considered pioneering among mining companies in the Brazilian Amazon and developed in partnership with the French-Brazilian startup Morfo, recognized by the World Economic Forum's Trillion Trees Challenge.



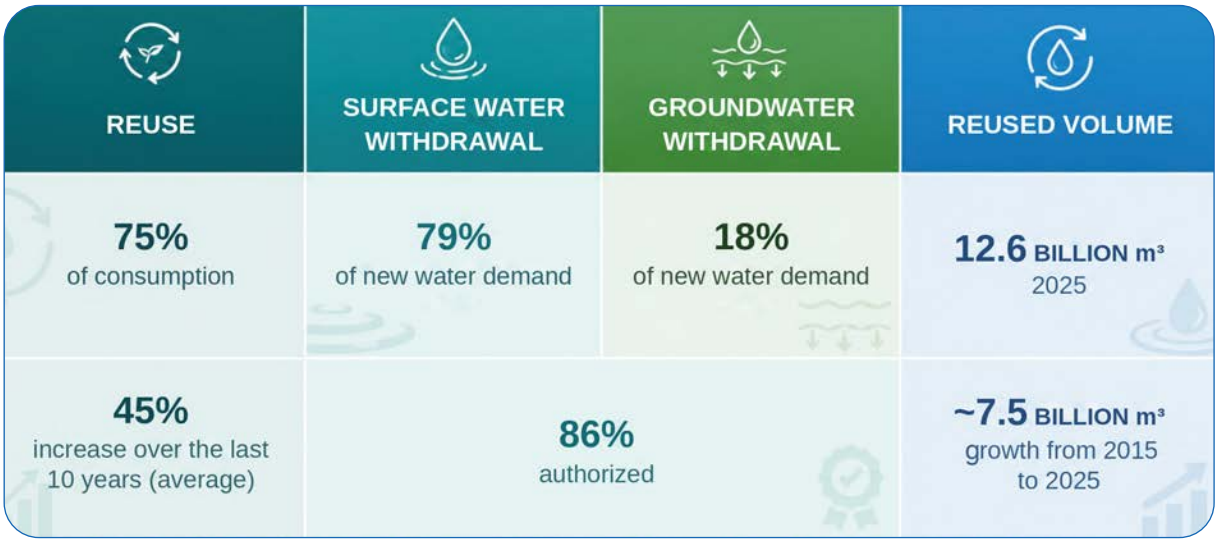
MRN Nursery – PRAD

8.1.3. WATER USE

Water management is one of the most important issues in contemporary mining, particularly in environmentally sensitive regions such as the Amazon.

At the Brazilian sectoral level, the National Water and Basic Sanitation Agency (ANA) published the first edition of the study Impact of Climate Change on Brazil's Water Resources in January 2024. According to the publication, water availability could decline by more than 40% in river-basin regions of the North, Northeast, Center-West and parts of the Southeast by 2040. For Brazil's North Region—which contains most of the Amazon—the study points to the prospect of more frequent and intense droughts, as well as reduced river flows and average rainfall volumes. According to the data, water withdrawals for mining in Pará account for 39.4% of the sector's total in Brazil and 95% of the total in the North Region.

Against this backdrop, SIMINERAL member companies have consistently expanded investments in water recirculation, operational automation, industrial-water reuse, consumption monitoring and reduction of dependence on external water withdrawals, following the evolution of international water-efficiency practices applied to mining. These efforts are also aligned with the sectoral target announced by IBRAM at Exposibram 2025: a 10% reduction by 2030 in the specific use of new water per metric ton of run-of-mine (ROM) ore extracted, from a 2023 baseline of 0.305 m³/t to a target of 0.237 m³/t in 2030.



Consolidated 2025 data indicate a high level of maturity in water management in industrial mining in Pará, characterized by widespread adoption of recirculation systems, control of withdrawals and continuous monitoring of water use throughout production processes. Information reported by member companies indicates that approximately 75% of the water used in operations is directed to internal use, reflecting continuous investment in water efficiency and a cumulative increase of around 45% in average reuse rates over the last decade.

Mineração Paragominas (Hydro) accounts for the largest absolute volume of reused water in the group, operating water-recirculation circuits integrated into the bauxite-beneficiation process. The company's model, based on the continuous reuse of industrial water in closed loops, helps reduce external withdrawals to the minimum necessary, reinforcing the compatibility between large-scale production and responsible use of Amazon water resources. This benchmark is especially relevant in a context in which ANA projects a reduction of more than 40% in water availability in part of the North Region by 2040.

From the design stage of the Tocantinzinho Mine, a gold operation in the municipality of Itaituba, G Mining implemented a comprehensive water-management plan focused primarily on water reuse and minimizing withdrawals from the region's surface-water resources. This approach was documented in the company's first ESG Report and reinforced through the environmental-licensing process conducted with SEMAS/PA. Recirculation circuits integrated into the CTSF (Fine Solids Treatment Circuit) and FTSF (Filtration and Solids Treatment) ensure that nearly all industrial water used in mineral processing returns to the production cycle, minimizing dependence on new withdrawals.

The total volume of water used by the companies reached approximately 12.6 million cubic meters in 2025, reinforcing the importance of recirculation systems within the operating context of mining in Pará. At the same time, water withdrawn to supply operations comes predominantly from regulated and monitored surface sources, which account for approximately 79% of new-water demand. Groundwater withdrawals represent around 18% of the total, a relatively limited share when compared with other international mining jurisdictions and indicative of a lower level of hydrogeological dependence among operations in Pará.

Withdrawals are carried out under systems of operational control, hydrological monitoring and environmental authorization applicable to licensed operations, including water-use permits, regulatory monitoring and water-quality monitoring, in alignment with Brazilian legislation and international Water Stewardship practices.

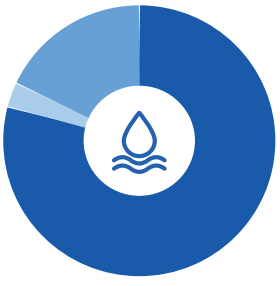
In the Amazon context, the water agenda assumes strategic importance in the debate on responsible mining, particularly given the need to distinguish licensed industrial mining from unregulated mineral activity.

International references on water management and environmental conservation indicate that the principal risks to water quality in the Amazon have historically been associated with activities conducted without regulatory controls, especially illegal artisanal mining, characterized by the absence of environmental monitoring, diffuse degradation and improper use of chemical substances.

MINING IN PARÁ
WATER MANAGEMENT – 2025

Operational excellence and commitment to the sustainable use of water

WATER WITHDRAWAL SOURCES – NEW WATER[2]



79% Surface water

18% Groundwater

3% Other sources[1]

Withdrawals are carried out under control, monitoring, and regulatory requirements applicable to the operations.

PERFORMANCE THAT GENERATES POSITIVE IMPACT

- **LOWER PRESSURE ON NATURAL RESOURCES** ↓
- **EFFICIENCY AND COMPETITIVENESS** ↑
- **RESPONSIBLE AND TRANSPARENT MANAGEMENT** ✓
- **COMMITMENT TO THE AMAZON** ✓

RESULTS THAT STRENGTHEN MINING IN PARÁ

75%	average water reuse rate in Pará's mining sector.
+45%	increase in the reuse rate over the last 10 years.
12.6	million m³ of water reused in 2025.
79%	of new water withdrawn from surface sources.
73%	of new projects with dry processing or reduced water use.
~77%	of surface water withdrawals have authorization.

AVERAGE WATER REUSE RATE



75%

+45% increase over the last 10 years

VOLUME OF WATER REUSED IN 2025

12.6 MILLION m³

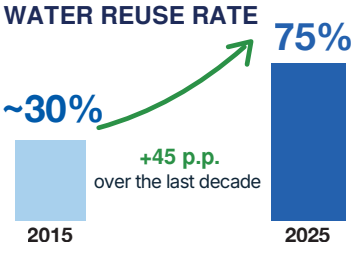
Volume reused in production processes

NEW PROJECTS WITH DRY PROCESSING OR REDUCED WATER USE

73%

Lower water withdrawal requirements and greater operational efficiency

EVOLUTION OF THE WATER REUSE RATE



OPERATIONS WITH WATER USE AUTHORIZATION AND MONITORING

~77%

of surface water withdrawals have authorization and all are monitored

FACTORS THAT DRIVE WATER MANAGEMENT EXCELLENCE

- Investments in recirculation and lower-water-intensity technologies
- Continuous monitoring and performance management
- Governance and stakeholder engagement
- Alignment with international best practices

* Percentage refers to surface water withdrawals subject to consumption/permits. Other withdrawals may be exempt from permitting under current legislation.

[2] Percentage calculated on the total volume of new water withdrawn.

[1] Includes rainwater harvesting, stored water and other sources (not classified as surface or groundwater).

Sources: Consolidated data from companies participating in the 2025 sectoral survey; IBGE; SEMAS/PA; National Register of Conservation Units (CNUC); IFC PS6; ICMM Mining Principles.

By contrast, formal industrial mining in Pará has expanded its adoption of technologies with lower water intensity, including dry processing, tailings filtration, slurry thickening and advanced recirculation systems. Sector estimates indicate that approximately 73% of new projects implemented in the state already use dry processes or systems with reduced water use, contributing to lower withdrawal requirements, improved operating efficiency and reduced pressure on natural resources.

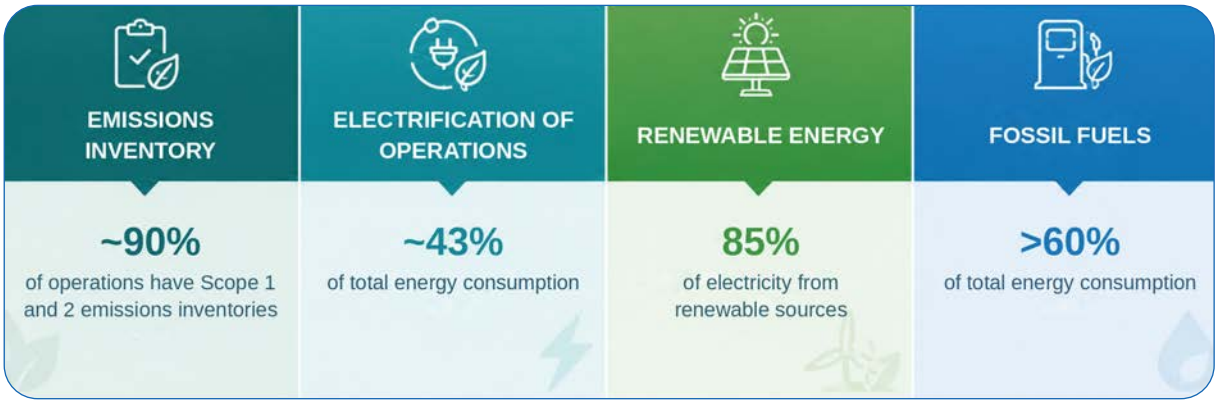
The consolidated indicators position mining in Pará at a level compatible with the international water-management best practices reported by the ICMM and reflected in the CEO Water Mandate guidelines, demonstrating that industrial mining in Pará combines production scale, operational efficiency and responsible management of water resources in the Amazon.

