Sustainability-Related Financial Information report

2024

Serra Sul Complex, S11D, Pará, Brazil

Contents

Letter from the CEO

GUSTAVO PIMENTA
Vale CEO

Dear Shareholders,

I am honored to present Vale's inaugural Sustainability-Related Financial Information report, prepared in accordance with the standards issued by the International Sustainability Standards Board and regulations issued by the Brazilian Securities and Exchange Commission ("CVM"). Since launching our first emissions reduction targets in 2019, we have sought to play a leading role in driving change in the mining sector, making progress in our decarbonization efforts while working to support the decarbonization of our value chain.

This report underscores Vale's strategic readiness to lead in sustainable mining, uniquely positioned to contribute to global decarbonization efforts while advancing toward becoming a benchmark in long-term value creation. This disclosure also highlights Vale's commitment to achieving its emission reduction targets through transparent and responsible actions, pragmatically investing in the execution of its climate strategy and advancing sustainability best practices.

Climate Risks

Climate change presents Vale with a dual challenge, requiring robust risk management and the pursuit of transformative opportunities. Regarding the former, we have implemented a comprehensive assessment of climate change-related risks, considering the transition to a low-carbon economy and the physical impacts of a changing climate, which may increase costs, disrupt operations and damage infrastructure.

This situation has led us to integrate climate factors into our operational execution and strategic planning. Our approach to climate risk management is exemplified by our continuous monitoring and reassessment of risks in our value chain, using climate scenario analysis to evaluate the vulnerability of our assets and to inform our adaptation and mitigation plans.

Climate Opportunities

Climate change also unlocks significant opportunities for Vale, particularly due to the growing need for essential metals and high-grade inputs for low-emission steel production. Effective climate management is leveraging value in Vale's businesses, influencing operational choices, product innovation and strategic investments.

We seek to strategically position Vale's Iron Ore Solutions business to capitalize on climate opportunities in the coming years, focusing on supplying high-quality inputs for low-emission steel production. This includes expanding the production and sale of high-grade iron ore and innovative products such as iron ore briquettes, which facilitate the use of direct reduction technologies, significantly reducing carbon emissions. Strategic collaboration and investments in technological advances aimed at minimizing the carbon footprint of our iron ore processing, including pellet production, will also be considered.

Furthermore, we recently launched the New Carajás Program, for which we expect investments of US$13 billion by 2030 to expand iron ore and copper operations at Carajás Complex in Pará. As well as boosting mineral production, this initiative is focused on circular economy practices in mining, harnessing innovative technologies and dry mining processes. This program will help position Vale and Brazil as leaders in the supply of critical minerals and metals.

Vale Base Metals – our Energy Transition Metals (nickel and copper) business – is focused on expanding the sustainable production capacity needed to meet growing demand from the electric vehicle and renewable energy infrastructure sectors. This includes accelerating growth initiatives in copper and optimizing our existing nickel assets. In addition, our "Waste to Value" program exemplifies our commitment to circular economy principles by converting mining waste, such as sand and fine tailings, into valuable commercial products, thereby enhancing the efficiency of resource use and creating new sources of value.

Climate Strategy and Medium to Long-Term Targets

Our climate strategy is designed to transform our operations and value chain in a sustainable manner. Our strategic response includes commitments to: (i) reducing our absolute Scopes 1 and 2 emissions (market-based) by 33% by 2030, compared to the 2017 baseline; (ii) reducing our net Scope 3 emissions by 15% by 2035, compared to the 2018 baseline; and (iii) reaching net-zero Scopes 1 and 2 (market-based) emissions by 2050. These targets guide our operational and investment decisions. We are actively pursuing the goal of ensuring that 100% of global electricity consumption in our operations comes from renewable sources by 2030. In Brazil, we achieved 100% of electricity consumption from renewable power in 2023, anticipating the intermediate target of 2025.

Net-Zero by 2050

We recognize that achieving our ambitions, particularly for Scope 3, requires robust collaboration. Therefore, Vale actively engages with clients and suppliers to accelerate sustainable solutions through partnerships. While committed to net zero by 2050 in our own operations (Scopes 1 and 2 - market-based), extending a firm commitment to Scope 3 is challenging at this time due to the decarbonization needs of the steelmakers, which require major technological innovation in the value chain. We are confident that progress toward our long-term Scope 3 reduction target for 2035 will enable us to solidify our detailed trajectory to net zero, and we see this as a key area for positive development.

Strategic Investments for Decarbonization

The proactive execution of our Climate Strategy and Trajectory includes strategic investments totaling US$1,426 million since 2020, including US$257[1] million spent on decarbonization initiatives in 2024. We are confident that these outlays are fundamental to guaranteeing long-term value creation. The effects on our balance sheet, income statements and cash flow are strategically balanced by strong revenue growth potential, driven by growing global demand for our products in a transition market. Furthermore, we are effectively integrating future financial impacts, such as carbon pricing, into our strategic planning. While recognizing the complexities inherent in assessing the precise financial impact of climate change, we are strongly committed to managing these factors transparently to ensure Vale's long-term resilience, continued success and delivery of superior value to shareholders.

This inaugural report is central to our commitment to communicating transparently about our climate-related performance and strategy.

We invite our stakeholders to learn more about our Climate Strategy and Trajectory by consulting other important reports: (i) 2021 Climate Change Report; (ii) 2022 Scopes 1, 2 and 3 Report; (iii) 2024 Integrated Report; and (iv) the latter's ESG Databook. For more information, we have a dedicated climate page on our website and a team of specialists ready to discuss the implementation of our Climate Transition Plan.

Through this initiative, we reinforce Vale's commitment to responsible management and to creating long-term value for all our stakeholders. We welcome your analysis and feedback as we continue on our path toward a more sustainable future.

Sincerely,

Gustavo Pimenta
Chief Executive Officer, Vale S.A.

[1] Composed of expenses associated with efforts to adapt the business model and mitigate risks related to exposure to GHG emissions regulations (TR1) and the carbon tax imposed by the International Maritime Organization (TR2), in the amounts of US$240 and US$17, respectively.

Letter from the Chairman of the Board

DANIEL STIELER
Chairman of the Board of Directors

Dear Shareholders,

As Chairman of Vale's Board of Directors, I am proud to present Vale's inaugural Sustainability-Related Financial Information report. This is a pioneering initiative by Vale, demonstrating the Board's proactive leadership in the Company's increasing transparency and in driving Vale's strategic response to climate change.

We see climate change not only as a challenge, but also as a catalyst for innovation and value creation, particularly in the long term. By ensuring that climate-related risks and opportunities, rigorously assessed through our robust risk management framework, are integrated into our planning and decision making, we are positioning Vale to thrive in a constantly changing global economy. Prepared in accordance with the IFRS Sustainability Disclosure Standards and the Sustainability Disclosure Standards issued by the Brazilian Sustainability Pronouncements Committee ("CBPS"), this report reflects our commitment to timely and transparent communication with shareholders, as well as our ambition for sustainable mining.

Climate Governance

Vale's Board of Directors takes a proactive stance on climate change, overseeing climate-related risks and opportunities to ensure they are guiding pillars of the Company's long-term strategic direction. To this end, the Board is supported by the following advisory committees:

Audit and Risks Committee: It is focused on the financial implications of climate change, managing climate-related risks, assessing assumptions and guaranteeing financial resilience.

Sustainability Committee: Proactively guides Vale's transition to a sustainable operating model, providing direct advice on integrating sustainability into the Company's strategy and identifying opportunities in the green economy.

These governance structures and the Board of Directors' engagement reflect our commitment to shareholders and to the continuous and lasting development of Vale's business, acting in a conscious manner with regard to climate change.

Climate Risk Management

The Board of Directors, supported by its committees, particularly the Audit and Risks Committee, oversees Vale's climate risk management. Our supervision aims to identify, assess and manage climate-related risks in our operations and value chain. This includes: (i) the comprehensive identification and evaluation of transition and physical risks; (ii) the development and implementation of risk mitigation strategies; and (iii) an assessment of strategic resilience using climate scenario analysis and stress testing.

Strategic Planning

Our approach to climate change is not limited to risk mitigation. Vale is committed to seeking opportunities that align with the global transition to a low-carbon economy. The Board, with the support of the Sustainability Committee, guides the Company in integrating climate considerations into its long-term strategic planning, ensuring that Vale remains competitive and creates sustainable value in a changing world.

Climate Disclosure Best Practices

Vale is committed to providing its stakeholders with climate information that is useful for decision making through disclosure best practices. We have voluntarily prepared this report in accordance with the IFRS Sustainability Disclosure Standards and the standards set out in Brazilian Securities and Exchange Commission (CVM) Resolution 193 of 2023. Vale recognizes CVM's pioneering leadership in promoting the adoption of such standards for the benefit of the market.

Shareholder Engagement on Climate

Decarbonizing our operations and value chain requires ongoing dialogue and collaboration, and the Board is fully committed to actively engaging with you, our shareholders, on these critical matters. We actively seek and regularly incorporate your feedback, ensuring transparent reporting and demonstrating our unwavering dedication to maximizing long-term value and building a sustainable future for Vale.

We encourage you to examine this report to gain a comprehensive understanding of our strategic vision for Vale's sustainable future. Your insights into our decarbonization journey are invaluable as we refine our strategies and align them with your expectations for lasting value and sustainability.

Finally, we thank you for your continued trust in Vale. We are committed to navigating the challenges and opportunities of climate change while maintaining our ambition to be a leader in sustainable mining and a reference in creating and sharing value.

Sincerely,

Daniel Stieler
Chairman of the Board of Directors, Vale S.A.

All financial data is presented in millions of United States dollar, unless otherwise stated

1. Basis of preparation and presentation

The sustainability-related financial information report of Vale S.A. ("Parent Company") was prepared in accordance with the International Financial Reporting Standards ("IFRS") as issued by the International Sustainability Standards Board ("ISSB") and referred to by the IFRS Foundation as the "IFRS Sustainability Disclosure Standards", as well as the Sustainability Disclosure Pronouncements issued by the *Comitê Brasileiro de Pronunciamentos de Sustentabilidade* ("CBPS").

In Brazil, the Brazilian Securities and Exchange Commission ("CVM") issued the *Resolução CVM No. 193/2023*, subsequently amended by *Resolução CVM No. 219/2024*, which requires public companies to disclose Sustainability-Related Financial Information starting in 2026, prepared according to the IFRS Sustainability Disclosure Standards.

Connectivity with financial statements

This report should be read in conjunction with the Vale S.A.'s consolidated financial statements for the year ended December 31, 2024 ("**Financial Statements**"), prepared and presented in accordance with the International Financial Reporting Standards (IFRS), issued by the International Accounting Standards Board ("IASB"), currently referred to by the IFRS Foundation as the "IFRS Accounting Standards, and in alignment with the accounting practices adopted in Brazil, issued by the *Comitê de Pronunciamentos Contábeis* ("CPC"), approved by CVM.

The information presented in this report covers the 12-month period ended December 31, 2024, and refers to Vale S.A. and its subsidiaries ("Vale" or "Company"), consistent with the Financial Statements.

The information derived from the statement of financial position are translated into US$ at the closing exchange rate, all other information are translated into US$ at the average annual exchange rate.

The Company used the following exchange rates in 2024 to translate sustainability-related financial information.

	Closing rate	Average rate
US Dollar ("US$")	6.1923	5.3920

First-time adoption of international sustainability-related disclosures standards

The Company is disclosing this report for the first time, on a voluntary basis, and the following standards were used by Vale to prepare this report:

- IFRS S1/CBPS 01 – General Requirements for Disclosure of Sustainability-related Financial Information.

- IFRS S2/CBPS 02 – Climate-related Disclosures.

The IFRS Sustainability Disclosure Standards provide transition reliefs for the first annual reporting period in which an entity applies the standards. Vale has applied the following transition reliefs:

- Relief from the requirement to disclose comparative information.

- Relief from issuing the sustainability-related financial information report at the same time as the Financial Statements, which were issued on February 19, 2025.

- Only information on climate-related risks and opportunities are disclosed in accordance with the IFRS S2, applying the requirements of IFRS S1 in relation to the climate-related risks and opportunities disclosures.

Regarding industry-based metrics, Vale considered the IFRS S2/CBPS 02's Implementation Guide by Economic Sector, Volume 10 – Metals and Mining.

2. Organizational reporting boundary

This Sustainability-Related Financial Information report includes Vale S.A. and its subsidiaries, consistent with the Financial Statements.

To calculate greenhouse gas ("GHG") emissions, Vale uses the approach established by the Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (2004) (GHG Protocol), as required by IFRS2, when applicable. Vale includes all Scopes 1 and 2[1] (market-based and location-based) emissions from operations and assets over which it has operational control, and its proportional share of joint operations. Any other emissions generated in the Company's value chain are reported as Scope 3 emissions.

The Company has operational control over all of its subsidiaries, and their emissions are classified as Scopes 1 and 2 (market-based and location-based). Conversely, it does not have operational control over any of its affiliates and joint ventures, and their respective emissions are classified as Scope 3. A list of investees controlled by the Company, as well as its affiliates and joint ventures, is presented in Note 16 to the Financial Statements.

3. Significant judgments and uncertainties

In the process of preparing this report, Management has exercised judgment in various areas, including the process of identifying sustainability-related risks and opportunities and identifying relevant information to report. In addition, the preparation of this report requires the use of estimates for certain amounts that cannot be measured directly. Estimates have been made where the sustainability information relates to an entity in the value chain and needs to be estimated, is related to forward-looking information, or involves data limitations.

The details of critical judgments made by Management in preparing this report, as well as amounts that are subject to a high degree of measurement uncertainty, are included in the following sections.

Reference	Significant judgments and uncertainties
8	Internal carbon pricing in Strategic Planning
8	CO_2e premium trend in Strategic Planning
8 and 9	Assumptions in climate scenarios
9	Carbon pricing
9	Climate scenarios – Transition risks and opportunities
9	Climate scenarios – Physical risks
10	Method for calculating GHG emissions
10	GHG-related metrics
10	Quantification of antecipated financial effects

[1] The definitions of the Scopes of the GHG inventory are described in the **Climate Change Policy**

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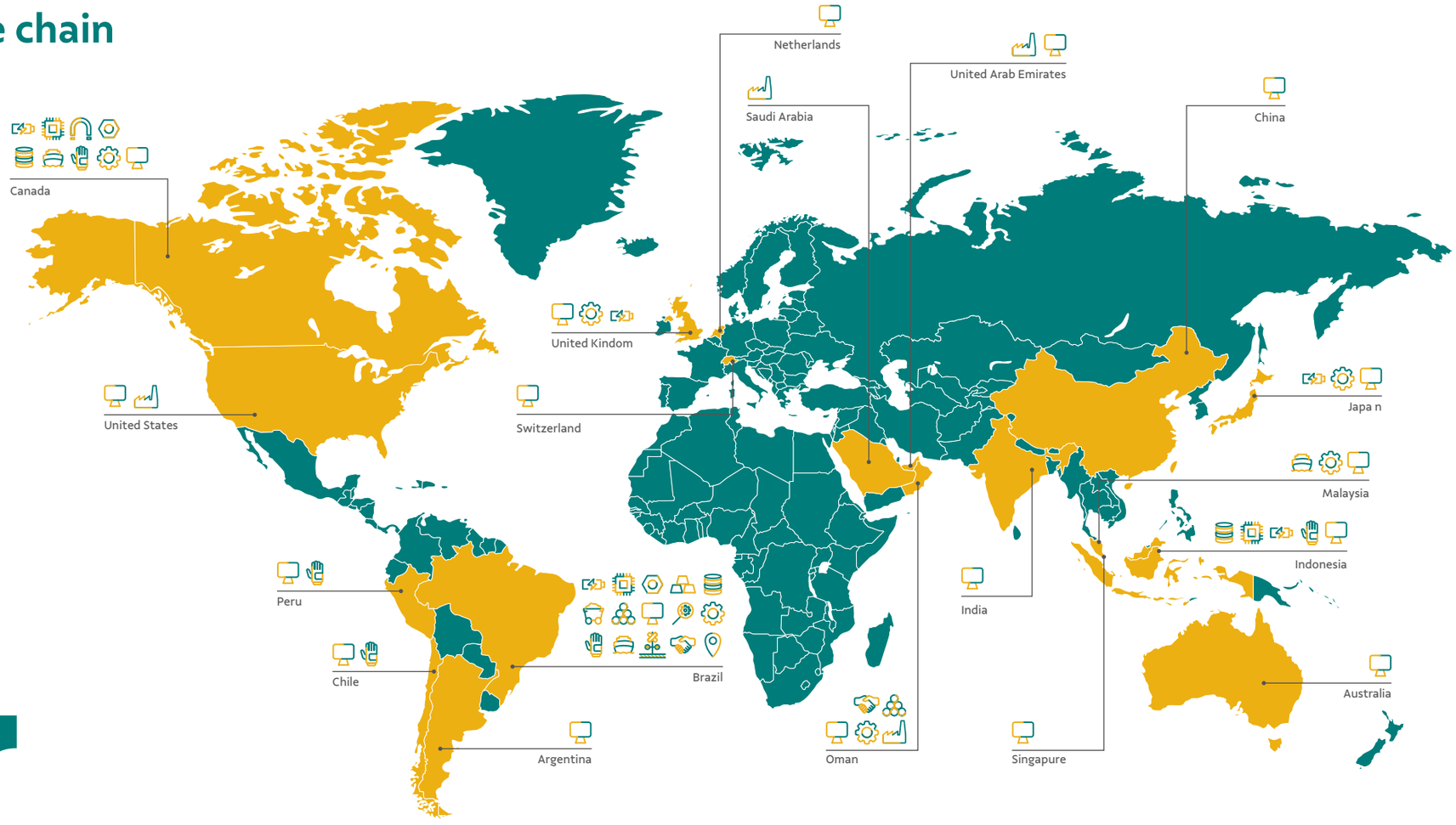
4. Business model and value chain

Vale is one of the world's largest producers of iron ore and nickel. The Company also produces iron ore agglomerates and copper. Nickel and copper concentrates also contain by-products such as platinum group metals, gold, silver and cobalt.

The Company is engaged in greenfield mineral exploration in five countries, Brazil, Canada, Chile, Peru and Indonesia. It also operates extensive logistics systems in Brazil and other regions worldwide, including railways, maritime terminals and ports, integrated with mining operations. Additionally, the Company has distribution centers to support its iron ore shipments globally. Vale also holds investments in energy businesses to meet energy consumption needs through renewable sources.



INTERACTIVE CONTENT

CLICK THE LEGEND TO EXPLORE THE MAP

EVERYWHERE

Activities

- Head office
- Joint Venture
- Operation[1]
- Offices
- Energy transition metals
- Ports
- Exploration
- Railroads
- Mega Hub
- Iron ore solutions

Product Portfolio

- Pellets
- Iron ore
- Cobalt
- Briquettes
- Nickel
- Copper
- PGM[2], gold and silver

[1]Platinum group metals (PGM) are byproducts of Canada's operations

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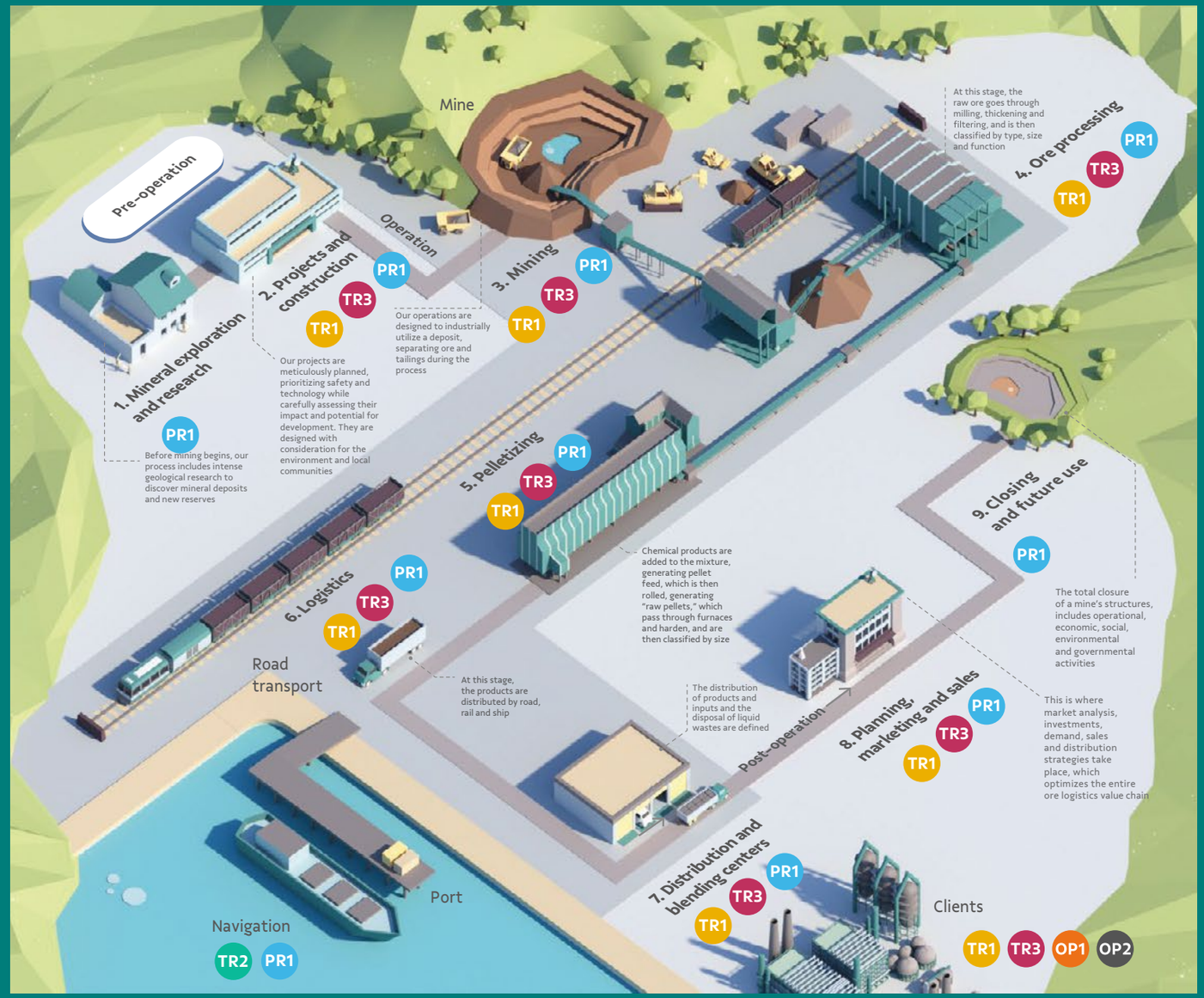

Assessment of climate risks and opportunities

The Company assesses the materiality of climate risks and opportunities considering the likelihood and the magnitude of the respective financial impact.

Vale uses defines horizons to support its Strategic Planning and decision making:

Short term	Medium term	Long term
1 year	from 1 to 5 years	from 6 to 30 years

The process of assessing the materiality of risks and opportunities considers qualitative and quantitative characteristics, and it involves the application of judgment and the use of assumptions, which are reassessed at each reporting period to reflect the best information available. The climate-related risks and opportunities, detailed in section 8 in this report, are presented below:

Climate risks:

- **TR1** Political, legal and market – Exposure to regulations related to GHG emissions, potentially resulting in reduced market share and increased operational costs. (Transition risk)
- **TR2** Political and legal – Increased shipping costs due to the carbon tax imposed by the International Maritime Organization (IMO). (Transition risk)
- **TR3** Reputational – Failure to meet the 2030 carbon target for Scopes 1 and 2 (market-based) emissions reductions; and increased scrutiny of voluntary commitments and GHG reductions, including but not limited to Scope 3 emissions reductions. (Transition risk)
- **PR1** Intensification of extreme weather conditions, impacting operating sites, the production chain and communities. (Physical risk)

Opportunities related to climate change:

- **OP1** Increased demand for high-quality and more efficient products and agglomerates with the potential to reduce GHG emissions.
- **OP2** Growing demand for nickel, copper and other energy transition metals.

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5. Corporate Governance

Vale has been a true corporation since November 2020, that is, the Company is not controlled by a single shareholder nor a group of shareholders. This corporate format was also reflected in the restructuring of the Company's Bylaws and the internal regulations of its governance bodies.

To strengthen the governance structure's decision-making process, the Board of Directors is supported by five advisory committees, which are permanent and statutory bodies composed exclusively of board members. Some committees include external consultants who are specialists in the topics addressed.

Sustainability-related governance

Vale has adopted a governance structure for overseeing sustainability-related risks and opportunities, supported by specific controls and procedures, which monitor progress toward targets. These controls are part of the Company's risk management and are integrated into the functions of its governance bodies. These mechanisms include the identification of climate risks and opportunities, the materiality assessment process, the development of strategy, metrics and targets, the monitoring of progress, and the establishment of sustainability-related policies. The Board of Directors and the Sustainability Advisory Committee have been engaged to ensure the appropriate skills and competencies to oversee climate-related risks and opportunities, and they might hire external experts to provide specific guidance and training on sustainability matters.

Board of Directors ("BoD")

The Board of Directors is responsible for the Company's strategic direction, including oversight of sustainability-related risks and opportunities, encompassing environmental, social and governance matters. The Board of Directors approves the resources necessary for the effective management of sustainability-related initiatives.

The Board of Directors ensures that sustainability is integrated into the Company's strategy. In particular, it considers climate-related risks and opportunities when reviewing strategy, performance targets, and risk management processes and policies. It also considers how they are designed to respond to sustainability-related risks and opportunities and how they align with Vale's business model and long-term strategy, including the transition to a low-carbon economy. In accordance with the Bylaws, the Board meets at least eight times a year, and may include climate-related matters on their agenda.

Vale's Board of Directors possesses advisory committees, which are responsible to proposing improvements related to their area of expertise, in accordance with the operating rules and duties established in each committee's internal regulations. The main bodies that advise the BoD on sustainability matters are the Audit and Risks Committee and the Sustainability Committee.

Sustainability Committee

The Sustainability Committee advises the Board of Directors on integrating sustainability strategy into Vale's strategic planning. This involves aligning the Company's policies and practices, promoting discussions on the topic and seeking to ensure greater efficiency and quality in its decisions, approach and handling of critical issues that result in business risks or impacts, as well as evaluating proposals for investments in sustainability, in accordance with the duties defined in its **internal regulations.** The Sustainability Committee meets according to an annual schedule. In 2024, it held eight meetings, including climate-related matters on the agenda.

Audit and Risks Committee

The Audit and Risks Committee is responsible for assessing and monitoring the Company's risk exposure.

The committee advises the Board of Directors on risk management strategy, including analysis of associated

corporate policies and risk appetite guidelines, as well as the Company's Integrated Risk Map. In addition, the committee supports evaluations of the effectiveness and adequacy of risk management controls and systems, and monitors their implementation, among other duties defined in its **internal regulations.** These regulations state that the committee must meet at least every two months on a regular basis and, when applicable, it may include climate-related matters on its agenda.

Management's role in sustainability-related governance

The Company's Executive Committee is responsible for assessing and monitoring sustainability-related risks and opportunities as part of its duties:

Executive Committee

The Executive Committee is composed of Vale's CEO and statutory executive vice presidents. Among other duties set out in the Company's **Bylaws**, it is responsible for preparing guidelines and the strategic planning and submitting them to the Board of Directors for approval, including social and environmental matters, and executing approved plans, as well as implementing the general risk management guidelines defined by the Board.

Vale's Executive Committee is supported by two groups that discuss subjects related to sustainability:

Sustainability Risks Executive Committee

This committee monitors risks related to climate change, human rights, communities and biodiversity, among other matters related to sustainability, as provided for in its internal regulations. Additionally, the committee recommends revisions to risk management principles and instruments, with a view to the continuous evolution of this process. When necessary, it also evaluates and suggests changes to the risk management strategy for subsequent approval by Vale's Executive Committee. In accordance with its internal regulations, the Sustainability Risks Executive Committee meets ordinarily at least three times a year and may include climate-related matters on its agenda.

Low-Carbon Forum

In line with the duties set out in Vale's **Climate Change Policy**, the Low-Carbon Forum seeks to maintain alignment between technical teams and members of the Executive Committee, in conducting the decarbonization strategy, emissions management and monitoring of related targets.

This group meets every four months to discuss a detailed analysis of challenges and progress in the low-carbon journey. This includes: (i) an evaluation of the previous year's performance and future expectations in relation to Scopes 1, 2 (market-based) and 3 emissions; (ii) a review of the roadmap and targets for GHG emissions in Scopes 1, 2 (market-based) and 3; (iii) alignment with the Company's strategic planning, considering financial impacts on Vale's valuation; (iv) identification of risks and opportunities related to areas such as the energy transition and external industry developments; and (v) analysis of investments and prioritization within Vale's sustainability strategy.

The results are periodically presented to the Sustainability Committee and Board of Directors, as part of the Company's governance system.

Executive remuneration

According to Vale's **Bylaws**, the annual overall remuneration of the members of the Board of Directors, Executive Committee, Fiscal Council and advisory committees is approved by shareholders during each year's Annual General Meeting. The responsibility for distributing the remuneration approved at the General Meeting among the members of the Executive Committee lies with the Board of Directors, with the support of the People and Remuneration Committee.

The compensation structure, aligned with the Company's climate targets, aims to incorporate sustainability-related considerations into business areas, with the objective of driving engagement and accelerating the implementation of decarbonization projects. To this end, the Company establishes and monitors annual and multi-year internal targets related to greenhouse gas emissions, based on emission trajectory curves, which are updated annually.