Sources: *GRI 303 – Water and Effluents; ICMM – Water Stewardship Position Statement; CEO Water Mandate – UN Global Compact; National Water and Basic Sanitation Agency (ANA); Brazilian Mining Institute (IBRAM); SIMINERAL sectoral ESG consolidation 2025.*



8.1.4. CLIMATE AND ENERGY

The climate agenda has become one of the principal drivers of transformation in global mining. Investors, financial institutions, value chains and consumer markets increasingly require greater transparency in greenhouse-gas emissions management, stronger climate governance and progressive reductions in the carbon intensity of mining operations. In this context, the ability to adapt to the demands of the energy transition has become a strategic factor in the competitiveness of the international mineral sector.



Consolidated 2025 data indicate that mining in Pará has levels of climate and energy management that are compatible with, or higher than, the average observed in Brazilian mining, particularly in emissions monitoring and the use of electricity from renewable sources. Information reported by member companies indicates that approximately 90% of operations maintain structured greenhouse-gas emissions inventories covering Scopes 1 and 2 and aligned with the GHG Protocol, GRI 305 – Emissions and the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD). This reflects a level of maturity consistent with practices among leading global mining companies.

Brazil's energy profile provides a significant competitive advantage for national mining compared with major international mining jurisdictions that remain heavily dependent on coal, fuel oil and natural gas for electricity generation and mineral processing.

According to Brazil's National Energy Balance (BEN) 2025, in 2024 the Brazilian energy mix reached a 50% renewable share, while renewables represented 88.2% of the electricity mix—a level far above that of the rest of the world and OECD countries. Within industry, the renewable share reached 64.4% in 2024, with mining, pulp and paper, and metallurgy among the sectors that contributed most to growth in industrial energy use.

This performance contrasts with the global mineral - sector landscape. According to the ICMM, mining accounts for around 2% of global energy consumption and is the most energy-intensive extractive activity. In 2024, mining and metals accounted for 11% of total global greenhouse-gas emissions—3% from mining and 8% from metals production—with 80% of sector emissions concentrated in Asia, reflecting the region's dominance in mining and commodity processing.



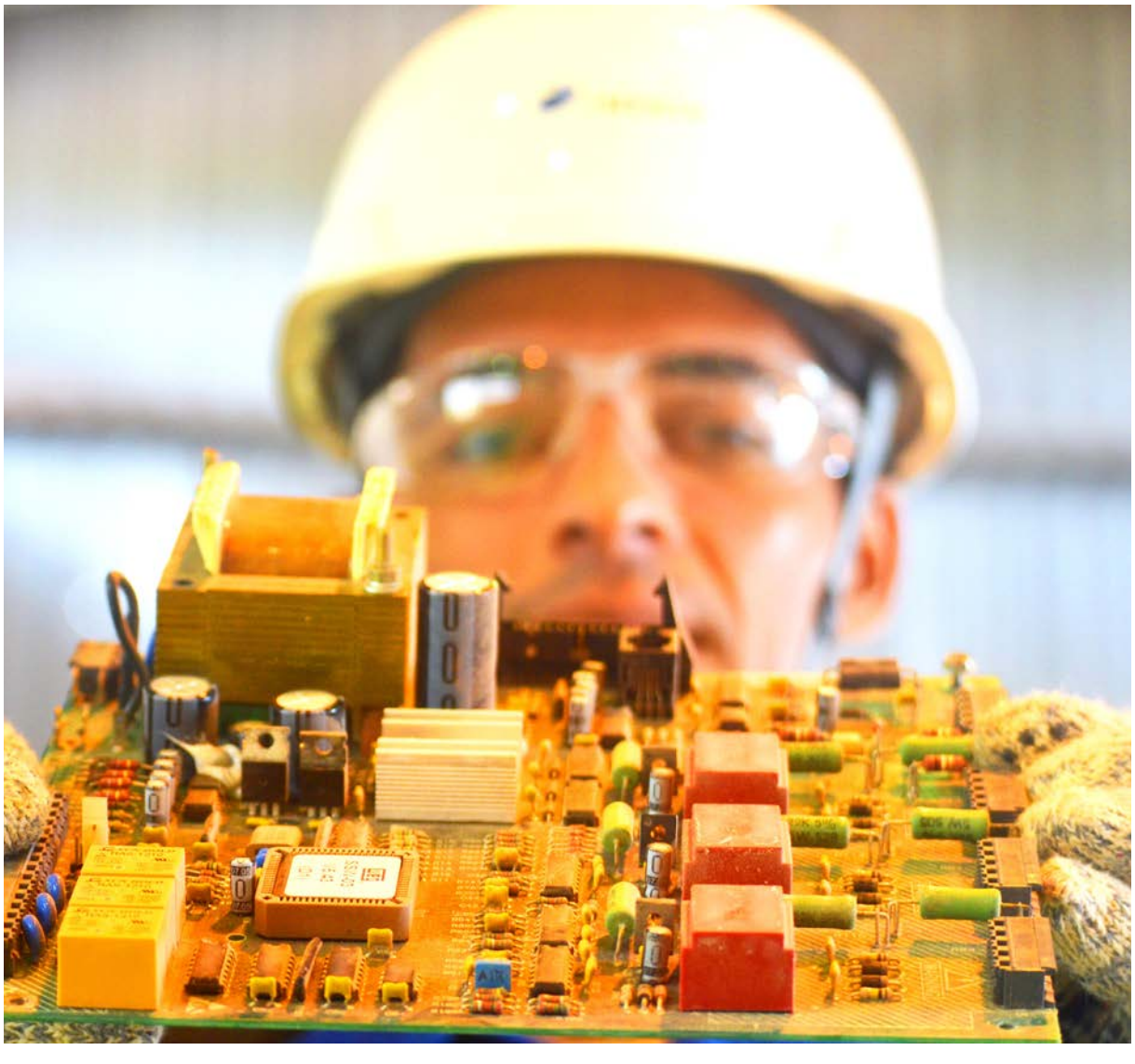
At Exposibram 2025, IBRAM announced a commitment to increase the share of renewable sources in the mineral sector's energy mix by 15% by 2030, using a 2023 baseline ratio of 0.45 between renewable and total energy consumption, with a target of 0.49 by 2030. At the operational level, the ICMM notes that major mining companies already use 100% renewable electricity in Brazilian operations, including Vale across all its units in Brazil and Antofagasta in its copper operations. This demonstrates that the advantage of Brazil's electricity mix can be fully leveraged by operations in states such as Pará, where hydroelectric generation is predominant.

Benefiting from Brazil's predominantly renewable electricity mix, mining in Pará has a high share of renewable sources in the electricity consumed by its operations.

Data indicate that electricity accounts for approximately 43% of the total energy consumption of member mining operations, reflecting gradual progress in the electrification of industrial processes, pumping systems, mineral beneficiation and operational infrastructure. Although the percentage demonstrates consistent progress compared with the previous decade, the indicators also point to a significant opportunity for further electrification as a driver of faster energy transition in the mineral sector.

Of the electricity consumed, approximately 85% comes from renewable sources, in line with Brazil's electricity mix, whose renewable share exceeds 85% according to the Energy Research Office (EPE) and Ministry of Mines and Energy (MME). This context places Brazilian mining, and mining in Pará in particular, in a relatively favorable position compared with mining operations in countries with more carbon-intensive energy systems.

At the same time, fossil fuels still account for approximately 60% of the operational energy mix of member companies, particularly because of diesel consumption in mobile equipment, material transport, mining activities and off-grid operations. This result is consistent with IBRAM studies indicating that around 60% of direct emissions from Brazilian mining are associated with diesel use in mobile equipment and mine operations, highlighting opportunities related to fleet electrification, industrial automation and the adoption of lower-carbon fuels.



MINING IN PARÁ
CLIMATE AND ENERGY MANAGEMENT – 2025

Current performance and key opportunities for improvement

PROGRESS

~90%
of operations have formal GHG emissions inventories (Scopes 1 and 2)

In line with practices in Brazil's mining sector[1]

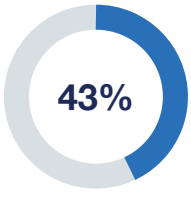
~85%
of the electricity consumed comes from renewable sources

Benefit of Brazil's electricity mix, with >85% renewables[2]

Adoption of international climate management and reporting frameworks

GHG Protocol | GRI 305 | TCFD | ICMM

OPPORTUNITIES



LOW ELECTRIFICATION

Electricity accounts for only ~43% of the operations' total energy consumption

Significant potential to expand process electrification



HIGH DEPENDENCE ON FOSSIL FUELS

Fossil fuels account for ~60% of the operations' energy mix

Consistent with the sector: ~60% of direct emissions from Brazilian mining come from diesel consumption in mobile equipment[4]

ACCELERATE THE ENERGY TRANSITION

Opportunity to expand electrification, adopt lower-carbon-intensity fuels, and increase energy efficiency

The sector in Pará shows maturity in climate management and renewable energy use, with clear opportunities to **accelerate decarbonization**

[1] IBRAM (2024) – GHG Emissions Inventory of Brazilian Mining • [2] EPE (2025) – National Energy Balance (BEN 2025) • [3] MME (2025) – Brazilian power sector data • [4] IBRAM (2024) – GHG Emissions Inventory of Brazilian Mining

Given this challenge, advances in the electrification of mobile equipment, industrial automation, lower-energy-intensity mineral beneficiation and the incorporation of low-carbon technologies are expected to be among the principal drivers of operational transformation in mining over coming decades.

IBRAM has established indicative pathways for reducing the sector's direct emissions by 40% to 50% by 2035 and by 90% to 95% by 2050, with levers including substitution of fossil fuels, electrification, long-term renewable-energy contracts and operating-efficiency gains.

In this context, mining in Pará occupies a strategic position in the global energy transition not only through the supply of iron ore, but also through growing production of copper, nickel, bauxite and aluminum, minerals that are fundamental to electrical infrastructure, energy storage, renewable energy, electric mobility and the expansion of low-carbon industrial value chains.

Taken together, these indicators demonstrate a progressive energy transition and stronger climate governance in mining in Pará, aligned with the principal international references for

climate management, corporate reporting and operational sustainability adopted by the mineral sector, including the ICMM, GRI, GHG Protocol and TCFD.

Sources: *National Mining Agency (ANM); Energy Research Office (EPE); Ministry of Mines and Energy (MME); IBRAM – Brazilian Mineral Economy; GHG Protocol Brazil; ICMM – Climate Change Position Statement; SIMINERAL sectoral ESG consolidation 2025.*

CASE STUDY

Hydro/Wave Aluminium: recovering minerals from bauxite residue

Refining bauxite to produce alumina generates very large quantities of residue known as red mud, which is permanently stored in containment structures. Globally, millions of metric tons of this residue are produced every year, creating a growing environmental liability with no economically viable destination.

To transform this liability into a resource, Hydro Alunorte entered into a partnership with Wave Aluminium to build a bauxite-residue processing plant within its refinery in Barcarena, Pará. **The initiative forms part of Alunorte's broader decarbonization effort, which had already produced significant results by 2025: fuel switching at the refinery generated an annual reduction of 700,000 metric tons of CO2**, while investment in two new electric boilers has the potential to reduce emissions by up to an additional 550,000 metric tons per year.