Short-term remuneration

An annual bonus encourages the achievement of short-term goals aligned with the Company's strategic priorities and recognizes the contribution of the members of the Executive Committee to Vale's performance. This bonus is based on both collective goals and specific targets for each executive, including economic and financial targets that reflect operational performance, as well as targets related to Environmental, Social, and Governance (ESG) performance and other aspects of strategic initiatives.

For the 2024 financial year, one of the specific targets of the vice president for sustainability was related to the percentage reduction in the intensity of Scopes 1 and 2 (market-based) GHG emissions for the year, compared to 2017, representing 7.5% of this officer's annual bonus.

Long-term remuneration

The members of the Executive Committee (a statutory body) and non-statutory directors are entitled to take part in the Vale Stock Program (PSU) – a long-term, performance-based compensation plan that incorporates metrics focused on environmental, social and governance matters. Under this program, eligible executives may receive, over a three-year vesting cycle, a premium equivalent to the market value of a specified number of common shares, contingent on Vale's performance factor. This factor is measured based on Total Shareholder Return and ESG indicators.

In this context, the long-term remuneration targets for executives in the 2024 Vale Shares Program included performance conditions tied to climate-related indicators, including 10% linked to reductions in Scopes 1 and 2 (market-based) greenhouse gas emissions (contributing to decarbonization target monitoring and progress), and 5% connected to Vale's performance in the Corporate Sustainability Assessment (CSA), which is used to select companies for the Dow Jones Sustainability Index (DJSI).

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Corporate policies

In the context of sustainability and environmental responsibility, Vale's policies establish its climate commitments and environmental performance requirements. These policies include existing climate commitments and environmental compliance requirements.

Sustainability Policy

Provides guidelines on minimizing risks and negative impacts and leveraging positive impacts on people, communities and the environment. This policy also defines climate and social commitments, including demonstrating leadership in low-carbon mining, creating shared value through social and environmental initiatives, and supporting local communities as part of a just transition.

Climate Change Policy

Developed in accordance with the strategic guidelines of the Company's transition plan, this policy formalizes Vale's commitments in relation to climate change. It sets out the strategic commitments that form the basis of Vale's Climate Transition Plan. It also establishes a series of principles that guide the Company's activities and underpin its approach to the low-carbon transition.

Risk Management Policy

Provides guidelines for proactively and effectively managing Vale's risks, including risks related to climate change. This policy clarifies roles and responsibilities in risk management.

Mining and metallurgical waste Management Policy

Establishes Vale's guidelines and commitments for the sustainable and efficient management of mining and metallurgical waste throughout the production chain.

Code of Conduct

Describes the environmental requirements for suppliers, including compliance with local environmental regulations and license requirements, as well as an understanding of impacts and subsequent control and mitigation actions. This contributes to the management of climate-related risks in Vale's supply chain and encourages suppliers to improve their environmental performance, supporting the engagement lever of the Company's strategic ambition

Socioenvironmental and Institutional External Expenditures Policy

Establishes guidelines for planning and implementing social and environmental investments. This policy helps ensure that Vale's investments support the broader objectives of a just transition.

Water Resource and Effluent Management Policy

Sets out principles and commitments for water resources. This helps manage and reduce our impact on water resources, in terms of both direct use and supported ecosystems, linking to the adaptation and resilience activities in Company's Climate Transition Plan.

Human Rights Policy

Guidelines and principles related to respecting human rights in projects and operations, our value chain and the regions where we operate. This includes protection for local communities and indigenous peoples, managing social risks associated with Company's Climate Transition Plan.

Click on the Policies above and learn more

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6. Management of risks and opportunities

Vale's risk management is guided by its Risk Management Policy, which establishes methodological guidelines, response strategies, a governance framework and responsibilities for addressing risks. This framework is built on three essential pillars – people, processes and systems – to ensure an integrated and effective approach. This model underpins all stages of the risk management cycle, from identification and analysis to treatment, monitoring and reporting, ensuring informed decision-making aligned with governance best practices.

Vale employs the lines of defense model, based on global risk management standards such as ISO 31000, ISO 55000, COSO-ERM and, for its operational safety management system, Risk-Based Process Safety (RBPS).

In connection with Vale's Climate Change Policy, risks related to this matter are incorporated into the Company's Integrated Risk Map and classified as a high-priority topic in the corporate risk management process.

The process of managing and monitoring risks and opportunities related to climate change contributes to the development of Vale's strategic climate ambition, transition plan and capital allocation decisions, which consider any trade-offs associated with these risks and opportunities in the context of the Strategic Planning cycle.

Expenditures and investments related to risk mitigation efforts, business model adaptation and the development of new oportunities are approved by the Board of Directors, as part of the Company's annual planning cycle and the management of its commitments and obligations.

For more details on the liquidity risk process, see Note 21c to the Financial Statements.

Climate-related risk methodology

Vale's risk management follows four stages: (a) Identification, (b) Analysis and Treatment, (c) Monitoring and (d) Communication and Reporting.

(a) Identification:
the risks that could impact the organization's objectives are mapped, whether their causes are under the Company's control. External and internal sources, new market, legal or regulatory requirements, analysis of similarities between operations, analysis of historical data and analysis of the risk map are used in a non-exhaustive way.

(b) Analysis and Treatment:
the identified risks are analyzed to define the best treatment approach. The analysis begins by assessing the situation and context, describing the worst-case scenario and identifying causes and impacts. A risk matrix is used for prioritization, which combines probability and severity, classifying risks as Very High, High, Medium or Low.

The severity of impacts is evaluated considering qualitatively and/or quantitatively the potential negative impacts arising from the risk materialization, considering five assessment dimensions: People (employees, contractors and communities), Environment, Social and Human Rights, Reputation and Financial. At this stage, appropriate treatment is also planned in line with risk appetite through the implementation of preventive and mitigating controls.

(c) Monitoring:
the controls are tracked to ensure that risk levels remain within the established limit. The tools used for monitoring include risk appetite alignment analysis, key performance indicators and key risk indicators. The emissions intensity per unit of production indicator, which monitors Vale's emissions profile per metric ton of output produced, mapped decarbonization projects, regulatory reviews and advocacy are examples of the monitoring Scope for climate-related risks.

(d) Communication and Reporting:
information related to the risk management process is communicated in a clear and structured way at different levels of the organization, according to the priority level of each risk. The main climate risks are communicated within the framework of the Low-Carbon Forum, where decisions are made to mitigate, transfer, accept or control the identified climate risks, as well as to capitalize on opportunities. These risks are also reported to the Audit and Risks Committee and the Sustainability Risks Executive Committee, as described in section 5 of this report.

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7. Climate transition strategy

Vale recognizes climate change as one of the greatest global challenges, with significant impacts on societies and natural systems. A 2024 study by the Climate Action Tracker project indicates that the planet is on course for an estimated average global temperature increase of 2.7°C (from 2.2°C to 3.4°C) by 2100.

In this context, the Company understands that mining plays an essential role in supporting the transition to a low-carbon economy, contributing to the decarbonization targets set by the Paris Agreement, with the aim of limiting the average global temperature increase to "well below 2°C" compared to pre-industrial levels, together with efforts to limit the increase to 1.5°C.

Assumptions, dependencies and challenges related to the climate transition

To align with the Paris Agreement, a societal effort will be needed to increase the average annual global investment in the deployment of low-carbon technologies and energy[1].

The emissions from the steel industry are considered hard to offset, being the primary source of emissions in the Company's value chain, and it accounts for approximately 8% of global greenhouse gas emissions. According to the International Energy Agency[2], the sector is not on track to achieve net-zero emissions by mid-century and its emissions have doubled over the last two decades. In 2023, less than 1 million metric tons of nearly carbon-neutral steel were produced, representing just 0.05% of global crude steel production.

Globally, it has been estimated that decarbonizing the iron and steel industries could require investments of approximately US$1.4 trillion[3]. Regarding the metals and minerals sector, although technological solutions for decarbonization have been developed, the associated high capital costs may make their implementation unfeasible.

Vale believes that regulatory progress to limit GHG emissions is fundamental to meeting the challenges of the energy transition, since carbon pricing and the redistribution of revenues will encourage the development and adoption of low-carbon solutions, contributing to the economic viability of decarbonization projects.

Currently, according to the Word Bank[4], only 24% of global GHG emissions are covered by regulated programs, and less than 1% of the priced carbon reaches the recommended level of US$63 to US$127 per tCO_2e to limit the temperature increase to below 2°C by 2030.

As well as encouraging emission reductions, Vale believes that carbon pricing can enable the adoption of processes and technologies that increase energy and industrial efficiency and consequently reduce GHG emissions, contribute to reducing dependence on imported energy and offer environmental and social benefits. However, their adoption faces political challenges, especially in the context of high inflation and rising energy prices.

Climate Transition Plan

Vale's Climate Transition Plan sets out its strategic ambition, including beyond the Company's operations, in its value chain, governance processes and risks. It is integrated with the Company's strategic planning, reflecting its climate change-related commitments. Aligned with the recommendations of the Transition Plan Taskforce (TPT), the plan is underpinned by the principles of Ambition, Action and Responsibility, establishing objectives and priorities for the transition to a climate change-resilient, low-carbon economy.

Photo: Marcelo Coelho

Vargem Grande Complex – Pelletizing Plant – Nova Lima, Minas Gerais, Brazil

[1] Source: BloombergNEF, New Energy Outlook 2024.
[2] Source: Agência Internacional de Energia (IEA), Steel – Breakthrough Agenda Report 2023
[3] Source: Wood Mackenzie, Decarbonising global iron ore and steel industry by 2050 necessitates urgent action and US$1.4 trillion of investment, 2024.
[4] Source: World Bank. 2024. State and Trends of Carbon Pricing 2024.

All financial data is presented in millions of United States dollar, unless otherwise stated

The Company adopts an integrated approach to matters related to climate, nature and the just transition, in different spheres of influence, through its climate pillars.

Spheres of influence:		Value shared with society	Value chain	Operations
Decarbonization targets (section 10)		Support the central objective of the Paris Agreement, to limit the average global temperature increase to below 2°C, while making efforts to limit the increase to 1.5°.	Reduce net Scope 3 emissions by 15% by 2035. Contribute to the International Maritime Organization's 2023 strategy of achieving net-zero GHG emissions by around 2050.	Reduce absolute Scopes 1 and 2 (market-based) emissions by 33% by 2030. Reach net-zero Scopes 1 and 2 (market-based) emissions by 2050.
Supporting ambitions				
Climate pillars	**Low-carbon solutions**	Supply products that support the transition to a low-carbon economy and embrace circularity, creating business models. Presented in section 8, in the topic on business model adaptation	Portfolio of products and technological solutions that support the transition to the manufacturing of low-carbon steel and other metals. Presented in section 8, in the topic on opportunities related to climate change.	Efficient allocation of capital to implement low-carbon fuels and technologies. • Obtain 100% of electricity from renewable sources globally by 2030. In Brazil, 100% of Vale's power consumption has come from renewable sources since 2023. Presented in section 10, in the topic on climate-related targets. • Improve global energy efficiency indicator by 5% by 2030. Presented in section 10, in the topic on climate-related targets.
	Resilience	Generate positive social and environmental impacts, in line with climate strategy. Presented in section 9, in the topic of adaptation and resilience efforts.	Develop the ability to assess and mitigate climate change-related risks in the Company's supply, logistics and value chains. Presented in section 9.	Assessment, monitoring and management of physical climate risks, protecting workers, operational assets and local communities. Presented in section 9.
	Partnerships and investments	Invest in technological and scientific solutions to global climate-related problems. Presented in section 8.	Partner with suppliers and clients to mitigate investment risks, collaborate on solutions to shared challenges, and support the transition of the metals and mining value chain. Presented in section 8.	Strategic partnerships to accelerate the study and implementation of technological solutions and new fuels in operations. Presented in section 8.
	Transparency and engagement	Advocate for robust climate regulation and policies, including carbon targets and markets.	Actively collaborate in industry groups and initiatives and support technical studies.	Commitment to monitoring and verification processes, promoting transparency in the identification and disclosure of climate risks and opportunities.

All financial data is presented in millions of United States dollar, unless otherwise stated

8. Risks and opportunities related to climate change

Addressing the impacts of climate change is a strategic priority on Vale's agenda. The Company seeks to reduce GHG emissions across the entire value chain by offering a portfolio of high-quality products, increasing the use of renewable energy, and adopting lower carbon intensity energy solutions. Vale understands that this path toward decarbonization requires a multifaceted approach, involving partnerships across the supply chain, improvement of processes and standards for licensing, encouragement to incentives and government commitments, and the use of technology and innovation to enhance efficiency and capture opportunities.

Climate risks

TR1 Exposure to regulations related to GHG emissions, resulting in a possible reduction in market share and higher operating costs

Transition risk category

Political and legal – Increased operating costs resulting from carbon regulation

Market – Market demand for less carbon-intensive products, resulting in loss of market for products with a higher carbon footprint

Time horizon

Political and legal – Medium and long term

Market – Long term

Concentration of business activities vulnerable to this risk

Operations related to the Iron Ore Solutions and Energy Transition Metals segments are exposed to this risk, with assets concentrated in Brazil, Oman, Malaysia and Canada.

Main items potentially impacted in the Financial Statements

- Cost of goods sold, and services rendered (Note 6a to the Financial Statements)
- Research and development expenses
- Property, plant and equipment (Note 19 to the Financial Statements)
- Provisions associated with GHG emissions regulation

a) Nature of risk

Vale is exposed to uncertainty concerning regulations related to GHG emissions in the jurisdictions where it operates and in its value chain, directly and indirectly impacting its business value.

The Company monitors the development of climate policies, including carbon pricing mechanisms such as the Canadian Federal Output-Based Pricing System, the Brazilian GHG Emissions Trading System (SBCE), the Chinese National Carbon Trading Scheme, the European Union Emissions Trading System (EU ETS) and the EU's Carbon Border Adjustment Mechanism (CBAM).

Depending on the carbon pricing model established by jurisdictions and the carbon price adopted, in addition to other climate-related regulations, the increase in operating costs may impact or even make economically unviable Vale's operating assets and impact the value of its iron ore business.

The implementation of such regulations may adversely impact the business value, reducing the Company's market share, due to the possibility that its products may have relatively higher carbon footprint than compared to competitors.

Alternatively, higher operational costs resulting from decarbonization initiatives may affect the competitiveness of Vale's products, especially when compared to competitors operating in jurisdictions without carbon regulation or with less restrictive policies.

b) Mitigation efforts

The Company assesses its portfolio of decarbonization initiatives and prioritizes them according to their technical and economic feasibility, with the aim of achieving its GHG emission reduction targets. As a risk mitigation measure and to support decision making, Vale uses a Marginal Abatement Cost Curve to estimate the costs of solutions to achieve its Scopes 1 and 2 (market-based) emission reduction targets. This tool provides an internal estimate of the potential costs related to decarbonization, which are considered in the Company's strategic planning.

Strategy for reducing GHG emissions

Vale's targets in this area, presented in section 10, are voluntary. However, the Company's investments in the following initiatives to reduce its Scopes 1 and 2 (market-based) GHG emissions contribute to risk mitigation:

Petrobras and Vale are partnering to test R5 Diesel in locomotive operations in Vitória, Espírito Santo, Brazil

All financial data is presented in millions of United States dollar, unless otherwise stated

Category	Description of solution	Main projects, initiatives and partnerships
Renewable energy (b.1)	Renewable energy solutions to achieve zero Scope 2 (market-based) emissions, which refer to indirect emissions from electricity purchases.	As a milestone for its target of reducing absolute GHG emissions from Scopes 1 and 2 (market-based), the Company achieved 100% use of renewable electricity sources in its operations in Brazil through power purchase agreements, as well as through concession agreements and the purchase of a small portion of renewable energy certificates. Details of these targets are presented in section 10.
Energy efficiency (b.2)	Solutions to optimize the use of energy inputs such as diesel and anthracite in industrial operations.	Investment in more modern, automated, geo-referenced fixed assets (trucks, drilling rigs, machinery and equipment), using radar and artificial intelligence. In addition to enhancing safety and energy efficiency, these investments contribute to sustainability benefits due to reduced fuel consumption and increased useful life of components.
Low-carbon process inputs (b.3)	Solutions that seek changes in production processes.	This includes inputs for briquette production (see the topic on business model adaptation to find out more about risk) and the replacement of anthracite, a type of coal, with low-carbon solutions.
Biofuels, other low-carbon energy solutions and natural gas (b.4)	Low-carbon energy solutions to replace traditional energy inputs with low-carbon alternatives where, (i) biofuels contribute to decarbonization when their full life cycle is considered, since the carbon emitted during combustion is previously captured from the atmosphere by the biomass used in their production. Although these emissions are biogenic, they are not accounted for in Scopes 1 and 2 target (market-based); (ii) low-carbon solutions include process electrification, the use of renewable energy, and energy efficiency; and (iii) natural gas is used as a transitional energy source, with a lower emission factor than liquid fossil fuels.	Replacing diesel with biodiesel, considering a renewable fuel produced from vegetable oils or animal fats. In addition to biodiesel, natural gas a transitional fossil fuel, as despite being a fossil fuel, its combustion generates less CO_2 and other pollutants compared to coal and fuel oils used in the production process. In October 2024, Vale and Petrobras signed a strategic alliance agreement with the potential to commercialize three products: (i) biofuel bunker (a fuel used in ships), (ii) R5 (diesel, co-processed with vegetable oils, which is being tested on the Vitória-Minas Railroad and at Fábrica Nova Mine in Minas Gerais); and (iii) natural gas, an essential input for the production of pellets and iron ore briquettes. This agreement will allow a range of possibilities to replace fossil fuels and promote the use of more sustainable energy sources. During 2024, Vale entered into partnerships with its truck suppliers (Komatsu and Caterpillar), to develop dual-fuel trucks, which consist of converting current diesel engines to run on a mixture of ethanol and diesel, making these trucks more sustainable. In addition, Vale has signed an agreement with Caterpillar to decarbonize mining operations, which includes testing large electric battery-powered trucks. In March 2025 (subsequent event), Vale and Wabtec Corporation signed an agreement to acquire 50 new locomotives for the Vitória-Minas Railroad and Carajás Railroad. These locomotives will be able to operate with a higher blend of biodiesel, which will reduce greenhouse gas emissions.

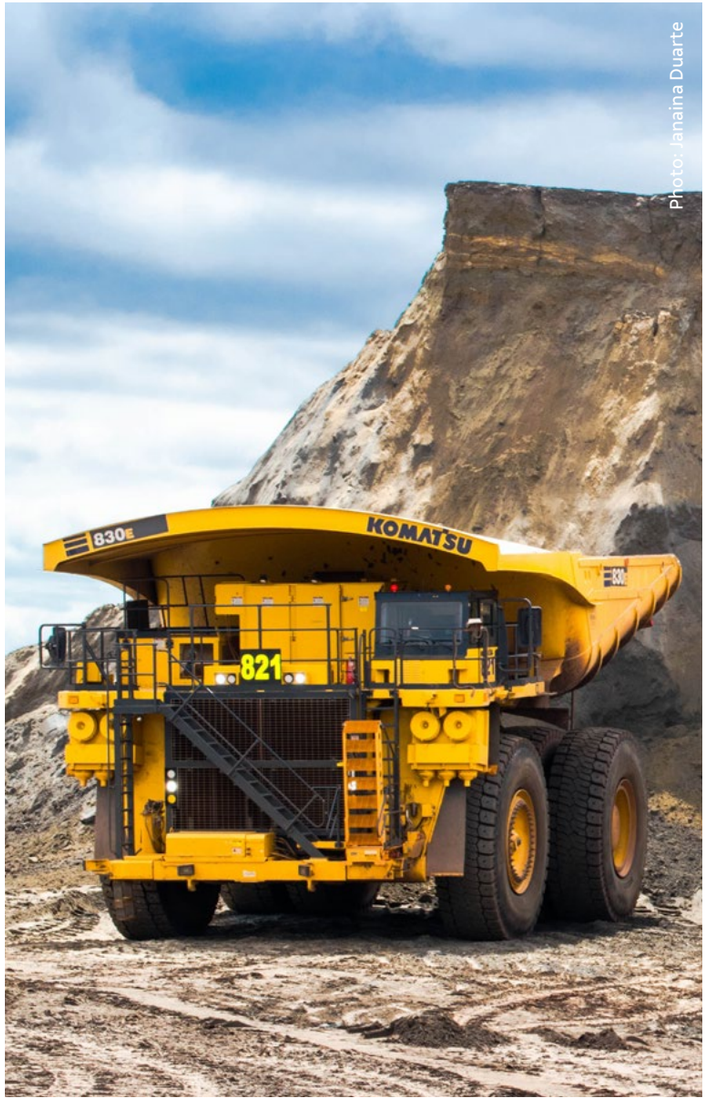


Photo: Janaina Duarte

In the photo: Off-highway mining truck

c) Efforts to adapt the business model

Briquettes (c.1)

Iron ore briquettes are a new product developed by Vale. The production process operates at low temperatures and involves the agglomeration of iron ore using a technological binder solution, which gives the final product high mechanical strength. When used by steel producers, briquettes can contribute to an estimated potential reduction of up to 10%[1] in greenhouse gas emissions due to their unique characteristics and the possibility of eliminating the sintering process. Additionally, briquettes require less energy consumption during their production compared to traditional agglomeration processes.

Lower CO_2 emissions
The production of these briquettes emits less carbon dioxide compared to traditional agglomeration processes.

Water
No water is used to make the briquettes.

Lower emissions of other gases
The production of iron ore briquettes results in lower emissions of gases such as sulfur dioxide (SOx) and nitrogen oxides (NOx).

Production process
Briquettes have lower particulate emissions, and sand from mining tailings can be incorporate into the binder's production process.

Vale has two iron ore briquette plants at Tubarão Complex, which were both converted from pelletizing plants. The first plant is already in operation, while the second is scheduled to start up after 2027. In addition, a mobile briquetting unit has been operating at the same site since 2024. The production process is being enhanced, with consistent progress in product testing in blast furnaces and direct reduction furnaces, in collaboration with its clients.

Negotiations and Partnerships

In 2024, the Company advanced in its strategy of increasing briquette production in order to develop low-carbon solutions for steel production, particularly through the following partnerships:

Briquette plant in the United States. In March 2024, the Company, through its subsidiary Vale USA LLC, was selected by the U.S. Department of Energy to enter into a cooperative agreement involving a financial reimbursement mechanism under the Inflation Reduction Act. In December 2024, the Company concluded negotiations with the Department of Energy and began phase 1 of a project to develop an industrial-scale briquette plant in the state of Louisiana. The partial cost reimbursement mechanism under the Cooperative Agreement provides for up to US$282.9 to be allocated to Vale, conditional on successful progress throughout the four phases of the partnership, until 2031. This iron ore briquette plant in the United States could be the first in the world to apply a patented cold briquette agglomeration process for direct reduction steelmaking.

Other partnerships: memorandum of understanding signed with Hydnum Steel, which includes evaluating the construction of a briquette plant in Puertollano, Spain; and renewal of a technical cooperation partnership with Midrex Technologies, Inc. to support the development and validation of iron ore briquettes produced via the direct reduction.

d) Current financial effects

The following table shows the financial impacts of decarbonization projects and costs related to carbon pricing expenses.

		December 31, 2024	Year ended December 31, 2024		Year ended December 31, 2024
		Balance Sheet	Income statement		Cash flows Statement
	Reference	Property, plant and equipment	Depreciation	Costs and Expenses	Payments
Briquettes and Mega Hubs	c.1	288	(2)	(25)	(116)
Renewable energy	b.1	219	(18)	(5)	(17)
Energy efficiency	b.2	93	(12)	(2)	(5)
Low-carbon process inputs	b.3	41	–	(3)	(39)
Biofuels, low-carbon energy solutions and natural gas	b.4	26	(1)	(31)	(46)
Other decarbonization projects		23	(2)	(3)	(12)
Carbon pricing[2]		–	–	(11)	(5)
Total		**690**	**(35)**	**(80)**	**(240)**

[2] Due to GHG emission regulations in Canada. The Company also has assets in other jurisdictions that have regulated carbon markets, such as the United Kingdom and Japan, for which there were no expenses related to this matter in the 2024.

e) Anticipated financial effects

The Company estimates that it may incur costs arising from carbon pricing mechanisms from US$1 billion to US$3.5 billion, measured at present value. These costs may impact the Company's income statement and cash flows substantially from 2030 onwards, therefore, over the long-term horizon as defined in section 4. The amount and timing of disbursements will depend on the achievement of Vale's emissions targets and the significant uncertainties described in section 9. For more details on the Company's targets, please refer to section 10.

In the steel industry, the Company invests in its own technologies and partnerships for the transition from blast furnaces and has developed iron ore briquettes. These investments are estimated at up to US$1 billion (present value) and are substantially linked to the construction and development of Mega Hubs. Disbursements will occur in the short (4%), medium (74%) and long term (22%), and will be recognized on the balance sheet as property, plant and equipment or investments in associates and joint ventures. In addition, Vale estimates research and development expenses of up to US$250 (present value), which disbursements will occur in the short (44%) and medium (56%) term.

[1] Estimates of the reduction in greenhouse gas emissions associated with the use of iron ore briquettes were based on Vale's internal data, considering information from its own database and specific operating parameters. As these are estimates, the results may vary according to different application scenarios, technologies used and future operating conditions.

All financial data is presented in millions of United States dollar, unless otherwise stated

TR2 Increased shipping costs due to the carbon tax imposed by the International Maritime Organization (IMO)

Transition risk category	Time horizon	Concentration of business activities vulnerable to this risk in the value chain	Main items potentially impacted in the Financial Statements
Political and legal – Carbon regulation	Medium and long term	Indirect exposure of the Iron Ore Solutions business to the IMO's proposed universal tax on international shipping emissions	• Cost of goods sold and services rendered (Note 6a to the Financial Statements) • Research and development expenses

a) Nature of risk

The International Maritime Organization is implementing measures to reduce GHG emissions from international shipping, which may significantly impact costs related to Vale's distribution chain. These measures may include stricter regulations on the use of fuels and technologies, as well as the implementation of universal carbon tax mechanisms for the maritime sector.

b) Mitigation or adaptation efforts

Vale seeks to mitigate the impacts of this regulation through its **Ecoshipping**, program, which aims to reduce GHG emissions from the fleet of ships used to transport its products (Scope 3). Given the challenges facing the international shipping sector, in which carbon emissions are hard to abate due to its dependence on fossil fuels, the Company is investing in the development and adoption of innovative low-carbon technologies, in line with the ambitions set out by the International Maritime Organization.

Espírito Santo (ES), Brazil – Port of Tubarão receives the world's first ore carrier equipped with rotor sails. The ship Sea Zhoushan is a Guaibamax

Ecoshipping program's decarbonization focus areas, which demonstrate the Company's resilience

New Construction of advanced, energy-efficient vessels

Objective: Energy-efficient fleet offering high transportation volumes and economies of scale.

The next-generation Guaibamax ships will be equipped with rotor sails and multi-fuel tanks, and they will be designed to adapt to low-carbon fuels. These combined technologies have the estimated potential to reduce GHG emissions by up to 23%.

Retrofitting to improve energy efficiency

Rotor sails: wind is used as auxiliary propulsion to generate fuel savings of up to 6% and CO_2 an estimated reduction in CO_2 emission reductions of up to 3,000 metric tons per ship per year.

Frequency inverters: electronic devices that control the speed of electric motors can generate a fuel use reduction in the order of 1.6–2.4% and an estimated reduction in CO_2 emission reduction of up to 2,256 metric tons per ship per year.

High-performance paints: state-of-the-art ship hull coatings are used to reduce friction and increase vessel efficiency by 2.7–4.0%, with an estimated potentially cutting CO_2 emissions by up to 3,759 metric tons per ship per year.

Competitive alternative fuels

Alternative fuels: biofuel trials have been carried out.

Multi-fuel tanks: Vale conducted a project together with DNV to study the applicability of Type B tanks compatible with Liquefied Natural Gas (LNG), methanol, ethanol and ammonia. The project has an estimated potential to reduce GHG emissions by 40–80%.

The new Guaibamax ships have dual fuel capability. They can use methanol as an alternative to bunker fuel and are designed for future adaptation to ethanol, LNG or ammonia.

All financial data is presented in millions of United States dollar, unless otherwise stated

c) Current financial effects

Carbon pricing: By the end of the 2024, the IMO had not yet approved the pricing mechanism and therefore there were no financial impacts in the current year as a result of this regulation.

Mitigation of GHG emissions related to international shipping: Vale incurred in research and development expenses associated with the Ecoshipping program, which aims to reduce emissions in shipping through new technologies designed to promote energy efficiency, gains in scale in shipping volumes and the use of less carbon-intensive fuels. These expenses resulted in an impact of US$17 in the income statement and in the statement of cash flows in 2024.

d) Anticipated financial effects

Carbon pricing: In April 2025 (subsequent event), the IMO's Marine Environment Protection Committee approved a set of regulatory measures establishing a maritime fuel standard and GHG emissions pricing mechanism for international shipping, which will be effective as of 2027.

Based on the recent approval of these measures, the Company will reassess the scenarios and financial impacts anticipated in the medium and long term during its strategic planning review, and it expects that the GHG emissions pricing mechanism will result in an increase in freight costs. For reference, Vale's shipping costs totaled, US$4,749 in 2024 (see Note 6a to the Financial Statements).

Mitigation of GHG emissions related to international shipping: As part of the Ecoshipping program, the Company intends to invest in solutions aimed at decarbonizing the fleet of vessels serving the Company. These investments will be recognized as research and development expenses in the income statement and will represent payments in Vale's statement of cash flows. The projections consider an impact of approximately US$19 at present value, with 39% in the short term and 61% in the medium term.