The solution developed with Wave Aluminium is based on patented Microwave Energy Transfer (MET) technology, which uses microwaves to selectively heat different components of the residue, enabling the separation and recovery of strategic minerals. The principal products include low-carbon metallic iron for the steel industry and silica-rich co-products for use in the cement and construction-materials industries.

This positioning has a direct impact on the company's financial results: in 2025, sales of products with a lower carbon footprint increased by more than 50% in value compared with 2024, demonstrating that decarbonization is not merely an operating cost, but an increasingly important source of revenue. Residue processing reinforces this strategy by expanding the portfolio of low-carbon products and strengthening Alunorte's position as one of the world's lowest-emissions-intensity refineries.

The semi-industrial plant, with an initial capacity to process 50,000 metric tons of residue per year, is being implemented to validate the technology at a larger scale before industrial expansion. The unit is expected to begin operating in the final quarter of 2026 and supports Hydro's target of utilizing 10% of bauxite residue by 2030 and eliminating the need for new permanent storage by 2050. If feasibility is confirmed, the technology could be expanded to process between 2 and 4 million metric tons per year. The implementation process is also expected to create hundreds of direct and indirect jobs in the Barcarena region.

MESSAGE FROM THE VICE CHAIR OF THE BOARD OF DIRECTORS

"The ESG agenda has moved beyond being merely a differentiator and has become an essential element of the mineral sector's competitiveness, credibility and sustainability. In the

Amazon, where challenges and opportunities exist side by side, strengthening an approach based on transparency, dialogue and responsibility is fundamental to creating shared value and building lasting relationships of trust.

This ESG Report is an important step in that direction. By consolidating sectoral information and presenting indicators that reflect the development of member companies, Simineral helps increase transparency, encourage continuous improvement and strengthen the collective commitment of mining in Pará to best practices in governance, socio-environmental responsibility and sustainable development.

The preparation of this document demonstrates that the advancement of mining depends on cooperation among companies, public authorities, academia and society. It is through this permanent dialogue that we can consolidate an environment that is safer for investment, better prepared for the challenges of the energy transition and capable of transforming mineral wealth into opportunities for people and for the development of the Amazon."



Ana Carolina Alves

Vice Chair of the Board of Directors, SIMINERAL

Director of Institutional Relations, Vale

8.2. S PILLAR – SOCIAL

The social dimension of mining in the Amazon is highly complex due to the presence of traditional communities, rural populations, Indigenous peoples, areas of socioeconomic vulnerability and municipalities that have historically depended on mining activity.

In this context, industrial mining in Pará has progressively expanded its social-governance structures, incorporating practices related to occupational health and safety, human rights, diversity, community relations, territorial development and the strengthening of local economies.

Over recent years, the social agenda of SIMINERAL member companies has shown consistent progress, reflecting greater alignment with the requirements of investors, financial institutions, multilateral organizations and global mineral supply chains.

The indicators presented in this chapter were structured on the basis of international references applicable to corporate social management, including the GRI Standards, IFC Performance Standards, Voluntary Principles on Security and Human Rights, UN Guiding Principles on Business and Human Rights and international frameworks related to the social performance of mining. They comprise:

- **Occupational Health and Safety**
- **Human Rights and the Voluntary Principles**
- **Diversity, Equity and Inclusion**
- **Social Investment and Territorial Development**

8.2.1. OCCUPATIONAL HEALTH AND SAFETY

Occupational Health and Safety (OHS) management is one of the principal operating pillars of industrial mining, particularly in activities characterized by high technical complexity, continuous operations, intensive use of mobile equipment, human-machine interaction and exposure to critical operational risks. In this context, accident prevention, occupational-risk management and the protection of life play a central role in the operational governance of the mineral sector.

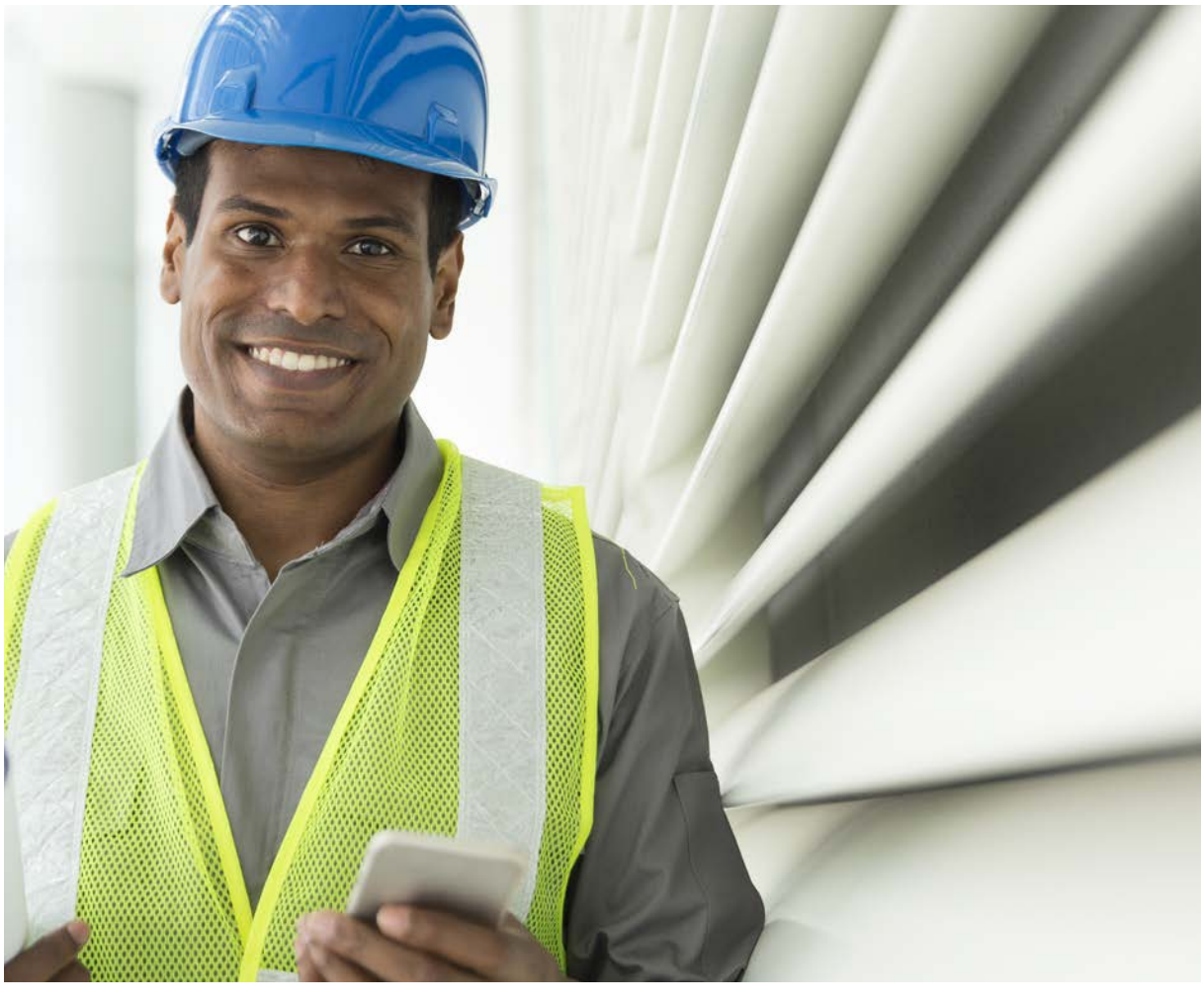


Consolidated 2025 data indicate a high level of maturity in Occupational Health and Safety management in mining in Pará, reflected in the widespread adoption of formal occupational-risk management systems, preventive monitoring and structured programs for the prevention of accidents and fatalities.

Information reported by member companies indicates that 100% of employees are covered by formal OHS management systems aligned with GRI 403 – Occupational Health and Safety and with international best practices adopted by the mineral sector. These systems include structured mechanisms for hazard identification, risk assessment, critical-control management, incident investigation, internal audits, continuous training and monitoring of operational performance.

There has also been progressive development of initiatives promoting workers' overall health, including mental-health support programs implemented by approximately 90% of member companies, together with measures focused on occupational monitoring, chronic-disease prevention, ergonomics, quality of life and strengthening a preventive culture. The expansion of the mental-health agenda reflects a trend observed among leading global mining companies, which have increasingly incorporated psychosocial factors and occupational well-being into their management systems in a more structured manner.

In contractor management, the indicators demonstrate a high degree of structuring of preventive controls throughout the operating chain. Approximately 100% of operating contracts with service providers include specific Occupational Health and Safety clauses and annexes, while 100% of contracted workers receive formal safety training before beginning operating activities. This model extends risk management across the full supplier and contractor chain, a practice considered essential under international mining-safety management references.



MINING IN PARÁ

OCCUPATIONAL HEALTH AND SAFETY – 2025

Mature management, prevention that saves lives and performance above Brazilian industry average.

MATURITY AND SCOPE OF OHS MANAGEMENT

100%
of companies covered by OHS management systems (IBRAM 2025)

~90%
of companies have health promotion and mental health support programs

100%
of contracts with service providers include specific OHS requirements

100%
of contractors receive safety training before starting activities

SAFETY PERFORMANCE

LOST-TIME ACCIDENT FREQUENCY RATE (LTIFR)

0.73
per million hours worked

PERFORMANCE CONSISTENT WITH BEST PRACTICES IN BRAZILIAN MINING (IBRAM) AND SIGNIFICANTLY LOWER THAN THE INDUSTRY IN GENERAL.

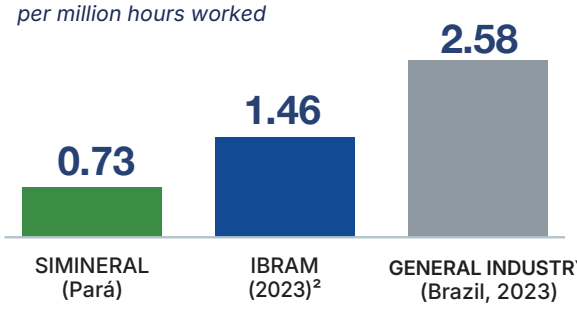
~90%
of companies have formal fatality prevention or high-potential event committees

EXCELLENCE THAT PROTECTS PEOPLE AND CREATES VALUE

- Prevention and continuous improvement culture
- Risk management across the entire operational chain
- Alignment with international best practices (GRI 403, ICMM)

PERFORMANCE: SIMINERAL vs. PUBLIC BENCHMARKS[1]

LOST-TIME ACCIDENT FREQUENCY RATE (LTIFR)
per million hours worked



SIMINERAL'S PERFORMANCE IS

50% BETTER than the average performance of the mining sector (IBRAM)

72% BETTER than the average for Brazilian industry

PRACTICES THAT STRENGTHEN SAFETY AND WELL-BEING

- Identification and control of critical risks
- Visible leadership and engagement
- Promotion of physical and mental health
- Continuous training and capacity building
- Event investigation and organizational learning
- Indicators and targets focused on results

MINING IN PARÁ OPERATES WITH STRUCTURED SAFETY MANAGEMENT SYSTEMS, ALIGNED WITH INTERNATIONAL BEST PRACTICES AND WITH PERFORMANCE ABOVE THE INDUSTRY AVERAGE.