TR3 Failure to meet the 2030 carbon target for Scopes 1 and 2 (market-based) emissions reductions; and increased scrutiny of voluntary commitments and GHG reductions, including but not limited to Scope 3 emissions reductions

Transition risk category

Reputational – Failure to meet 2030 carbon target

Reputational – Increased scrutiny of voluntary commitments and GHG reductions, including but not limited to Scope 3 emissions reductions

Time horizon

Reputational (2030 Target) – Medium term

Reputational (Scope 3 Compromises) – Long term

Concentration of business activities vulnerable to this risk in the value chain

Exposure to this risk could lead to a loss of confidence among stakeholders throughout the Company's value chain, as presented in the Value chain section 4 – Business Model and Value Chain.

Main items potentially impacted in the Financial Statements

- Provisions associated with the Company's decarbonization targets
- Operating expenses

a) Nature of risk

Failure to meet the voluntary target for reducing Scopes 1 and 2 (market-based) emissions by 2030 could impact the Company's credibility among some stakeholders, lead to lower ESG ratings, hinder access to financing and harm Vale's reputation.

Within the Scope of the voluntary Scope 3 reduction target, there is a risk of increased scrutiny of voluntary commitments and GHG emission reductions. This could impact investors' and stakeholders' perceptions of Vale's climate strategy and expose the Company to climate litigation.

b) Mitigation or resilience efforts

Vale has been communicating its progress and achievements in its decarbonization journey, including 100% consumption of renewable electricity in Brazil, which has underpinned its reduction in Scope 2 emissions (market-based), and the complete replacement of fuel oil with natural gas in all its pellet plants. It has also been communicating its efforts, investments, challenges, risks and opportunities involved in solutions to cut its Scopes 1 and 2 (market-based) emissions.

As well as monitoring and transparently reporting on the performance and progress of its goals, Vale has been engaging and establishing key partnerships to achieve its targets, as detailed in the mitigation efforts section regarding TR1.

In 2024, Vale's Scopes 1 and 2 (market-based) emissions were down 26.9% from the 2017 base year (section 10), primarily due to lower volumes and a change in production mix compared to the base year, while also reflecting improved operating performance and lower Scope 2 (market-based) emissions because of higher relative consumption of renewable power sources. The long-term trend makes it clear that the Company is reducing its emissions.

Mitigation efforts related to reducing Scopes 1, 2 and 3 emissions are presented in the descriptions of initiatives to mitigate TR1 and TR2 risks.

c) Current and anticipated financial effects

The timeline for the targets is linked to future reporting periods and, therefore, there was no direct impact from this risk in 2024. However, the current financial effects described in risks TR1 and TR2 represent efforts that contribute to the achievement of the Company's targets and are therefore also related to this risk. The progress achieved as of December 31, 2024, for each of the Company's targets is disclosed under the topic "climate-related targets" in section 10 – Metrics and Targets.

If this risk materializes, the Company's reputation could be affected, potentially resulting in impacts such as reduced sales, increased cost of capital, among others. Due to the level of uncertainty involved in measuring the projected financial effects of this risk, the Company concluded that any quantitative estimate would not constitute relevant information. Nevertheless, the projected financial effects described in risks TR1 and TR2 represent efforts that contribute to the achievement of the Company's targets and are therefore also related to this risk.

All financial data is presented in millions of United States dollar, unless otherwise stated

PR1 Intensification of extreme weather conditions, impacting operating sites, the production chain and communities

Category

Acute and chronic physical risks

Time horizon

Long term

Concentration of assets vulnerable to physical risks

The Company's property, plant and equipment, which are mainly located in Brazil and Canada, are vulnerable to physical risks resulting from extreme weather events. Further details on the composition of Vale's property, plant and equipment are presented in Note 19 to the Financial Statements. The assessment of the potential impacts arising from this risk also considered possible effects associated with dam failures. Information on Vale's dam safety can be found on the Company's specific webpage, (**ESG – Dams**) and in the 2024 (**Integrated Report**).

Main items potentially impacted in the Financial Statements

- Operating revenue (Note 5b to the Financial Statements)
- Cost of goods sold and services rendered (Note 6a to the Financial Statements)
- Expenses due to operational stoppages (Note 28 to the Financial Statements)
- Impairment and write-offs of non-current assets (Notes 19 and 20 to the Financial Statements)
- Property, plant and equipment (Note 19 to the Financial Statements)

a) Nature of risk

Vale is exposed to risks arising from extreme weather events, such as intense rainfall, winds, floods, prolonged droughts and severe temperature variations, which may impact its operations, logistics chains and the lifespan of its infrastructure assets.

In particular, rainfall above the historical average may cause flooding in operating sites, hindering or temporarily halting mineral extraction, transportation and processing activities, as well as the increase in water levels in the Company's dams and tailings storage facilities. Similarly, long periods of drought may impede the containment of particulate matter and increase the risk of fires in areas adjacent to operations.

Such extreme events may result in increased operating costs and the need for additional investment in containment and drainage systems.

In its Energy Transition Metals operations, the Company faces challenges in Canada stemming from the extreme weather conditions typical of the regions in question, including heavy snowfall, ice storms and prolonged periods of severe cold. These conditions can cause logistical restrictions and damage to infrastructure, especially in assets located in remote areas. In addition, the freezing of equipment and roads can negatively affect production and distribution schedules.

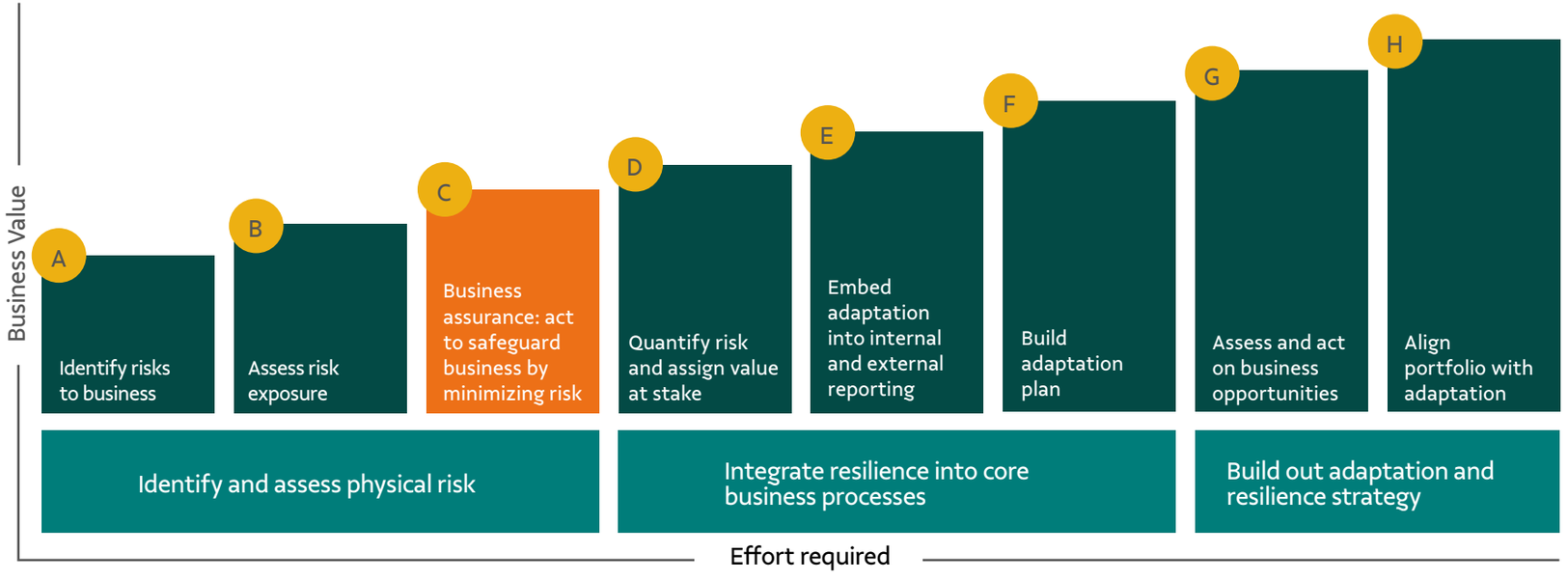
b) Adaptation and resilience efforts

Vale continuously monitors climate indicators and adopts preventive and adaptative measures, including the incorporation of climate data into its operational risk models, with the aim of mitigating the financial and operational impacts resulting from extreme events.

The Company's operational teams manage short-term climate adaptation efforts by implementing specific rainy and dry season plans, as well as measures within the overall management plan. These plans are informed by data and analysis from meteorology teams and, when available, weather radar. The aim is to promote the safety of people, the environment and the Company's production processes. Constant updates to these rainy and dry season plans make it possible to adapt to the chronic impacts of climate change on the Company's assets.

The physical risk analyses carried out to date do not have the level of maturity required to change the Company's strategy and business model. However, given the evolution of techniques and a growing understanding of the vulnerability of the Company's assets, this position is susceptible to change in the short or medium term.

Vale is seeking to evolve in its assessment of climate change risks throughout its business model. As an owner and operator of assets in many locations and given the complex nature of climate change-related risks, the Company is determining the appropriate approach for integrating climate risks into its operations, projects and strategy. Using the "Business Leaders Guide to Climate Adaptation and Resilience," published by the World Business Council for Sustainable Development (WBCSD), as a reference, the Company is transitioning to stage C, titled "Business assurance – Act to safeguard the company's infrastructure, supply chain and operations." (See the figure below.)



In the medium term, Vale intends to monitor current risks and assess new ones, as well as designing appropriate adaptation measures. The adaptation measures to be implemented will be carried out in a timely manner, varying from risk to risk and from location to location, taking into account the changing frequency and intensity of climate events.

Studies that will support the assessment of the impacts of climate change are underway. The Company expects that these studies will support the assessment of potential impacts, such as landslides along railroads and impacts on the water balance in river basins in Brazil.

In the medium term, the Company will, if necessary, update its operational and business risks for different climate scenarios, as well as including new risks arising from changing climate patterns, if applicable. Risks or associated controls that are significantly impacted will be part of the asset adaptation plan.

In the long term, efforts are aimed at ensuring the adoption of international best practices; continuously updating climate risks facing operations and projects; conducting new climate simulations when necessary; and monitoring compliance with adaptation plans.

c) Current financial effects

The Company did not identify any material financial impacts due to weather events in 2024.

d) Anticipated financial effects

Potential impacts include increased expenses due to equipment damage and loss, rendering production unfeasible, operational interruptions, loss of productivity and increased maintenance costs due to unscheduled downtime. Based on the current stage of analysis related to physical risks and the level of uncertainty involved in measuring potential effects, the Company concluded that any quantitative estimate would not be relevant information.

Property, plant and equipment related to the Iron Ore Solutions and Energy Transition Metals segments have a higher degree of exposure to physical risks arising from climate change. The carrying amount of these assets as of December 31, 2024 were US$24,367 and US$13,309, respectively. Due to the nature of Vale's operations, in which investments in capacity replacement are constantly needed, the carrying amount of the assets is deemed a reasonable proxy to their replacement costs.

The extreme weather events may result in operational shutdowns, impacting the Company's production volume and, consequently, decreasing the operating revenue and the associated variable costs. For reference, a 5% reduction in the volumes sold of Iron Ore Solutions and Energy Transition Metals products would have an impact of US$1,234 or 8.3% in relation to Vale's adjusted EBITDA for the year ended December 31, 2024, which totaled US$14,840 (Note 5a to the Financial Statements).

Physical risks

Implementation of Global Industry Standard on Tailings Management (GISTM)

Vale has adopted the Global Industry Standard on Tailings Management (GISTM), launched in 2020 as an initiative of the United Nations Environment Program, the Principles for Responsible Investment (PRI), and the International Council on Mining and Metals (ICMM). . Its main objective is to ensure zero harm to people and the environment by establishing a global benchmark to achieve a high standard of social, environmental and technical management, prioritizing the safety of tailings storage structures throughout all phases of their life cycle, including planning, design, operation and post-closure. The standard includes requirements related to understanding climate factors and their uncertainties, increasing resilience to climate change, and assessing and regularly updating management and adaptation needs.

Opportunities related to climate change

OP1 Increased demand for high-quality and more efficient products and agglomerates with the potential to reduce GHG emissions

Business activities aligned with the opportunity	Time horizon	Main items potentially impacted in the Financial Statements
Exposure of Iron Ore Solutions business	Short, medium and long term	• Operating revenue (Note 5b to the Financial Statements)

a) Nature of opportunity

Vale anticipates growth in global steel demand over the next few years, driven by factors such as urbanization and economic expansion in emerging markets. While steel production in China is expected to gradually decline, this reduction will likely be offset by growth in the Middle East, India and Southeast Asia. Thus, demand for iron ore in the seaborne market is projected to remain stable at around 1.55 billion metric tons per year[1].

Regarding the Company's value chain, the increasing adoption of direct reduction steel production processes will require high-grade iron ore. This shift aligns with new technologies that utilize less carbon-intensive energy sources, including green hydrogen in the long term (Scope 3). As a result, the mining and steel supply chain will need to be redesigned, with steel plants relocating to regions that have competitive access to renewable energy.

b) Adaptation to business model

Mega Hubs

The Company's Mega Hubs represent a strategic opportunity to meet the growing demand for high-quality, more efficient iron ore products and agglomerates. These industrial centers are designed to offer solutions that enable the production of iron and steel with lower carbon intensity, promoting the use of raw materials with a higher iron content and lower levels of impurities, which result in lower GHG emissions in the steelmaking process. By integrating the production chain in regions with access to sustainable energy and optimized logistics infrastructure, Mega Hubs will enable the production of intermediate products such as hot briquetted iron (HBI), leading to greater energy efficiency and helping cut emissions in steelmaking processes. Accordingly, this initiative has the potential to position the Company as a strategic partner in its clients' transition to production models with a lower climate impact, capturing the opportunities associated with growing demand for more sustainable solutions in the global steel industry.

In addition, the Company is committed to offering integrated and competitive solutions, in line with the sector's transformations, and a high-quality portfolio, including agglomerates compatible with the energy transition, such as briquettes, presented in the topic about business model adaptation efforts as TR1 risks mitigation.

The Company has been entering into agreements and partnerships for the construction of Mega Hubs, industrial complexes where iron ore concentration and agglomeration

[1] Information based on internal data from Vale.

plants will be built. These industrial centers are planned for locations such as Oman, the United Arab Emirates, Saudi Arabia, the United States and Brazil. They will include logistics services, iron ore processing and the manufacture of intermediate products such as HBI, optimizing global supply chains.

Mega Hubs

The steel industry's transition requires the reconfiguration of its business model, promoting integration between various agents in the production chain and the use of cleaner and more competitive energy sources. The Mega Hubs model stands out for aligning industrial production with a low-emission strategy, fostering greater cooperation between companies, sectors, investors and countries. In 2024, Vale entered into partnerships for the construction of Mega Hubs, notably:

(i) an agreement with Jinnan Iron & Steel Group (Jinnan Group) to build an iron ore concentration plant in Sohar, Oman. This project involves an initial investment of more than US$600. Vale will allocate US$227 to connect the plant to its agglomeration facilities, while Jinnan Group will invest approximately US$400 to build and operate the plant; and

(ii) a partnership with Green Energy Park, an initiative that could create an open platform for international partnerships, through which global steel companies could acquire and produce HBI in Brazil.

Circularity in mining – Waste to Value program

The Company has incorporated emerging opportunities into its operations as part of its long-term strategy, aligning itself with the principles of the circular economy. Vale's circular mining program, called Waste to Value, aims to generate value through the reuse of materials, promoting the reprocessing of tailings and reduction of waste rock piles, with a focus on optimizing the use of mineral resources, mitigating environmental impacts and sharing value with communities.

The program's main objectives include expanding ore extraction from existing stockpiles and tailings ponds using new technologies, optimizing mineral processing to reduce tailings and waste rock, and developing initiatives to generate coproducts.

This initiative has already identified more than 150 circular economy initiatives in mining, including the following **highlights:**

Reprocessing of tailings
Project: Gelado
Location: Carajás, Pará

The Gelado Project plans to produce more than 80 million metric tons of high-quality pellet feed[1] by 2035, containing 63% iron, using technologies to take advantage of tailings stored in tailings ponds. This is recovered by electric dredging, sieved and pumped into a magnetic separation and filtering circuit, where the pellet feed is produced. As of December 31, 2024, the Company had a balance of US$308 in property, plant and equipment relating to the Gelado Project.

The resulting product feeds Vale's pellet plant in São Luís, Maranhão. Thanks to the high quality of the pellets produced there, our steel clients can reduce their carbon emissions.

The sustainable nature of the project is reinforced by the use of 100% electric dredgers, as well as electric pumps, which use purchased electricity backed by renewable energy certificates instead of fossil fuels such as diesel.

In 2024, through its circular solutions program, Vale produced around 12.7 million metric tons of iron ore from tailings and waste rock, representing 4% of total iron ore production in the same period. The program's objectives include expanding ore extraction from existing stockpiles and tailings ponds, optimizing mineral processing to reduce the amount of tailings and waste generated, and developing initiatives to create coproducts such as sand and building blocks. With the support of robust governance, from the Executive Committee to technical teams in operations, Vale plans to obtain 10% of its iron ore production from circular sources by 2030.

c) Current and anticipated financial effects

The briquettes initiative, which is the Company's strategic response to adapt its business model to this opportunity, is in the research and development phase. Consequently, there was no material impact on revenue in 2024.

Due to the maturity level of the briquettes initiative and the resulting uncertainties associated with the materialization of its financial impacts in future periods, Vale concluded that any quantitative estimate would not be relevant information.

Because they are less carbon intensive products, briquettes can capture a higher premium in the market. As a reference, an increase of US$1 per ton in the realized premium for Iron Ore Solutions products would have represented an increase of US$239 or 1.6% in relation to the adjusted EBITDA of that segment in the year ended December 31, 2024, which totaled US$15,085 (see Note 5a to the Financial Statements).

The current and anticipated financial effects regarding expenses associated with the development of this opportunity are described in the TR1.

[1] Fine ore obtained through the flotation process, suitable for use in steelmaking operations.

All financial data is presented in millions of United States dollar, unless otherwise stated

OP2 Growing demand for nickel, copper and other energy transition metals

Business activities aligned with the opportunity

Exposure of Energy Transition Metals business

Time horizon

Short, medium and long term

Main items potentially impacted in the Financial Statements

- Operating revenue (Note 5b to the Financial Statements)
- Cost of goods sold and services (Note 6a to the Financial Statements)
- Property, plant and equipment (Note 19 to the Financial Statements)

a) Nature of opportunity

The energy transition will require a global increase in the deployment of low-carbon technologies, driving growing demand for critical metals and minerals. Copper plays a crucial role in the production of electric vehicles, solar energy systems and wind turbines, while nickel is indispensable for electric vehicle batteries.

Between 2024 to 2031, copper demand is expected to grow at a compound annual rate of 11.8% in the electric vehicle segment and 7.4% in the renewables area, resulting in total copper demand of approximately 37.7 million metric tons in 2031. By the same year, the global electric vehicle penetration rate is forecast to reach 47%, leading to sales of approximately 49 million metric tons. This and other factors will cause nickel demand to rise at a compound annual rate of 5.2% per year from 2024 to 2031, when the total sales volume will reach an estimated 4.9 million metric tons[1].

In response to this growing demand for energy transition metals, Vale is seeking to position itself strategically, consolidating its assets to enable long-term partnerships and investments, deliver a robust pipeline of nickel and copper projects, and unlock the value potential of this segment for the energy transition.

b) Adaptation to business model

New Carajás Program

In February 2025 (subsequent event), Vale announced the New Carajás Program in the state of Pará, Brazil, which is focused on maintaining and increasing iron ore volumes and raising copper production. The initiative projects investments of US$13 billion over five years (2025–2030), in line with Vale's guidance, in the Carajás region of Pará. The program will expand mining in Carajás by means of existing mines, expansions and new targets, thereby boosting the production of high-grade iron ore, which is critical to green steel production. Iron ore production in Carajás is expected to reach 200 million metric tons per year by 2030. In the case of copper, the region's output is forecast to grow by 32%, to around 350,000 tons a year.

Strategic partnership in Energy Transition Metals business

In April 2024, the Company finalized a transaction with Manara Minerals for the sale of a 10% stake in Vale Base Metals for US$2,455. The proceeds were fully capitalized in VBM, reducing Vale's stake to 90% while maintaining control over the business.

This strategic partnership, first announced in July 2023, will accelerate the generation of value from the first-class assets and projects that VBM has in its portfolio, enabling it to support the global energy transition at a faster pace and on a larger scale in the main jurisdictions where it operates. Over the next 10 years, VBM plans to invest in new projects in Brazil and Canada.

c) Current and anticipated financial effects

Due to the complexity and level of uncertainty involved in determining the percentage of the Energy Transition Metals segment's results that are specifically linked to this opportunity, the Company concluded that any quantitative estimate of current and anticipated financial effects would not be relevant information.

Growing demand for metals critical to the energy transition could result in rising copper and nickel prices. As a reference, a 5% increase in realized nickel and copper prices would have represented an increase of US$245 or 16.7% in relation to the adjusted EBITDA of the Energy Transition Metals segment in the year ended December 31, 2024, which totaled US$1,453 (see Note 5a to the Financial Statements).

One of the objectives of the New Carajás Program is to expand copper production, which would result in higher production volumes for this product increasing the operating revenue and the associated variable costs For reference, a 5% increase in realized copper volumes would have represented an increase of US$82, or 6.8%, in relation to the adjusted EBITDA of the Metals for Energy Transition segment.

Sudbury (Ontário), Canadá – Refinaria de níquel Copper Cliff

[1]Source: Information based on internal data from Vale, which considers market information and industry references.

All financial data is presented in millions of United States dollar, unless otherwise stated

Significant judgments and uncertainties

The following assumptions were used to quantify the anticipated financial effects of carbon taxes on the cash flows forecast in the Company's strategic planning:

1) Internal carbon pricing in strategic planning

The internal carbon price is one of the main strategic tools used by the Company for decision making, allowing it to assess the global and geographically dispersed distribution of operating and client markets. Integrated into the scenario analysis and strategic planning cycle, carbon pricing helps evaluate the financial impacts on the value of the business over time. In the 2024 cycle, three main effects were analyzed: (i) direct costs avoided through decarbonization; (ii) the net CapEx and OpEx impacts associated with the Scopes 1 and 2 (market-based) reduction targets for 2030; and (iii) the potential increase in demand for agglomerated iron ore products, such as pellets and briquettes, driven by emission limit regulations and the search for lower-emission raw materials in the steel industry.

Decarbonization capital allocation: Carbon prices are incorporated into Vale's Marginal Abatement Cost Curve as a shadow price, considered as part of capital investment analysis and decision making. The consideration of existing and potential carbon costs within the net present value of potential projects ensures the integration of associated risks and the proper prioritization of initiatives that align with the Company's decarbonization ambitions.
For more details, see section 10, which describes the methodology and assumptions used to calculate carbon pricing under different climate scenarios.

2) CO_2e premium trend in strategic planning

Iron ore supply and demand are expected to be significantly influenced by measures to reduce carbon emissions and the transition to more sustainable practices. Given global efforts by countries and industries to reduce carbon emissions, the trend is for the steel industry to gradually adapt to this new situation. With regard to energy transition metals, the Company foresees an increase in demand for critical metals, such as nickel and copper, driven by growing production of electric vehicles, battery storage systems and other technologies.

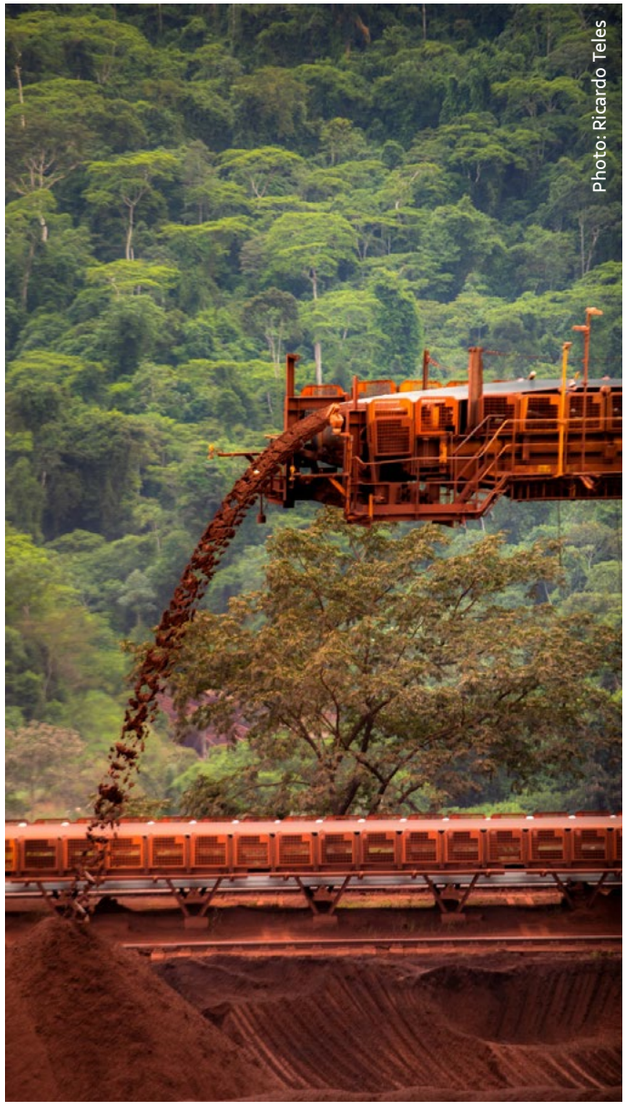
The Company expects steel production to partially shift from blast furnaces to less carbon intensive methods, such as electric arc furnaces and direct reduction processes. These methods will require high-grade iron ore with iron content of 67% or more and pellets suitable for direct reduction, particularly in Europe, the Middle East and North Africa, and North America.

Even countries that rely heavily on blast furnaces, such as China, or those expanding steel production using this traditional model, such as India and Southeast Asian nations, are likely to adopt measures to reduce carbon emission intensity in pig iron production. This can be achieved by increasing the use of iron ore pellets, which are more efficient and generate lower emissions compared to sintered ore. Furthermore, these countries are expected to use iron ore fines with higher iron content, contributing to a more efficient and cleaner production process. By implementing these measures, they can enhance the sustainability of their steelmaking operations while meeting high production demand.

On the supply side, mining companies will need to invest heavily in sustainable mining practices and technologies to comply with environmental regulations and meet clients' expectations. Vale is closely monitoring these transformations, adjusting its product portfolio and forming strategic partnerships with clients to develop joint solutions. These initiatives aim to maximize operational efficiency and position the Company in line with the sector's global sustainability goals.

3) Technological factor included in mitigation efforts and business model adaptation

The Company faces significant technological uncertainties when seeking to align its business models with the transition to a low-carbon economy, mainly due to the maturity of emerging technologies, many of which are still in the development or pilot testing phase. In addition, high implementation costs and scalability challenges, especially in remote regions, make large-scale adoption difficult. Another relevant factor is the speed at which new technologies emerge.



Parauapebas, Pará (PA), Brazil

All financial data is presented in millions of United States dollar, unless otherwise stated

9. Building resilience through analysis of climate change-related scenarios

The Company conducts scenario analysis, including scenarios based on the latest projections of the Intergovernmental Panel on Climate Change (IPCC) and the scenarios of the International Energy Agency (IEA), which are respectively applied to the identification, classification and quantification of physical risks related to climate change and transition risks and opportunities.

Vale selects climate scenarios with internationally recognized models, developed through robust research and projections validated by the scientific community. This provides a reliable foundation for evaluating future climate conditions and potential economic effects. The Scope of these scenarios is carefully considered to enable a comprehensive assessment of the Company's resilience to potential climate impacts. Furthermore, the geographical Scope is tailored to address specific needs and the expectations and concerns of stakeholders, underscoring the Company's commitment to transparency and effective risk management.

The table below summarizes the classification levels of each risk and opportunity identified in each climate scenario.

- **TR1** Regulations related to GHG emissions
- **TR2** Increase in freight costs due to carbon taxation imposed by the IMO
- **TR3** Failure to meet the 2030 carbon target and increased scrutiny over voluntary commitments and GHG reductions
- **PR1** Intensification of extreme weather conditions
- **OP1** Increased demand for high-quality and more efficient products and agglomerates, with potential for GHG emissions reduction
- **OP2** Growing demand for nickel, copper and other energy transition metals

	Declared Policies		Realistic Energy Transition (Base Case)		Zero-Net Emissions	
	2025	2050	2025	2050	2025	2050
TR1	Low	Low	Low	Medium	Low	High
TR2	Low	Medium	Low	High	Low	High
TR3	Low	Low	Low	Medium	Low	High
OP1	Low	Low	Low	Medium	Medium	High
OP2	Low	Low	Low	Medium	High	High

	SSP1-2.6 Scenario		SSP2-4.5 Scenario		SSP5-8.5 Scenario	
	2025	2050	2025	2050	2025	2050
PR1	Low	Medium	Low	Medium	Low	High

Risks: *green indicates low, orange indicates medium, and red indicates high.*
Opportunities: *red indicates low, orange indicates medium, and green indicates high.*

Physical risks

In the 2024 financial year, Vale's current operating sites were assessed for the vulnerability of assets exposed to physical risks, establishing a basis for preparing and implementing climate adaptation plans.

The assessment of climate impacts considered the location of the assets, the category of the sites and climate modeling based on the SSP1-2.6, SSP2-4.5 and SSP5-8.5 scenarios. The data used was extracted from versions 5 and 6 of the Climate Model Intercomparison Project (CMIP), recognized as the best available technology for analyzing the effects of climate change, due to its wide acceptance in the market.