[1] Benchmark: IBRAM – Brazilian Mineral Yearbook 2023, Simint/AI, OHS Observatory – Overview of Occupational Accidents 2023.
[2] Other industries in the mineral economy: IBRAM (2023).
[3] Overall average of the manufacturing, extractive and construction industries (2023).

Sources: IBRAM - SmartLab (OHS Observatory); GRI 403; ICMM.
Consolidated data from companies participating in the 2025 sector survey.



In terms of operating performance, the consolidated Lost-Time Injury Frequency Rate (LTIFR) of member companies is approximately 0.73 per million hours worked, a level compatible with benchmarks observed among leading Brazilian mining companies affiliated with IBRAM and significantly below historical averages recorded in industrial sectors with higher operational risk.

At the same time, approximately 90% of member companies reported having formal structures for fatality prevention or high-potential event management, including specialized committees, critical-risk control protocols, operational-risk analysis, organizational-learning programs and preventive-response systems. The strengthening of these mechanisms reflects the increasing incorporation of international Fatality Prevention practices adopted by the global mineral sector.

In international assessments conducted by the ICMM, the maturity of safety-management systems, critical-control management and fatality prevention are recognized as central elements of the operational sustainability of modern mining. In this context, industrial mining in Pará demonstrates consistent progress in consolidating a culture of prevention, integrated risk management and continuous improvement in operating performance.

Taken together, these indicators demonstrate that mining in Pará operates under structured safety-management systems, operational-risk controls and preventive governance aligned with the principal international occupational-health-and-safety references adopted by the mineral sector, including GRI 403, the ICMM and global best practices for fatality prevention and critical-risk management.

Sources: *GRI 403 – Occupational Health and Safety; ICMM – Health and Safety Performance; IBRAM – Mining and Operational Safety; SmartLab / Observatory for Occupational Safety and Health; SIMINERAL sectoral ESG consolidation 2025.*

Mineração Rio do Norte (MRN) stands out as the group benchmark for this indicator, combining formal fatality-prevention programs with the group's lowest accident-frequency rate (Lost-Time Injury Frequency Rate of 0.07). MRN's structured prevention program, called "Front Leader," was developed to support frontline leadership. It promotes safety actions involving both employees and contractors and integrates behavioral training, preventive analysis of critical tasks and stronger safety leadership at every hierarchical level of the operation. Alcoa's Juruti operation combines a culture focused on eliminating risks with well-structured fatality-prevention programs, reflecting systemic maturity and an ongoing commitment to operational safety.

MESSAGE FROM THE DIRECTOR OF EXTERNAL RELATIONS

"The Santarém Charter reinforces the importance of mining that is increasingly responsible, transparent and committed to the sustainable development of the Amazon. These are concepts that guide companies such as Hydro as they seek to integrate the ESG agenda into business strategy, operations and relationships with the territories in which they operate.

Over recent years, Hydro and the sector have made progress in decarbonization, environmental rehabilitation, biodiversity conservation, innovation and community development, reflecting a long-term vision based on innovation, partnerships and socio-environmental responsibility.

Initiatives such as the Santarém Charter help strengthen dialogue, increase transparency and transform data and commitments into concrete actions. By sharing experiences, results and lessons learned, the sector strengthens a common agenda and advances a more responsible vision for the future of mining in the Amazon."



Fernanda Corrêa

Director of External Relations, Hydro

8.2.2. HUMAN RIGHTS AND THE VOLUNTARY PRINCIPLES

The Human Rights agenda has become increasingly important in global mining over recent decades, particularly in regions characterized by high territorial complexity, the presence of traditional communities and Indigenous peoples, and contexts of heightened socio-environmental sensitivity. In this setting, preventive management of social risks, stronger territorial dialogue and the consolidation of corporate social-governance mechanisms have assumed a central position in the ESG agendas of the international mineral sector.

In Pará, industrial mining operates in one of the country's most complex and strategic territorial contexts, involving mining municipalities, traditional communities, Indigenous territories, rural populations and areas of high environmental and sociocultural diversity. This environment requires robust social-governance structures, permanent engagement mechanisms, preventive risk-management processes and the continuous strengthening of territorial-relations practices.

Consolidated 2025 data indicate a high level of formalization of Human Rights policies in Pará's mineral sector, reflected in the increasing adoption of governance instruments aligned with the principal international references for corporate responsibility and the preventive management of social risks.

Information reported by member companies indicates that approximately 80% have formal Human Rights policies aligned with the UN Guiding Principles on Business and Human Rights (UNGPs) and the institutional disclosures provided for in GRI 2 – General Disclosures. These policies generally include commitments relating to non-discrimination, respect for communities, labor rights, the elimination of child and forced labor, grievance channels and mechanisms to prevent rights violations.



Mineração Rio do Norte (MRN) represents the most advanced standard of institutionalization of a Human Rights Policy among the companies in the group. Internal guideline RC.NORM-0001 formally establishes the company's commitments to FPIC (Free, Prior and Informed Consent), cultural-heritage protection, respect for sacred areas of traditional communities and integration of Human Rights principles into operating and licensing decisions. As stated by MRN's Sustainability and Legal Director, Vladimir Moreira, at the launch of the 2024 Sustainability Report: "We have strengthened policies, processes and practices that reflect the highest international standards in human rights, carbon emissions, water use, biodiversity and community relations." The publication, prepared on the basis of GRI guidelines, was the first report in the sector to adopt the new GRI 14: Mining Sector 2024 standard even before it became formally required, and details dialogue mechanisms, community-listening channels and accountability structures related to respect for Human Rights in the company's operations.

Progress has also been observed in the implementation of the Voluntary Principles on Security and Human Rights (VPSHR), particularly at interfaces involving asset-security management, community relations and interaction with public and private security forces. Approximately 68% of member companies are in the process of implementing the Voluntary Principles, including structured training programs for employees, contractors and security teams, strengthening the prevention of risks associated with the use of force, territorial conflict and institutional interaction in sensitive areas.

In preventive management, approximately 70% of companies reported having structured Human Rights due-diligence processes, including mechanisms to identify, assess, prevent and mitigate social risks associated with mining operations. These processes include social-impact assessments, stakeholder analysis, listening mechanisms, territorial monitoring, grievance management and the integration of social factors into corporate risk-management systems.

Strengthening this agenda reflects the increasing alignment of Amazon mining with international references on corporate responsibility, transparency and preventive management of social risks. In assessments conducted by organizations such as the UN Office of the High Commissioner for Human Rights, the International Finance Corporation and the International Council on Mining and Metals (ICMM), due-diligence mechanisms, formal corporate policies, continuous training and dialogue structures are recognized as central elements of responsible mining in territories of high social and environmental sensitivity.

Vale, with iron ore, copper, manganese and nickel operations in Pará, is a signatory and committed implementer of the VPSHR and publishes annual implementation reports through the Voluntary Principles Initiative platform. Vale's 2024 VP Report details a comprehensive Human Rights due-diligence process focused on security-service providers at all its units in Brazil, including risk assessments, mandatory Human Rights training programs (available in eight languages, including Brazilian Sign Language) and grievance channels accessible to impacted communities. In 2024, the company recorded 9,313 community submissions, of which 3,995 were handled as complaints, demonstrating the effective operation of the listening and response mechanisms established under the Voluntary Principles. Alcoa and OZ Minerals (Pedra Branca do Amapari) also report full compliance with the Voluntary Principles in their operations in Pará.

HUMAN RIGHTS IN MINING IN PARÁ

Institutional commitment, risk management and respect for people and communities.

KEY RESULTS – 2025 SECTORAL SURVEY

80%

of companies have **formal Human Rights policies**

Aligned with the UN Guiding Principles on Business and Human Rights (UNGPs) and GRI 2.

REFERENCES: UNGPs + GRI 2

68%

of companies in the process of implementing the **Voluntary Principles on Security and Human Rights (VPSHR)**

Includes training for employees and security teams, preventing risks in interactions with public and private security forces.

REFERENCE: VPSHR

70%

of companies have implemented structured Human Rights **due diligence processes**

Aligned with GRI 412 and international best practices for identifying, preventing, and mitigating social risks.

REFERENCE: GRI 412

EVOLVING

Human Rights governance strengthened and integrated into strategy and social risk management.

Continuous improvement process and alignment with international best practices.

REFERENCES: IFC PS • BEST PRACTICES

STATE CONTEXT – PARÁ

Pará has one of the most structured environments in the country for the adoption of corporate Human Rights policies in the mining sector.
In a socially complex context, marked by the presence of Indigenous territories and traditional communities, formal mining has incorporated risk mitigation instruments, including institutional policies, due diligence processes, training, security protocols, and mechanisms for dialogue and territorial engagement.

- **DIALOGUE AND STAKEHOLDER ENGAGEMENT**
- **SOCIAL RISK MITIGATION**
- **RESPECT FOR THE RIGHTS OF INDIGENOUS PEOPLES AND COMMUNITIES**
- **GOVERNANCE AND TRANSPARENCY**

NATIONAL COMPARISON – MINING

The level of formalization of Human Rights policies in Pará's mining sector is above the average for the sector in Brazil.

80%
in Pará (member companies)

62%
average for Brazil's mining sector[1]

Public data indicate a trend of continuous progress in the Brazilian mining sector regarding Human Rights.

[1] Source: IBRAM – Brazilian Mineral Yearbook 2023 (reference: Human Rights policies).

INTERNATIONAL REFERENCES

- **UNGPs** – UN Guiding Principles on Business and Human Rights
- **GRI 2** – General Disclosures
- **GRI 412** – Human Rights Assessment
- **VPSHR** – Voluntary Principles on Security and Human Rights
- **IFC PS** – Performance Standards

SOURCES: UNGPs (UN, 2011); GRI 2; GRI 412; VPSHR; IFC Performance Standards; IBRAM – Brazilian Mineral Yearbook 2023. Consolidated data from companies participating in the 2025 sectoral survey.



At the state level, Pará has become one of Brazil's principal reference points for the advancement of discussions on Human Rights and responsible mining, given the growing incorporation by the formal mineral sector of preventive protocols, consultation processes, community-relations mechanisms and social-governance structures.

Taken together, these indicators demonstrate progressive advancement in Pará mining's consolidation of Human Rights governance structures compatible with the principal international references applicable to the mineral sector, reinforcing the development of social-management practices, risk prevention and territorial relations in the Amazon.

Sources: *UN Guiding Principles on Business and Human Rights (UNGPs); Voluntary Principles on Security and Human Rights (VPSHR); IFC Performance Standards; GRI 2 and GRI 412; ICMM Mining Principles; SIMINERAL sectoral ESG consolidation 2025.*

8.2.3. DIVERSITY, EQUITY AND INCLUSION

Global mining has historically faced challenges related to gender diversity and the inclusion of underrepresented groups in operating, technical and leadership positions. Traditional characteristics of the extractive industry, such as the predominance of intensive operational activities, historically male-dominated work environments and structural barriers to entry and retention, contributed to low levels of diversity over past decades.

In recent years, however, corporate policies related to Diversity, Equity and Inclusion (DEI) have gradually evolved, driven both by social transformation and by growing expectations from investors, financial institutions, global supply chains and international corporate-sustainability references. In this context, diversity practices have become a more structured component of ESG governance systems in global mining.

Diversity, Equity & Non-Discrimination Policy	Female Participation	Women in Management Positions	Pay Equity	People with Disabilities
100% of companies have a policy implemented	**16% of total** (average)	**14%** (average)	**78%** proportion (average)	**80%** have targets

Consolidated 2025 data indicate progressive advances in incorporating Diversity, Equity and Inclusion policies into Pará's mineral sector, reflected in the formalization of corporate policies, implementation of institutional reporting mechanisms and initiatives aimed at promoting more inclusive and diverse workplaces.

Information reported by member companies indicates that 100% have formal DEI and non-discrimination policies, accompanied by institutional reporting channels and mechanisms related to the prevention of discrimination, harassment and misconduct, in alignment with GRI 2 – General Disclosures and GRI 406 – Non-discrimination.

In terms of gender diversity, women account for an average of approximately 16% of the total workforce of member companies and around 14% of leadership positions, including technical and administrative roles as well as management positions. Although these indicators still reflect historical structural challenges in the mineral sector, the data demonstrate a gradual trajectory of increased female representation, particularly in technical, corporate and operational-leadership positions.

According to IBRAM's ESG Report on Brazilian Mining, the national average share of women in leadership positions in the mineral sector is around 22%, indicating additional opportunities for progress in Amazon mining over the coming years, particularly in operating areas and positions traditionally characterized by low female participation.

In terms of pay equity, the average ratio of women's base salary to men's is approximately 78%, reflecting gradual progress in a sector historically marked by structural inequalities in representation and remuneration. At the same time, approximately 80% of member companies and their strategic suppliers reported having formal policies relating to equal pay, inclusion and salary non-discrimination, reinforcing the progressive incorporation of the equity agenda into sector corporate practices.

Gradual progress has also been observed in the inclusion of persons with disabilities (PwD), with vocational-training programs, adaptation of operating environments, stronger accessibility and the establishment of inclusion targets equal to or above legal requirements. Approximately 80% of member companies and their strategic suppliers adopt structured targets related to the inclusion of persons with disabilities, demonstrating the expansion of corporate inclusion and accessibility practices in the workplace.

At the state level, formal mining in Pará has expanded initiatives to attract female talent, provide technical training, promote social inclusion, develop leaders and strengthen corporate equity and non-discrimination policies, taking into account the social, cultural and territorial diversity of the Amazon.

Alcoa's bauxite-mining operation in Juruti stands out as the group benchmark, with women representing more than 30% of its total workforce and 33% of leadership positions. The company attributes this result to decades of active investment in local professional-training programs, with a specific focus on preparing women for technical and operational positions. Since 2006, the company has supported SENAI training courses that have issued 19,202 certificates, helping expand the pool of qualified local workers and, specifically, women's access to historically male-dominated operational and technical positions.

DIVERSITY, EQUITY AND INCLUSION (DEI) IN MINING IN PARÁ – 2025

Commitment to people, respect for differences, and inclusive work environments.

REAL PROGRESS. CONTINUOUS TRANSFORMATION.

100% of companies have formal DEI and non-discrimination policies

With institutional reporting channels aligned with GRI 2 and GRI 406.

GENDER DIVERSITY

16% women in the total workforce

14% women in leadership positions

Levels compatible with Brazilian mining and above the historical averages of the national extractive industry.*

PAY EQUITY

78% average ratio of women's base salary to men's.

Aligned with GRI 405.

INCLUSION OF PwD

80% of companies and their strategic suppliers adopt targets for the inclusion of people with disabilities that meet or exceed legal requirements.

GOVERNANCE AND CULTURE

Ongoing process of strengthen a culture of respect, equity and non-discrimination.

Training, awareness, and attraction initiatives for diverse talent.

STATE CONTEXT – PARÁ

Pará presents unique challenges and opportunities for promoting diversity and inclusion, considering the presence of traditional communities, cultural diversity, and the different social groups in the Amazon

Formal mining has been expanding initiatives focused on inclusion, training, attracting female talent and strengthening corporate equity and non-discrimination practices.

COMPARISON – PUBLIC BENCHMARKS

WOMEN IN THE TOTAL WORKFORCE

Mining companies in Pará (member companies)	16%
Brazilian mining (IBRAM 2023)	15%
Manufacturing industry[3]	12%

WOMEN IN LEADERSHIP POSITIONS

Mining companies in Pará (member companies)	14%
Brazilian mining (IBRAM 2023)	13%
Manufacturing industry[3]	9%

PAY EQUITY

Mining companies in Pará (member companies)	78%
Brazilian mining (IBRAM 2023)	73%
Manufacturing industry[3]	70%

The indicators of member companies in Pará show performance equal to or above the averages for Brazilian mining and the manufacturing industry.

REFERENCES AND STANDARDS

GRI 2
General Disclosures

GRI 405
Diversity and Equal Opportunity

GRI 406
Non-discrimination

UN WOMEN
Gender equality and empowerment indicators

IBRAM
Sectoral references for Brazilian mining

SOURCES: GRI 2, GRI 405, GRI 406, UN Women, IBRAM – Brazilian Mineral Yearbook 2023. Consolidated data from companies participating in the 2025 sector survey.

[1] Sources: IBRAM – Brazilian Mineral Yearbook 2023.
[2] Source: IBGE – Annual Industrial Survey (2022).

In international assessments by organizations such as UN Women, the International Finance Corporation and the International Council on Mining and Metals (ICMM), diversity, inclusion and equal opportunity are recognized as relevant elements for innovation, corporate sustainability, talent management and stronger social legitimacy of mining operations.

Taken together, these indicators demonstrate an ongoing process of strengthening diversity, equity and inclusion practices in mining in Pará, aligned with the principal international references for corporate social governance and sustainable development and reinforcing the gradual evolution of organizational culture in the Amazon mineral sector.

Sources: *GRI 2 – General Disclosures; GRI 405 – Diversity and Equal Opportunity; GRI 406 – Non-discrimination; IBRAM – ESG Report on Brazilian Mining; UN Women; SIMINERAL sectoral ESG consolidation 2025.*



MESSAGE FROM THE ADMINISTRATIVE DIRECTOR

"The Santarém Charter, launched for the first time this year, demonstrates that sustainability, development and long-term partnerships in mining can transform realities and improve quality of life in the municipalities where mining operates. In a state of growing mineral relevance and unique environmental and social sensitivity, sustainability requires method, transparency and the capacity for dialogue.

It is in this context that the Santarém Charter gains importance: it organizes sector data, reinforces common commitments and establishes a vision for the future of mining in the Amazon. Its strength lies in bringing together information from the leading mining companies in Pará and transforming that information into concrete data capable of guiding decisions and improving management across a wide range of areas.

Simineral plays an essential role in this process by bringing together companies, public authorities, institutions and society around a shared agenda. For Alcoa, this commitment is expressed every day in our Juruti operation, where we have worked for 17 years under a vision of building a legacy of excellence for future generations.

The Santarém Charter reaffirms that responsible mining is built on verifiable results, active listening and joint efforts between the private and public sectors. By signing it and putting it into practice, the sector takes an important step toward strengthening trust and contributing to a more prosperous, inclusive and secure future for Pará".



Lucila Ribeiro

Director of Communications and Government Relations, Alcoa Brazil

Administrative Director, SIMINERAL

8.2.4. SOCIAL INVESTMENT AND TERRITORIAL DEVELOPMENT

Mining plays an important role in the economic and social dynamics of Pará's mining municipalities, contributing to job creation, stronger regional infrastructure, increased public revenues, the development of local value chains and the strengthening of institutional capacities

in territories where operations are located. In regions with high economic dependence on mining activity, social investment and territorial-development mechanisms play a strategic role in expanding the socioeconomic benefits associated with formal mining.

Over recent years, SIMINERAL member companies have expanded structured programs for social investment, territorial development and the strengthening of local economies, aligned with international practices for benefit sharing, local development and shared-value creation recognized by organizations such as the World Bank and the International Council on Mining and Metals (ICMM).

This movement follows a structural trend in corporate social investment in Brazil. According to BISC 2025 – Benchmarking of Corporate Social Investment, prepared by Comunitas, the industrial sector recorded a 27% increase in social-investment volume in 2024 compared with the previous year, with a median investment of BRL 69.3 million per company and corporate social investment equivalent to 1.2% of gross profit. These figures returned to pre-pandemic levels and consolidated industry as the major Brazilian economic sector with the highest proportional commitment to the social agenda.

Consolidated 2025 data indicate that total social investment by member companies reached approximately BRL 2 billion, including mandatory and voluntary investments focused on strengthening the socioeconomic conditions of mining territories.

Mandatory investments totaled approximately BRL 213 million in 2025, covering initiatives arising from environmental licensing conditions, institutional agreements, socio-environmental impact-mitigation programs, regulatory instruments and formal environmental-licensing requirements. At the same time, voluntary investments exceeded BRL 1.7 billion, demonstrating the significance of companies' territorial engagement beyond the regulatory requirements applicable to mining operations.

Mandatory - Value	Voluntary - Value
BRL 213.2M 2025 value	**BRL 1.79B** 2025 value

CASE STUDY

Together against poverty

Reducing poverty is an urgent global issue. In 2021, Vale established a target to support the development of self-sufficient communities and help 500,000 people escape extreme poverty, aligned with the United Nations Sustainable Development Goals. To pursue this objective, the company created a program that understands poverty as a multidimensional phenomenon across five dimensions: education, income, health, nutrition and infrastructure.

"The ESG agenda is essential to the future of mining in the Amazon. Integrating environmental responsibility, social inclusion and governance is the path toward sustainable development in the region. Examples such as Vale's work in Carajás show that conservation and mining can be reconciled, with operations occupying only 3% of an 800,000-hectare mosaic of protected forests. In the social sphere, targets such as helping 500,000 people out of extreme poverty in Brazil, together with projects that have already benefited more than 25,000 people in Pará, reinforce that mining can be a driver of progress. The purpose is to contribute to an Amazon that balances economic growth and environmental preservation, while also investing in culture, sports and education." Ana Carolina Alves, Director of Institutional Relations, North and Northeast

The program is implemented in Brazil in partnership with governments, civil-society organizations and companies. It follows families over time, connects them with public policies and measures results using the University of Oxford's Multidimensional Poverty Index (MPI).

Using the Alkire-Foster method, an MPI was developed specifically for the project and validated and licensed by Oxford through Wise Responder. The methodology provides continuous follow-up of each family and ongoing monitoring across five dimensions: income, education, health, infrastructure and nutrition.

To achieve the objective, Vale organized a network that brings together companies, civil society, academia and local governments to act collectively in the fight against extreme poverty in Brazil. Through a strong partner network that ensures external engagement and accreditation, the project developed a methodology designed to ensure access to social-protection public policies through solutions that emerge from the territory itself.