Scenario analysis	
Macroeconomic trends	Population growth, technological development, economic development, and a broad spectrum associated with energy, land use and GHG emissions, aligned with Intergovernmental Panel on Climate Change scenarios.
Assumptions	SSP1-2.6, SSP2-4.5 and SSP5-8.5 scenarios, using data from versions 5 and 6 of the Climate Model Intercomparison Project.
Time horizon	The assessment covered different periods: baseline (1986-2005), 2020, 2025, 2030, 2040, 2050, 2075 and 2100.
Scenario analysis exercise	The scenario analysis took place during 2024.
Scope of analysis	Underground and open-pit mines, railroad loading terminals, port terminals, mineral processing plants, power generation assets and a breakdown of railroad concessions.
Response to the effects identified in the analysis	The difference between the scenarios is the frequency of climate events. However, the Company's integrated operating model provides adaptive capacity for managing operational disruptions, being resilient to withstand an increase in the frequency of climate events through greater investments in adaptation costs

All financial data is presented in millions of United States dollar, unless otherwise stated

Sensitivity analysis for physical risks

In the 2024 financial year, the Company recognized impairment losses on certain nickel assets, which are not directly related to climate change effects. Further details, including the respective triggers and amounts, are presented in Note 20a to the Financial Statements.

The potential financial impacts arising from physical risks associated with climate change were considered in the assessment of the Company's critical accounting estimates, including in the measurement of the recoverable value of assets, where Vale assessed scenarios including potential operational disruptions caused by an increase in the frequency and/or severity of extreme and chronic weather events. However, the complexity of physical risk modeling, the continuous evolution of the assessment process and the possible identification of additional risks may result in material impacts on the Company's results and on the accounting balances of assets and liabilities in future periods.

Significant judgments and uncertainties

There are uncertainties in climate projections, both in the short and long term, mainly due to:

I. Future GHG emissions: Vale uses multiple reasonably possible emissions scenarios and climate models that provide a range of projections.

II. Climate model inaccuracies: No climate model can perfectly represent the climate. The analyses used seek to reduce uncertainties through bias adjustments, statistical treatments when combining projections from different climate models, and summarizing exposure across different time horizons.

III. Surrounding conditions: The impact on the Company's operations of various climatic threats, such as landslides, floods and wind, is affected by land use outside the boundaries of the Company's sites. For the current analysis, current conditions were considered.

Transition risks and opportunities

The Company qualitatively assesses a range of climate scenarios in line with well-established frameworks, and considers the external environment to design a strategy and test the resilience of its portfolio, including scenarios presented by the International Energy Agency, such as the following:

I. The Announced Pledges Scenario (APS), aligned with the Paris Agreement.

II. The Stated Policies Scenario (STEPS).

III. The regulatory scenario aligned with an emissions reduction trajectory aimed at limiting the global temperature increase to below 1.5°C by 2100 and achieving net-zero emissions by 2050.

The International Energy Agency has developed medium- and long-term energy projections using detailed, regularly updated and internationally recognized tools[1]. The Global Energy and Climate Model reflects the agency's expertise in energy systems and climate policies by generating detailed scenarios by sector and region. The scenarios are updated periodically, based on reports developed by the agency, which consider sector-specific energy demand and supply, technological developments, public policy scenarios and economic growth projections. The scenarios are developed to support decision making by presenting emission trajectories, estimates of necessary investments, technology deployment forecasts and implications for energy security. Regarding climate policies, each scenario seeks to reflect different levels of ambition related to global efforts to limit the increase in average global temperature by reducing greenhouse gas emissions. For these reasons, the Company considered it relevant to include these scenarios as part of its annual strategic and financial planning cycles, contributing to the monitoring of trends that may impact the direction of its strategy and base case.

The base case is the starting point for the development of Vale's business strategy and involves medium- and long-term projections related to the global economy and sectors of relevance to the Company, as well as market analysis concerning demand, supply and prices. The base case scenario called "Realistic Energy Transition" is aligned with the International Energy Agency's Announced Pledges Scenario (APS). Since this scenario was formulated, its macroeconomic assumptions have been monitored annually, including a review of climate policies implemented and under implementation, as well as regional carbon price curves and legal requirements related to GHG emissions.

Scenario analysis	
Macroeconomic trends	The scenarios are based mainly on four macro trends: (i) economic growth; (ii) demographics; (iii) geopolitics; and (iv) the pace of the energy transition and decarbonization.
Assumptions	The adopted assumptions are based on the International Energy Agency's scenarios, which incorporate projections related to population growth, economic growth, carbon prices, fossil fuel prices and subsidies, as well as technical and economic assumptions. All the assumptions were based on the International Energy Agency's Global Energy and Climate Model.
Time horizon	Short, medium and long term, totaling 30 years (2025 to 2054).
Scenario analysis exercise	The scenario analysis took place during the Company's strategic planning cycle in 2022, and monitoring has occurred in every cycle since then.
Scope of analysis	The base case aligned with the "Realistic Energy Transition" scenario was used for the Iron Ore Solutions and Energy Transition Metals businesses.

[1] Source: IEA, Global Energy and Climate Model – Analysis, 2024.

All financial data is presented in millions of United States dollar, unless otherwise stated

The table below summarizes the impacts on the Company's strategy and business model in the event of the materialization of the Declared Policies and Net Zero Emissions scenarios, compared to the base case (Realistic Energy Transition).

	Scenario – Declared Policies	Scenario – Net-Zero Emissions
Impacts on strategy and business model	This scenario reflects policies in force and under development up to August 2024 and considers planned production capacity for clean energy technologies. The partial implementation and heterogeneity of climate policies may create competitive distortions between regions, resulting in trade barriers for markets with stricter policies TR1, whose effect in the medium and long term would be partially offset by lower production costs in regions where the Company operates. The possible implications of this scenario for sector climate policies would result in a lower impact on the cost of carbon-intensive inputs TR1 and international shipping TR2 due to less aggressive mechanisms and lower carbon prices. The gradual evolution of sectoral climate policies would allow for longer and smoother transition periods. The configuration of this scenario reflects a lower sense of global urgency regarding GHG emissions mitigation, reducing opportunities related to energy transition OP1 OP2 and limiting the direct regulatory pressure to comply with voluntary targets. As a result, the expectations of different markets and stakeholders could be divergent, partially compromising the Company's credibility among certain groups TR3.	This scenario reflects net-zero emissions from the energy sector by 2050, without offsets from other sectors. The intensification of global climate policies, such as more aggressive carbon pricing and stricter regulatory requirements, could accelerate the obsolescence of carbon-intensive assets, pressuring the Company to accelerate investments in decarbonization TR1 and review its product portfolio and operations to maintain access to markets OP1. Stricter climate policies arising from this scenario could materially increase Vale's freight costs due to higher carbon prices being able to require a review of logistics routes TR2. However, the base case already provides for the adaptation of the Company's business model, which could offset the impact through initiatives such as Mega Hubs OP1. Direct regulatory pressure to meet voluntary targets would intensify, as would scrutiny of the mitigation measures taken to reduce, offset and neutralize GHG emissions, including greater demands for transparency and traceability. Failure to meet voluntary targets could result in significant reputational and financial penalties for Vale TR3. The materialization of this scenario would result in greater investments in GHG emissions mitigation TR1 TR2. On the other hand, the opportunities related to the energy transition would be enhanced OP1 OP2.

Sensitivity analysis for transition risks

As previously mentioned, the Company recognized impairment losses on certain nickel assets, which are not related to climate change effects. Further details, including the respective triggers and amounts, are presented in Note 20a to the Financial Statements.

The potential financial impacts of climate change and the transition to a low-carbon economy were considered in the evaluation of the Company's critical accounting estimates, including impairment indicators. These impacts include possible reductions in demand for commodities due to changes in policies, the regulatory environment (such as carbon pricing mechanisms), and legal, technological, market or reputational factors. Given the complexity of modeling, the possible identification of additional risks, and the planning and execution of mitigation actions, transition risks may result in material impacts on the Company's results and the accounting balances of assets and liabilities in subsequent financial years.

Significant uncertainties

Carbon pricing – One of the main tools associated with climate scenario analysis is carbon pricing to identify transition risks and quantify their financial impacts.

In the 2024 financial year, Vale updated its carbon pricing approach, using climate scenarios and a survey of regulations related to economic mechanisms. This process involved developing regional carbon price curves and assessing current and forecast GHG emission limits, aligned with Nationally Determined Contributions (NDCs) and compliance requirements. This analysis covers the markets in which Vale and its value chain operate. The assumptions adopted by the Company are consistent with its Climate Policy, as presented in section 5 – Corporate Governance, in the corporative policies topic.

This approach aims to represent the global and geographically dispersed distribution of Vale's operational and client markets, while also ensuring that the carbon price analysis adequately reflects how its exposure to these costs may change over time. For application to the Company's base case, the curves were developed by analyzing regulated carbon markets, using sources such as the International Energy Agency's Announced Pledges Scenario, the World Bank and the United Nations Principles for Responsible Investment (UN PRI).

The curves are consolidated into two categories: Advanced Economies and Developing Economies.

Carbon price curves under "Realistic Energy Transition" scenario

Year	2030	2040	2050
Advanced economies	US$150	US$170	US$180
Developing economies	US$40	US$80	US$115

Uncertainties in climate scenario assumptions – demographic changes, the pace of the energy transition, geopolitical dynamics, the evolution of the supply chain, the future of mining, the risk of scenario volatility, technology and GHG emission restrictions in some countries

All financial data is presented in millions of United States dollar, unless otherwise stated

10. Metrics and targets

Climate change-related cross-sector metrics

Absolute gross greenhouse gas emissions

In the financial year ended December 31, 2024, Vale's total absolute gross GHG emissions were 467.05 million metric tons of carbon dioxide equivalent ($MtCO_2e$), considering biogenic emissions of Scopes 1 and 3. For Scope 2, the location-based approach was used.

The Company defined the targets based on the Scope 1 emissions, plus Scope 2 emissions (market based). The Company has not defined specific target for Scope 2 location based; however, the defined targets comprise a substantial portion of the total Company's gross combined emissions.

The Company discloses its absolute gross GHG emissions expressed in million metric tons of CO_2 equivalent ($MtCO_2e$), unless otherwise stated. For the purposes of quantifying its greenhouse gas inventory, the gases established by the Kyoto Protocol are considered: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs) and sulfur hexafluoride (SF_6).

Total GHG emissions – Scopes 1, 2 and 3:
In million metric tons of CO_2e

Financial year ended December 31, 2024

Category	Location-based	Market-based
Scope 1 emissions[1]	7.81	7.81
Scope 2 emissions	0.74	0.31
Total Scopes 1 and 2 emissions	8.55	8.12
Scope 3 emissions[1]	458.50	458.50
Total emissions	467.05	466.62

Calculation methodology – Scopes 1 and 2

The calculation of Scopes 1 and 2 emissions in Vale's inventory is carried out in a disaggregated manner, based on a combination of top-down[2] and bottom-up[3] approaches (by business unit and by type of equipment when available), using the mass balance and emission factors for each type of input and activity, and for each of the countries where the Company operates.

The Company collects and consolidates data from its operations to quantify its Scopes 1 and 2 emissions, such as fuel consumption, electricity, blasting, industrial process activities, boundaries of areas owned by Vale, areas where vegetation has been cleared and refrigerant gases. Some of this data is also used to calculate Scope 3 categories 1 and 3.

Direct and indirect emissions from waste and effluent treatment processes (such as landfills, biological treatment, composting and incineration), direct emissions from the combustion of acetylene in welding processes, and fugitive emissions from fire extinguisher gases are not registered, as they are considered immaterial to Vale's overall result.
In producing the inventory, various factors, such as mass and volume, are used to convert consumption into greenhouse gas emissions[4]. Every year, Vale updates its database, which includes information on the physical and chemical properties of the production processes and fuels used, such as density, lower calorific value and carbon content. These parameters are measured directly in an in-house laboratory, obtained from suppliers or based on technical references. The GHG emission factors for each type of emission source included in the inventory, the composition of electricity supplies and the percentage of losses in the transmission and distribution systems in the countries in which it operates, as well as the mix of renewable fuels and fossil fuels in the locations where it operates, are updated at the same intervals and obtained from technical references.

These GHG emission factors, as well as fuel properties and the composition of electricity generation sources in each country where Vale operates, are updated annually and are based on nationally and internationally accepted technical references, such as the GHG Protocol, IPCC, EPA, DEFRA and national inventories.

There were no changes to the aforementioned measurement approach in the current reporting period.

[1] Includes biogenic emissions: 0.44 for Scope 1 and 0.04 for Scope 3.
[2] This only considers energy supply in the respective country, without detailing how it is consumed.
[3] This identifies where and how emissions occur, including emissions of CO_2, CH_4, N_2O, CO, NOx and volatile organic compounds.
[4] Vale follows the GHG Protocol guidelines when selecting the emission factors used in the inventory calculations. The values considered for global warming potential ("GWP 100 years") were taken from the Fifth Assessment Report ("AR5") of the Intergovernmental Panel on Climate Change ("IPCC"). The Company assessed the impacts of the inventory update based on the IPCC's Sixth Assessment Report ("AR6") and concluded that the difference would not be material.

All financial data is presented in millions of United States dollar, unless otherwise stated

Scopes 1 and 2

Vale's operating sites are located in six countries: Brazil, Canada, Japan, Malaysia, Oman and the United Kingdom. The main operational and administrative activities are located in Brazil. As a result, the country accounted for 77% of the Company's location-based Scopes 1 and 2 emissions in 2024, or 6.3 $MtCO_2e$ in absolute emissions.

Scopes 1 and 2 emissions only represent Vale S.A. and its subsidiaries. The Company does not have operational control over any of its associates or joint ventures and, therefore, no disaggregated disclosures are provided.

The Company's direct Scope 1 emissions mainly stem from transportation and industrial processes that take place within its operational boundaries. In 2024, 7% of Scope 1 emissions were subject to emission limitation regulations, involving operations located in Canada, Japan and the United Kingdom.

Indirect Scope 2 emissions result from the purchase of electricity, steam, heating and cooling. These emissions are registered using two different approaches:

(i) The location-based approach, in which the emission factor is the average of the power generation emissions in each electricity system in which Vale operates and purchases electricity:

Location	Generation emission factor [gCO_2e/kWh]
Brazilian power grid	54.50
Canadian power grid – province of Manitoba[1]	1.90
Canadian power grid – province of Newfoundland and Labrador[1]	16.00
Canadian power grid – province of Ontario[1]	28.00
Japanese power grid	435.57
Malaysian power grid	631.05
Omani power grid	370.90
United Kingdom power grid[2]	207.07

(ii) The market-based approach, which quantifies Scope 2 GHG emissions using the specific emission factor associated with each generation source of purchased electricity.

Vale has power purchase agreements with renewable energy suppliers, as well as instruments to verify the origin of the power sources, enabling the quantification of Scope 2 emissions (market-based). These contracts guarantee competitive costs in the long term, as well as contributing to Vale's public commitment regarding Scope 2 emissions (market-based).