Approximately 19 companies have already contributed to financing actions in the territories, totaling more than BRL 38 million since the program began. Supporters include BNDES, Consórcio Ponte Rio Tocantins, Della Volpe, EGTC, Enesa, Equatorial Energia, Fundação Banco do Brasil, Grupo Ápia, Hatch, Logicalis, Michelin, MIP, Plamont, Plangecon, Priner, Sotreq, U&M, Usimig, Wabtec and Wheaton.

Partnership with the private sector plays a fundamental role in leveraging resources. To strengthen this process and provide transparency to donors, Vale established the Philanthropic Fund in 2024, managed by the Institute for the Development of Social Investment (IDIS). In 2025, in partnership with BrazilFoundation, another fund targeting an international audience was launched at an event held at the New York Stock Exchange (NYSE), further expanding the program's capacity to mobilize resources.

Today, around 60,000 people participate in the Together Against Poverty program, 87% of them living in the Brazilian Amazon in urban, rural and forest areas. Among the roughly 26,000 participants who completed the 24-month monitoring cycle, the MPI fell from 43.6 to 13.2—a 70% reduction—placing these families below the extreme-poverty threshold established at MPI ≤ 20.

The program's experience reinforces that poverty is multidimensional and requires responses adapted to different territorial realities. It also demonstrates that addressing immediate deprivation while ensuring basic rights is fundamental to enabling pathways toward autonomy. In this process, stronger public policies and network-based action are decisive for expanding reach and effectiveness. Finally, active listening to the people served and engagement by different stakeholders are essential to ensuring the legitimacy and sustainability of initiatives.

“Addressing poverty is one of the most urgent challenges of our time, and it can only be done through collective effort. By joining forces with companies, institutions and local leaders, we can transform challenges into pathways toward sustainable development and social inclusion.”

Flávia Constant
Director of Private Social Investment, Vale.





Together Against Poverty Program

The ratio of mandatory to voluntary investment recorded by Pará’s mineral sector differs markedly from the national pattern. BISC 2025 indicates that, among large Brazilian companies subject to socio-environmental conditions, compulsory investments averaged 188% of voluntary investment—almost twice as much. Among SIMINERAL member companies, the relationship is strongly reversed: BRL 1.7 billion in voluntary investment is more than eight times the mandatory total of BRL 213 million, indicating an active social-investment approach that extends far beyond regulatory compliance.

Resources were directed primarily to structured programs in health, education, income generation, public infrastructure, institutional strengthening, vocational training and community development. In international assessments by the World Bank, IFC and ICMM, initiatives of this nature are recognized as relevant mechanisms for strengthening sustainable territorial development in mining regions. The thematic profile of these investments is consistent with the pattern identified by BISC 2025 for the industrial sector: industrial companies maintain diversified, territorially oriented social-investment portfolios, with greater emphasis on community development, productive inclusion and social assistance—areas that coincide with the priorities declared by SIMINERAL member companies.

The data demonstrate that sector social investments are concentrated in structural projects aimed at expanding access to essential services, strengthening local capacities and creating economic opportunities.



Health	Education	Income Generation	Public Infrastructure
R$ 158.8M 2025 value	**R$ 43.8M** 2025 value	**R$ 63.9M** 2025 value	**R$ 952M** 2025 value
61,321 direct project beneficiaries	**7,602** direct project beneficiaries	**1,278** families directly benefiting from the projects	**62,792** estimated indirect beneficiaries

In 2025, approximately BRL 158.8 million was allocated to health initiatives, BRL 43.8 million to educational projects, BRL 63.9 million to income-generation programs and around BRL 952 million to public-infrastructure investments and community services.

The supported initiatives directly benefited approximately 61,300 people through health programs, 7,600 beneficiaries through educational projects and 1,278 families through income-generation and local productive-strengthening initiatives. In addition, around 62,800 indirect beneficiaries were reached through investments in public infrastructure, community services and territorial improvements supported by member companies.

For comparative reference, BISC 2025 reports that the median territorial coverage of large Brazilian companies is 43 municipalities per organization, with median social investment of BRL 1.37 million per municipality. This contextualizes the scale and territorial reach of social investment by SIMINERAL member companies across Pará's mining municipalities.

In the field of employment generation and regional economic strengthening, the indicators demonstrate the strong territorial integration of formal mining in Pará. Approximately 72% of the direct and contracted workforce of member companies was hired within the State of Pará, reflecting local-hiring practices aligned with GRI 202 – Market Presence and GRI 203 – Indirect Economic Impacts.

Local Workforce	Local Suppliers	Local Taxes, Fees and Transfers
~72% (average) workers from the State of Pará	**~50%** (average) spending with suppliers from the state	**R$ 953M** total amount distributed in Pará



At its bauxite-mining operation in Juruti, Alcoa achieved a workforce composition of 75% from Pará—the highest percentage within the group and a benchmark for regional hiring in the Amazon mineral sector. This result is not accidental: since operations began in 2009, the company has pursued a deliberate strategy to value local Juruti labor, including a partnership with SENAI in the municipality to offer courses designed to strengthen regional employability. Today, among employees from Pará, 45% are from the municipality itself. The mining company also operates initiatives to qualify local suppliers and service providers. Commitment to community development is likewise part of Alcoa's legacy. By September 2024, when the company celebrated 15 years in Juruti, it had voluntarily invested more than BRL 81 million in the Agenda Positiva and Juruti+10 structural programs, implemented in partnership with public authorities.

At the same time, around 50% of member companies' operating expenditure was directed to suppliers located in Pará, contributing to stronger regional value chains, expansion of the local business base and indirect economic impacts associated with mining activity. This economic dynamism is also reflected in value distributed to the territory, which reached BRL 953 million in taxes, fees and local transfers directed to the state, reinforcing the sector's contribution to public finances and local development.

In international mining economies, local-hiring mechanisms, the strengthening of regional suppliers, redistribution of mineral revenues and corporate social investment are recognized by the World Bank and ICMM as central instruments for promoting sustainable development and strengthening the social legitimacy of extractive activities. In Pará, this model combines regional job creation, stronger local value chains, structural private investment and redistribution of public revenues generated by CFEM and mineral-sector taxation.

Mineração Rio do Norte (MRN), operating in the municipality of Oriximiná since 1979, is the group benchmark for this indicator, with 81.6% of expenditure directed to suppliers in western Pará, the highest percentage among member companies. According to the company's 2024 Sustainability Report, around 81% of materials expenditure, approximately BRL 655 million, was made with suppliers from the region, while an additional BRL 62 million was invested in locally contracted services. This performance reflects a procurement policy developed over more than four decades of operation in Oriximiná that systematically prioritizes regional suppliers, invests in their training and qualification, and contributes to the development of a robust and diversified local business ecosystem.

SOCIAL INVESTMENTS BY THE MINING SECTOR IN PARÁ – 2025

Investing today to transform territories and generate sustainable development.

> Social investments that generate **real impact** and **shared** value in the territories.

Social investments by the mining sector in Pará convert operational presence into territorial development, strengthening essential services, local capacities, and economic opportunities in mining municipalities. Sector investments are concentrated in structuring projects in the areas of health, education, income generation, and public infrastructure, aligned with internationally recognized local development practices from the **World Bank and ICMM**.

SOCIAL INVESTMENTS BY AREA – 2025

HEALTH

BRL 158.8M
2025 value

61,321
Direct project beneficiaries

EDUCATION

BRL 43.8M
2025 value

7,602
Direct project beneficiaries

INCOME GENERATION

BRL 63.9M
2025 value

1,278
Families directly benefiting from the projects

PUBLIC INFRASTRUCTURE

BRL 152.2M
2025 value

62,792
Estimated indirect beneficiaries

TOTAL INVESTED IN 2025
+ BRL 2 BILLION
Mandatory + voluntary investments

SOCIAL IMPACT IN 2025
+132 THOUSAND
people benefiting directly and indirectly

STATE CONTEXT – PARÁ (COMPARATIVE REFERENCE)

In mining regions, the World Bank and ICMM recognize that social investments and the redistribution of mineral revenues are central mechanisms for territorial development. In Pará, this model combines companies' social investments with the redistribution of public revenues from CFEM, strengthening public services and local opportunities.

Social investments by the mining sector strengthen capacities, create opportunities, and promote sustainable development in the territories where mining activities are present.

REFERENCES AND BENCHMARKS

- **World Bank** Local development drivers
- **ICMM** Local development framework
- **GRI 203** Indirect Economic Impacts
- **GRI 413** Local Communities
- **ANM/CFEM** Public data

Sources: Sources: World Bank; ICMM; GRI 203; GRI 413; ANM/CFEM; consolidated data from companies participating in the 2025 sectoral survey."

Taken together, these indicators demonstrate that mining in Pará plays a relevant role as a driver of territorial development, income generation, regional economic strengthening and shared-value creation, aligned with the principal international references on indirect economic impacts, community engagement and sustainable development applicable to the mineral sector.

Sources: *GRI 201 – Economic Performance; GRI 202 – Market Presence; GRI 203 – Indirect Economic Impacts; GRI 204 – Procurement Practices; GRI 413 – Local Communities; ICMM – Mining Principles and Social Performance Framework; World Bank – Extractives Global Programmatic Support (EGPS); SIMINERAL sectoral ESG consolidation 2025.*

MESSAGE FROM THE SUSTAINABILITY DIRECTOR

"The ESG agenda for mining in the State of Pará is founded on governance, and its consolidation requires joint engagement by member companies, public authorities and Pará society. Robust risk-management, tailings-dam safety and compliance systems are indispensable for the mineral sector to demonstrate its commitment to society and to the communities where mining is present, to its employees, member companies and partners, investors and financial institutions, public authorities and regulatory agencies, customers and suppliers, and, above all, to the environment and future generations.

In this regard, SIMINERAL has worked to strengthen sectoral governance in alignment with the principal international references, such as the GISTM and the ICMM, reinforcing standards of transparency and risk management consistent with international best practices.

This report represents an important step along that path: by bringing together comparable indicators and submitting sector practices to public scrutiny, SIMINERAL reaffirms its commitment to mining in Pará that is transparent, safe and aligned with the highest international governance standards."



Aldo Lenzi
Operations Director, Ero Copper, and
Sustainability Director, SIMINERAL



8.3. G PILLAR – GOVERNANCE

Corporate and institutional governance is a central element of the sustainability of contemporary mining. In regions of high environmental and social sensitivity, such as the Amazon, the capacity for risk management, transparency, regulatory compliance and institutional coordination becomes even more important.

Over recent years, the governance structures of SIMINERAL member companies have progressively strengthened, including advances in tailings-dam management systems, emergency preparedness, corporate ESG policies, compliance mechanisms, risk-management structures and institutional-transparency initiatives.

The indicators presented in this chapter were structured on the basis of international references applicable to mineral-sector governance, including the GRI Standards, ICMM Mining Principles, IFC Performance Standards, the Global Industry Standard on Tailings Management (GISTM), OECD Guidelines for Multinational Enterprises and international corporate risk-management frameworks. They comprise:

- **Tailings Dams and Industrial Waste Management**
- **Emergency Preparedness and Response**
- **Sectoral ESG Governance**

DAM MANAGEMENT AND EMERGENCY PREPAREDNESS RESPONSIBLE AND SAFE MINING IN PARÁ – 2025

Strengthening governance, reducing risks and protecting people and territories.

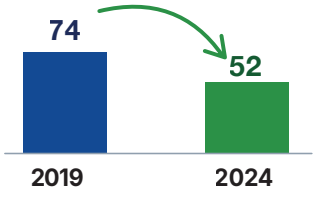
Preventive management, technology and institutional integration: **pillars of safe and sustainable mining.**

DAMS – RISK MANAGEMENT AND MODERNIZATION

2025 data indicate that mining in Pará has a relatively low level of exposure to upstream dams, reflecting the geographic distribution of these structures in Brazil and the progress of risk management and technological modernization practices in the state's mining sector.

UPSTREAM DAMS IN BRAZIL

Continuous reduction since 2019



Reduction of **29%** in the number of upstream dams in Brazil between 2019 and 2024.

IN PARÁ



Low relative representation of upstream dams compared with other historic mining states.

Predominance of more recent construction methods and alternative tailings disposal solutions, as well as the sector's regulatory evolution."

67% of member companies have approved dam decommissioning plans that are currently underway or completed. In compliance with ANM requirements, the National Dam Safety Policy, and international best practices.

32.6% of the mineral production of member companies already uses dry tailings disposal methods.

Reducing dependence on conventional structures and moving toward operating models with lower geotechnical and water-related risk.

Continuous strengthening of dam governance, risk reduction, and technological modernization, aligned with ICMM and GISTM guidelines and Brazilian regulatory requirements for safe tailings management.

EMERGENCY ACTION PLANS – EAP

2025 data show a high level of structuring of Emergency Action Plans (EAPs) among member companies, reflecting the consolidation of preventive risk management practices in Pará's mining operations.

90% of member companies have formally established EAPs.

85% of dams have an Emergency Action Plan for Mining Dams (PAE-BM).

In compliance with ANM regulatory requirements and the National Dam Safety Policy.

80% of PAE-BM plans are formally integrated with Civil Defense agencies and municipal governments.

With periodic drills, training, and joint exercises.

INTERNATIONAL REFERENCES

ICMM, IFC, and Global Industry Standard on Tailings Management (GISTM) guidelines consider institutional integration, community protection, and emergency drills to be central elements for the effectiveness of emergency response systems.

Management model focused on prevention, operational protection, and institutional coordination, aligned with international best practices in risk management and operational safety in the mining sector.

REFERENCES AND DATA SOURCES

ANM National Mining Agency	**IBRAM** Brazilian Mining Institute	**Law 14,066/2020** National Dam Safety Policy	**ICMM** International Council on Mining & Metals	**GISTM** Global Industry Standard on Tailings Management	**IFC** International Finance Corporation

Consolidated data from companies participating in the 2025 sectoral survey.

Source: ANM – Integrated Mining Dam Management System (SIGBM) | IBRAM – Sector Reports 2019–2024



8.3.1. TAILINGS DAMS AND INDUSTRIAL WASTE MANAGEMENT

Management of tailings dams and geotechnical structures became one of the most important issues in global mining following critical events in Brazil during the last decade, particularly the Mariana and Brumadinho dam failures, which drove profound regulatory, institutional and technological changes in the Brazilian mineral sector. Since then, safe tailings management has assumed a central position on international mining ESG agendas, encompassing risk governance, transparency, geotechnical stability, emergency preparedness and technological modernization of tailings-disposal systems.

In Pará, industrial mining has a relatively low level of exposure to upstream-raised dams compared with other major Brazilian mining jurisdictions. This reflects geological, operational and technological characteristics specific to the operations in the state, as well as the prevalence of more recent projects implemented under more modern regulatory and technological standards.

Public data from the National Mining Agency (ANM) and the Brazilian Mining Institute (IBRAM) show that the number of upstream-raised dams in Brazil has been progressively reduced since 2019 as a result of regulatory requirements introduced after the Mariana and Brumadinho events, including the progressive prohibition of this construction method, the strengthening of the National Dam Safety Policy and stricter requirements for decommissioning such structures.

In this context, Pará has a relatively low share of upstream-raised dams when compared with historically important mining states, reflecting the prevalence of more recent construction methods and disposal solutions aligned with regulatory and technological developments in the Brazilian mineral sector.

Information reported by SIMINERAL member companies indicates that approximately 67% of applicable structures have decommissioning plans that are approved, under implementation or completed, in compliance with ANM

Ero Copper Corp., headquartered in Vancouver, sets the group benchmark for sustainable tailings management, achieving 100% dry tailings disposal at its copper-mining operation in the State of Pará. According to its 2024 Sustainability Report, the company recorded an 88% water-recirculation rate at the Caraíba operations, performance directly associated with the adoption of filtered-tailings disposal, which significantly reduces demand for new water by enabling its recovery and recirculation in the production process.

At the Tucumã Unit, this commitment is even more evident, as 100% of tailings are dry-stacked. From the project-design stage onward, the operation was fully planned to use this technology exclusively. It is regarded as one of the best practices in modern mining because it helps reduce water consumption, minimizes risks associated with tailings-containment structures and strengthens the operation's environmental performance.

Mineração Paragominas (Hydro) has a 75% dry-disposal rate, a significant share for a large-scale bauxite operation, while MRN achieved 50% dry disposal of its tailings in 2025, positioning the company on a clear transition pathway.

requirements, the National Dam Safety Policy and international best practices for safe mineral-tailings management. These processes include de-characterization of structures, geotechnical monitoring, environmental control and programs associated with operational and territorial risk management.

At the same time, there has been progressive growth in the adoption of dry-tailings-disposal technologies and lower-water-intensity mineral processing. Consolidated data indicate that approximately 32.6% of mineral production by member companies already uses dry-disposal methods, helping reduce dependence on conventional tailings-disposal structures and reinforcing the transition toward operating models with lower geotechnical and water-related risks.

In addition to dry disposal, the use of technologies related to tailings filtration, slurry thickening, water reuse and operational optimization is expanding, in line with international trends in mining modernization. In assessments conducted by the ICMM and the Global Industry Standard on Tailings Management (GISTM), reducing dependence on conventional dams and incorporating lower-risk technologies are recognized as central elements in strengthening geotechnical governance in the global mineral sector.

The strengthening of these practices reflects the increasing alignment of mining in Pará with GISTM guidelines, ICMM recommendations and Brazilian regulatory requirements for the safe management of dams and mineral tailings. This development also tracks changing expectations from investors, insurers, financial institutions and international markets regarding geotechnical-risk management and operational transparency in mining.

Taken together, these indicators demonstrate a consistent process of strengthening geotechnical governance, technological modernization and progressive reduction of operational exposure to risks associated with conventional tailings disposal, reinforcing the alignment of industrial mining in Pará with the principal international references for the safe management of dams and geotechnical structures.

Sources: *National Mining Agency – Integrated Dam Safety Management System (SIGBM); ICMM – Global Industry Standard on Tailings Management (GISTM); IBRAM – Dam and Tailings Management in Brazilian Mining; Federal Law No. 14,066/2020; SIMINERAL sectoral ESG consolidation 2025.*

8.3.2. EMERGENCY PREPAREDNESS AND RESPONSE

Emergency preparedness and response are central elements of operational governance in industrial mining, particularly for operations located in territories of high environmental, social and logistical complexity such as the Amazon. In this context, structured systems for prevention, operational readiness, institutional communication and territorial coordination play a strategic role in the safe management of mining operations.

Consolidated 2025 data indicate a high level of structuring of Emergency Action Plans (PAE) and Mining Dam Emergency Action Plans (PAE-BM) among SIMINERAL member companies, reflecting the consolidation of preventive operational-risk management and emergency-preparedness practices in Pará's mineral sector.

Information reported by member companies indicates that approximately 90% have formally established Emergency Action Plans covering operating protocols, assignment of responsibilities, communication systems, team mobilization and structured procedures for responding to incidents and operational emergencies.

At the same time, approximately 85% of applicable dams have Mining Dam Emergency Action Plans implemented in accordance with National Mining Agency requirements and the provisions of the National Dam Safety Policy. These plans cover monitoring protocols, preventive communication, definition of self-rescue zones, institutional activation and integrated emergency-response procedures.

G Mining Ventures' Tocantinzinho Mine represents the group's best-practice benchmark for this indicator. The greenfield operation declared commercial production in August 2024 and began operations with a formally established PAE-BM integrated from the outset with Civil Defense and municipal governments. Adoption of a robust PAE-BM from the first production cycle, in compliance with all requirements of Law No. 14,066/2020 and GISTM best practices, demonstrates that new mining operations in Pará can begin with structured emergency governance from day one.

There has also been progressive strengthening of institutional integration among companies, Civil Defense agencies, municipal governments and public bodies responsible for emergency management. Approximately 80% of the reported PAE-BMs are formally integrated with municipal and state civil-protection and civil-defense systems, including periodic internal drills, operational training, integrated emergency-response exercises and institutional-communication protocols with potentially affected communities.

In international assessments conducted by the ICMM, IFC and GISTM, institutional-integration mechanisms, preventive communication, continuous training and periodic drills are considered central to effective operational-risk management and emergency-preparedness systems in the mineral sector.

The consolidation of these mechanisms also reflects the strengthening of preventive culture and operational governance following regulatory changes introduced in Brazil from 2019 onward, including expanded requirements relating to dam safety, geotechnical monitoring, information transparency and institutional integration of emergency-response systems.

In the Amazon context, emergency preparedness has additional relevance because of territorial characteristics, logistical distances, the presence of rural and traditional communities and the need for continuous integration among the private sector, public authorities and civil-protection and civil-defense systems. In this setting, stronger institutional coordination and operating readiness become essential elements of responsible mining operations.

Taken together, these indicators demonstrate a governance model oriented toward prevention, operational readiness, institutional coordination and the continuous strengthening of a preventive risk-management culture, aligned with the principal international references for emergency management and operational safety applicable to the mineral sector.

Sources: *National Mining Agency – ANM; Global Industry Standard on Tailings Management (GISTM); ICMM – Emergency Preparedness and Response; IFC Performance Standard 1; Federal Law No. 14,066/2020; SIMINERAL sectoral ESG consolidation 2025.*



8.3.3. SECTORAL ESG GOVERNANCE

Strengthening ESG governance has become a strategic element for the competitiveness, institutional legitimacy and market access of contemporary mining. In a global environment characterized by rising requirements related to sustainability, corporate transparency, climate change, human rights and socio-environmental risk management, investors, financial institutions and global supply chains increasingly require mineral companies to align with the principal international references for governance and ESG reporting.

Over recent years, SIMINERAL member companies have expanded their participation in public commitments related to sustainability, transparency, climate, human rights, corporate ethics and institutional governance, reflecting an ongoing process of maturation of ESG practices in Pará's mineral sector.

Consolidated 2025 data indicate a high level of institutional engagement by member companies in public commitments associated with the ESG agenda. The reported information shows that approximately 80% of member companies are signatories to, or participants in, public initiatives, institutional platforms or voluntary commitments related to corporate sustainability, including Brazilian and international initiatives focused on climate governance, transparency, human rights and sustainable development.

Principal references include initiatives aligned with the United Nations Global Compact, the Organisation for Economic Co-operation and Development (OECD) Guidelines for Multinational Enterprises, the disclosures provided for in GRI 2 – General Disclosures and other international platforms related to ESG governance and corporate sustainability.

MESSAGE FROM THE BOARD SECRETARY

"The Santarém Charter has special significance for a company such as Mineração Rio do Norte (MRN), which has operated in the Amazon for 47 years. It represents a collective commitment to building solutions capable of promoting development, environmental conservation and prosperity for the region.

MRN operates through dialogue and partnership with communities, institutions and a wide range of stakeholders in western Pará. This experience teaches us that creating value goes beyond mining itself. It means expanding opportunities, strengthening territories, protecting natural resources and cultivating relationships of trust.

The Santarém Charter expresses a vision for the future of mining in Pará: a sector that seeks to be recognized not only for the wealth it produces, but also for the legacy it helps build—a legacy founded on transparency, innovation, responsibility and commitment to people, territories and the Amazon."



Guido Germani
CEO, MRN
Board Secretary, SIMINERAL

CASE STUDY

Seeds that grow a future: community network drives reforestation and income in western Pará

Mineração Rio do Norte (MRN), with operations in Oriximiná in western Pará, faced a central challenge in restoring mined areas in the Amazon: the need for large volumes of native seeds representing a high diversity of species, essential for rebuilding ecosystems as complex as the Amazon rainforest. At the same time, there was a concrete opportunity to involve local communities in this process, creating socioeconomic benefits directly connected to environmental conservation.

To address this challenge, MRN structured the Seed Collectors Network, which today includes 43 families from the Boa Nova and Saracá communities. These families supply native seeds directly to the company's Forest Nursery as part of the Degraded Area Recovery Program (PRAD). The program combines scientific knowledge with the traditional knowledge of local populations to restore mined areas with characteristics close to those of the original forest.

The initiative goes beyond simply supplying inputs. It includes training for collectors, stronger community organization, traceability of collected material and support for access to new markets. The project is carried out in partnership with Redário and the Association of the Communities of the Trombetas and Sapucuá Land Parcels (ACOMTAGS), strengthening local governance and conservation of Amazon biodiversity.

The results achieved in 2025 demonstrate the initiative's reach: 95% of the seeds used by the Forest Nursery were supplied by local communities, totaling 2.3 metric tons of native seeds purchased and BRL 250,000 paid directly to community collectors. During the same period, 527,000 seedlings of Amazon species were produced, covering 108 cultivated native species, and 455,000 trees were planted. In total, MRN has already reforested 8,052 hectares through this program, which remains ongoing and continues to expand as a central component of the company's environmental-restoration and territorial-development strategy.

"Every seed collected carries much more than the potential for a new tree. It represents income for communities, conservation for the Amazon and a legacy that remains long after the mining cycle."



MRN Forest Nursery

Seed Collectors Network



Community seed collection

In addition, 100% of participating companies reported having formal corporate policies related to ESG matters, including sustainability, ethics, compliance, human rights, climate change, socio-environmental risk management and corporate integrity. These policies generally include codes of conduct, compliance mechanisms, grievance channels, stakeholder-engagement guidelines and internal corporate-governance structures focused on risk management and the prevention of ethical and operational misconduct.

Member companies are also increasingly participating in structured sectoral initiatives and actions promoted by SIMINERAL, strengthening the sharing of best practices, technical harmonization of indicators, development of joint institutional positions and the ESG agenda for Amazon mining. In this context, preparation of this Sectoral ESG Report also represents an important advance in consolidating collective mechanisms for transparency and institutional coordination in Pará's mineral sector.

In assessments by international organizations such as the United Nations, OECD and ICMM, adoption of public commitments, structured corporate policies and collective sectoral action is recognized as central to strengthening transparency, corporate governance, preventive risk management and the institutional legitimacy of extractive activities.

In the Amazon context, characterized by high territorial, environmental and social complexity, strengthening ESG governance has additional strategic importance, particularly in view of growing global demand for critical minerals associated with the energy transition and the need to increase institutional trust in Brazilian mineral value chains.

In this setting, SIMINERAL is progressively consolidating itself as an institutional platform for technical coordination, sectoral coordination and strategic strengthening of the ESG agenda for mining in Pará, helping expand transparency, alignment with international references and the continuous evolution of sustainability and governance practices in the Amazon mineral sector.

Sources: *United Nations Global Compact; OECD Guidelines for Multinational Enterprises; GRI Standards – General Disclosures; ICMM Mining Principles; SIMINERAL sectoral ESG consolidation 2025.*

9. CONCLUSION

Mining in Pará occupies a unique position in the global context. At the same time that it accounts for a significant share of Brazilian mineral production and the supply of minerals essential to the energy transition, it operates in one of the most environmentally, socially and climatically important territories on the planet.

In this context, sustainability is not limited to an agenda of compliance or risk management. It is a strategic element for competitiveness, institutional legitimacy and the capacity to generate long-term value for society.

The consolidated results presented in this report demonstrate consistent progress in the development of environmental, social and governance practices adopted by Pará's mineral sector. The indicators show the continuous strengthening of management systems, increased transparency, consolidation of control and monitoring mechanisms, generation of socioeconomic benefits for territories and growing commitment to issues central to the contemporary ESG agenda.

At the same time, the report recognizes that challenges associated with climate change, biodiversity conservation, institutional strengthening of territories, promotion of human rights, diversity and the continuous building of social trust will require ongoing efforts in improvement, innovation and dialogue.

More than presenting indicators, this document establishes a baseline for the evolution of the mining ESG agenda in the State of Pará. Its relevance lies in its capacity to consolidate comparable information, strengthen sectoral transparency, guide strategic priorities and expand understanding of mining's contribution to the sustainable development of the Amazon.

The results presented also reinforce the principles established by the Santarém Charter, which recognizes the need to reconcile economic competitiveness, socio-environmental responsibility, environmental conservation, territorial development and responsible governance. These principles now constitute a reference for the institutional positioning of mining in Pará in the face of the challenges and opportunities of a changing global economy.

By consolidating this first cycle of sectoral ESG reporting, SIMINERAL reaffirms its role as a platform for technical coordination, knowledge production, institutional strengthening and the promotion of sustainability best practices in Amazon mining. More than recording progress, this report represents a collective commitment to continuous improvement, transparency and the construction of mining that is increasingly aligned with society's expectations and the demands of a sustainable future for Pará, the Amazon and Brazil.



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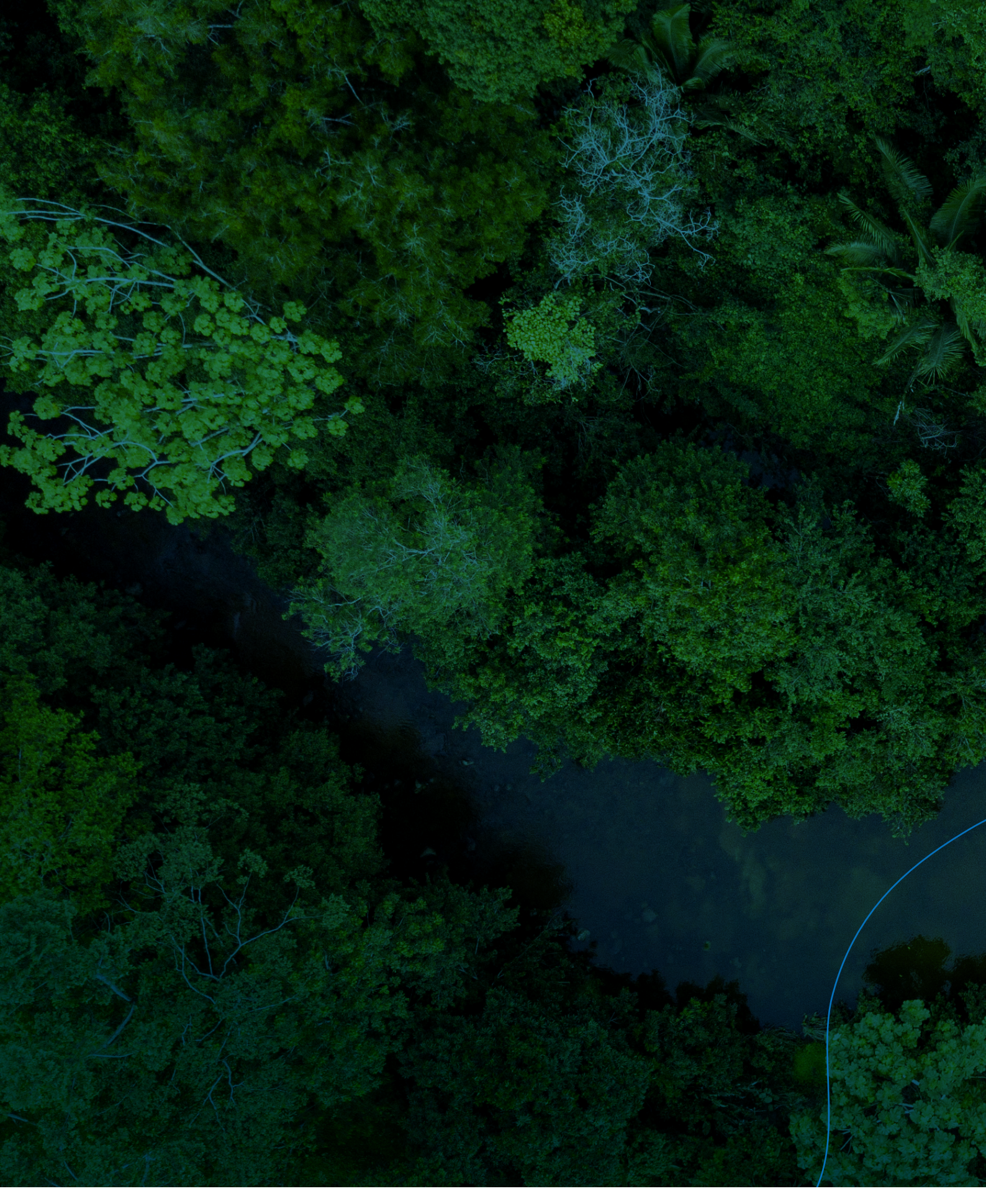
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10.4 Corporate Data and Sectoral Consolidation

The corporate information presented in this report was consolidated from structured ESG questionnaires applied to SIMINERAL member companies and supplemented by public corporate reports, emissions inventories, operational-monitoring systems, regulatory databases, institutional reporting and technical documents provided by participating companies.

Methodological consolidation, technical validation and conceptual harmonization of the indicators were conducted by Proactiva Results between April and May 2026.

As applicable, the quantitative indicators reflect data reported directly by member companies, public regulatory data, preliminary sectoral consolidations and duly identified technical estimates.



Realization

Hydro

VALE

MRN

MINING VENTURES MINA TZ

BEMISA

Alcoa

ERO