The Company's Scope 2 greenhouse gas inventory, under both approaches, is presented below by country where Vale has operations:

In million metric tons of CO_2e

Financial year ended December 31, 2024

	Location-based	Market-based
Brazil	0.42	–
Canada	0.04	0.04
Japan	0.01	0.01
Malaysia	0.04	0.03
Oman	0.22	0.22
United Kingdom	0.01	0.01
Total	**0.74**	**0.31**

In 2024, of the 0.74 million metric tons of CO_2e of location-based Scope 2 emissions, 38.17 million gigajoules (GJ) of energy were consumed in total, and 98.0% of this electricity came from power grids, while 75.7% came from renewable energy sources.

In Brazil, all the electricity purchased and consumed by Vale's operations via the power grid is from renewable sources. This renewable energy is secured through concession contracts for the Company's assets, as well as power purchase agreements. The renewable origin of this power has been verified through declarations from generators and renewable energy certificates, and audited by a third party to attest that the energy purchased is renewable.

In 2024, Scopes 1 and 2 emissions (market-based) covered by the 2030 Emissions Reduction Target[3], totaled 7.7 million metric tons of CO_2e, down 26.9% compared to the 2017 base year. This reduction is mainly due to a decrease in volumes and change in production mix compared to the base year, but also reflects improved operating performance and lower Scope 2 emissions (market-based) because of higher relative consumption of renewable power sources.

Scope 3

Vale's Scope 3 GHG inventory covers 9 of the 15 categories established by the GHG Protocol. The remaining categories are not reported, as they are either not applicable or not material. Many factors affect the assessment of whether to include Scope 3 categories. The main ones are: (i) significant changes in the Company's value chain; and (ii) significant changes in the Company's business model, activities or corporate structure.

Upstream categories register emissions associated with the production of materials and services purchased by the Company, as well as the transportation and distribution of inputs and products. In 2024, these categories represented around 3.3% of Vale's Scope 3 emissions. Downstream categories, which accounted for the other 96.7% of Scope 3 emissions, are linked to the processing of products sold by the Company – such as (i) Iron Ore and Pellets, (ii) Nickel, (iii) Copper, (iv) Cobalt and (v) Ferroalloys – as well as investments made in other entities.

[1] The Company considers the generation factors and used the National Inventory Report ("NIR") from a previous period. Vale assessed the impacts of the update of the factors according to the most recent NIR and concluded that the difference would not be material for reporting.
[2] The Company considers the generation factors and used the DEFRA (Department for Environment, Food & Rural Affairs) for the United Kingdom from the previous period. Vale assessed the impacts of the factor update and concluded that the difference would not be material for reporting.
[3] In order to align its climate strategy with scientific principles, Vale adhered to the recommendations of the SBTi Criteria and Recommendations (TWG-INF-002), Version 4.1 of April 2020. Vale's targets were calculated using the Science Based Target Setting Tool – Version 1.1. The targets for Scopes 1 and 2 were defined using the Absolute Contraction Approach, aligned with the scenario of limiting global warming to "well below 2°C". For Scope 1, in accordance with the GHG Protocol guideline, biogenic emissions were not included, and for Scope 2, the market-based accounting method was adopted.

All financial data is presented in millions of United States dollar, unless otherwise stated

Calculation methodology – Scope 3

Vale follows the GHG Protocol guidelines[1] for calculating Scope 3 emissions, along with the mandatory Scope 3 measurement framework in IFRS S2 paragraphs B38–B57. A combination of methods is applied to the calculations of the nine categories accounted for by the Company, including "average-data," "fuel-based," "distance-based" and "investment-specific." The method is selected in line with the availability and quality of data, the effort required to apply each method and the representativeness of the emissions from each activity throughout the value chain.

The Company collects and consolidates emissions data from its value chain. Data related to fuel and electricity consumption, used to calculate categories 1 and 3, is collected and analyzed on a monthly basis. Data concerning purchases of materials and services, capital goods, the quantity of products sold, business travel, employee transportation, transportation carried out by third parties and investments, among other items, is collected annually[2].

The GHG emission factors used in Scope 3 calculations are updated annually and are based on nationally and internationally accepted technical references, such as the GHG Protocol, IPCC, EPA, DEFRA, Ecoinvent and national inventories.

There were no changes to the aforementioned measurement approach in the current reporting period.

Vale's Scope 3 categories with material emissions are presented below, and category 15 is presented in accordance with IFRS S2 for GHG emissions stemming from company investments:

Financial year ended December 31, 2024

Category	
10 – Processing of sold products	434.65
15 – Investments	6.64
Other categories[2]	17.21
Scope 3 emissions[3]	**458.50**

[1] GHG Protocol Corporate Value Chain (Scope 3) – Accounting and Reporting Standard and Technical Guidance for Calculating Scope 3 Emissions.
[2] This includes GHG Protocol categories 1, 2, 3, 6, 7 and 9, as well as biogenic emissions of scope 3.
[3] The calculations consider global warming potential values ("GWP 100 years") taken from the IPCC AR5. The Company assessed the impacts of updating the calculations based on the IPCC AR6 and concluded that the difference would not be material.

Metrics based on the mining sector

Water management

Water is an essential input that cuts across all stages of the mining process, and its management is a critical factor for the sustainability of operations. Inadequate management of water resources can result in impacts on water availability and quality, legal penalties and loss of revenue due to the reduction or interruption of Vale's operations. In 2024, no significant environmental incidents were recorded that impacted water quality and resulted in formal actions, such as fines, penalties, or other regulatory measures.

Aware of the strategic importance of water for its operations and the growing risks associated with its scarcity, Vale adopts a preventive approach by assessing water stress in the river basins where it operates. Currently, among the Company's operating units, the Serra Norte – Carajás operation, located in the state of Pará, and the Itabira operation and the Fazendão and Timbopeba mines, in the Mariana operation, located in the state of Minas Gerais, are in areas of critical water stress (>100%). The Água Limpa operation, located in the state of Minas Gerais, is in an area with high water stress (75–100%).

Given the current scenario of water stress, it is important to consider the future impacts of climate change on water availability. Climate projections presented by the Multidisciplinary Digital Publishing Institute ("MDPI") indicate an increase in temperature and a reduction in precipitation in several regions of Brazil, especially in the northern region, where a large part of Vale's iron ore production is concentrated. These changes can increase pressure on water resources, intensifying events such as prolonged droughts and compromising the regularity of the water supply needed for operations. Therefore, the integration of climate and hydrological studies into water resource management is essential to anticipate risks, ensure the continuity of activities and strengthen the resilience of operations in the face of a scenario of increasing water scarcity.

The amount of water, in thousands of cubic meters, extracted from all sources for operational purposes and consumed in the Company's operations, is presented below:

Financial year ended December 31, 2024

Metric	Total (thousand m³)	% in regions with critical water stress	% in regions with high water stress
Volume of water withdrawn for operational purposes[4]	106,918.6	17.8%	0.5%
Volume of water consumed[5]	63,719.5	25.5%	0.8%

[4] Water withdrawn for operational purposes is the sum of water withdrawn for first use in any of the company's activities (surface water, groundwater, rainwater and external sources).
[5] Water consumed is the portion of water withdrawn for operational purposes that, after being used, is unavailable for other operational use (e.g., water retained in tailings, operational evaporation, etc.)

All financial data is presented in millions of United States dollar, unless otherwise stated

Calculation methodology

The assessment of the level of water stress in Vale's operations is based on indicator 6.4.2 – Level of water stress, prepared by the Food and Agriculture Organization ("FAO") of the United Nations, an internationally recognized methodology that enables more detailed analysis at the regional level and is more stringent, as it considers the scale of river basins. Until 2021, Vale conducted water stress assessments solely based on the Aqueduct Water Risk Atlas, developed by the World Resources Institute (WRI). Currently, the WRI methodology is used in addition to indicator 6.4.2.

Both approaches consider essential factors such as the total volume of freshwater withdrawn by the main user sectors, the availability of water resources for use and the ecological flow of river basins, which represents the minimum amount of water needed to preserve aquatic ecosystems.

In addition to these criteria, variables such as the period of analysis, climatic conditions, vegetation cover, territorial scale, land use and occupation and water demand also directly influence the results obtained. The main distinction between the methodologies lies in the scale of application: while the WRI offers a global view, the FAO methodology allows for a more detailed analysis at a regional level, being more restrictive as it considers the scale of river basins. Vale therefore adopts the FAO methodology, as it offers greater granularity and technical rigor in identifying areas with potential water stress.

The Level of Water Stress of indicator 6.4.2 – Level of water stress is calculated using the equation:

$$\text{Water stress} = [QW / (QA - Qref)] \times 100\ [\%]$$

Where QW is the total flow of water withdrawn in the basin, QA is the total average flow of available water, and Qref is the reference flow according to applicable legislation.

The classification criterion follows the following scale: Nil: water stress < 25%, Low: 25% ≤ water stress < 50%, Medium: 50% ≤ water stress < 75%, High: 75% ≤ water stress < 100% and Critical: water stress > 100%.

Activity metrics

The volumes produced in 2024, measured in marketable thousand metric tons and broken down by business segment, are presented below:

Financial year ended December 31, 2024

Metric	
Iron Ore Solutions	
Iron ore	327,675
Iron ore pellets	36,891
Energy Transition Metals	
Copper	348.2
Nickel	159.9
Byproducts	160

The following table shows the total number of workers in 2024, broken down into employees and contractors:

Financial year ended December 31, 2024

	Number	(%)
Employees[1]	64,610	37.1
Contractors[2]	109,506	62.9
Total	**174,116**	**100.0**

[1] Includes all employees hired on a fixed-term basis, trainees and employees hired through our affirmative action program for people with disabilities.
[2] The classification of contractors takes into account the total number of external personnel who access Vale's sites.

All financial data is presented in millions of United States dollar, unless otherwise stated

Climate-related targets

The Company understands that it can play an important role in the global energy transition, with its portfolio of high-quality iron ore products and solutions, which can contribute to the decarbonization of the steel industry, and as a producer of essential metals for global electrification.

In order to support the decarbonization of the steel, metallurgical and shipping chain, in 2019 the Company set a GHG reduction target for Scopes 1 and 2 (market-based) in line with the Paris Agreement's goal of limiting global warming to "well below 2°C" compared to pre-industrial levels.

In 2020, it established its Scope 3 target, aligned with the scenario of a maximum global temperature rise of 2°C.

To achieve the voluntary targets set, Vale has included investments aimed at decarbonization in its strategic planning, as presented in the mitigation plan highlighted in section 8 on risks and opportunities.

The following table presents these targets:

Basis for Target Setting:

The Company established its GHG emissions reduction targets in line with international practices, using the Science Based Targets initiative ("SBTi") as a methodological reference. The target-setting process considered the principles and criteria of the GHG Protocol Corporate Standard, applicable to Scopes 1, 2, and 3, as follows:

i) Scope 1 – Direct emissions: Scope 1 targets were determined by considering only direct emissions from sources controlled by the Company, excluding biogenic emissions. This exclusion is in accordance with the criteria established by the GHG Protocol Corporate Standard, which recommends that biogenic emissions be reported separately from fossil fuel-based emissions.

The decision not to include biogenic emissions in the target definition stems from the fact that these emissions originate from renewable sources, whose carbon flows are part of natural cycles, contributing to a more sustainable product life cycle.

ii) Scope 2 – Indirect emissions from purchased electricity: Scope 2 targets were defined based on SBTi criteria, adopting the market-based approach, in line with the Company's strategy of sourcing electricity from renewable sources.

The Company also discloses Scope 2 emissions using the location-based approach, as required by IFRS S2.

Target: 33% reduction in absolute Scopes 1 and 2 (market-based) GHG emissions	
Metric	Percentage (%) reduction in absolute Scopes 1 and 2 (market-based) GHG emissions by 2030 (33% target), in relation to the 2017 base year
Objective	Mitigation of absolute Scopes 1 and 2 (market-based) GHG emissions
Coverage	Vale and assets under Vale's operational control
Greenhouse gases covered by the target	Carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs) and sulfur hexafluoride (SF_6)
Scope	Scopes 1 and 2 (market-based)
Period	2017 – 2030
Base year	2017
Milestones or interim targets	The following public commitments are important milestones toward achieving the target: (i) Consume 100% renewable electricity in Brazil by 2025 (commitment achieved in 2023), reaching zero Scope 2 (market-based) emissions in Brazil; (ii) Obtain 100% renewable electricity globally by 2030; (iii) Improve the global energy efficiency indicator by 5% by 2030, compared to 2017.
Methodology for setting the target	The tool used to calculate the percentage reduction needed for the scenario of keeping global warming "well below 2°C," compared to pre-industrial levels, was the "Science-Based Target-Setting Tool – Version 1.1" and the method used by Vale was the "Absolute Contraction Approach," given that the mining sector does not have a dedicated method. This target does not cover biogenic emissions.
Type of target (absolute or intensity)	Absolute quantitative target
Target review frequency	Annual. Adjustments will be made if a significant change of 5% or more is identified in the GHG inventory, in accordance with the materiality recommendations of the GHG Protocol.
Metrics used to monitor progress	Percentage reduction in market-based absolute Scopes 1 and 2 emissions calculated in the current year compared to absolute Scopes 1 and 2 emissions in 2017[1]
Progress achieved	26.9% reduction as of 2024 in relation to the 2017 base year

[1] The divestments completed in 2024 were also reflected in the 2017 base year.

All financial data is presented in millions of United States dollar, unless otherwise stated

Target: 15% reduction in net Scope 3 GHG emissions	
Metric	Percentage (%) reduction in net GHG emissions 15% target (an absolute reduction[1] of 63.4 million tCO_2e or 12.0%) from 2035 in relation to the base year of 2018
Objective	Mitigation of Scope 3 GHG emissions
Coverage	Vale's value chain and assets under Vale's operational control, including indirect GHG emissions, covering both upstream and downstream stages
Scope	Scope 3
Period	2018 – 2035
Base year	2018
Milestones or interim targets	Vale is aligned with the International Maritime Organization's ambitions for international maritime transportation in categories 4 and 9 of Scope 3. **1. Reduction in carbon intensity:** The target is to reduce the carbon intensity of international maritime transportation by at least 40% by 2030, compared to 2008 levels. **2. Adoption of low-carbon technologies and fuels:** By 2030, at least 5% of the energy consumed by international maritime transportation must come from zero- or near-zero-emission technologies, fuels and/or energy sources, aiming for an ambition of 10%.
Methodology for setting the target	The Scope 3 target was set using the "Science-Based Target-Setting Tool" (TWG-INF-002), Version 4.2 of April 2021, based on the "Absolute Contraction Approach" method, made available by the Science Based Targets initiative (SBTi), in line with the scenario of limiting global warming to 2°C compared to pre-industrial levels. This target does not cover biogenic emissions.
Type of target (absolute or intensity)	Absolute quantitative target
Target review frequency	Vale's Scope 3 target, set in 2020, will be reviewed in 2025 and then every five years, due to uncertainties related to low-carbon technologies and climate policies.
Metrics used to monitor progress	Percentage reduction in net Scope 3 emissions in the current year compared to net Scope 3 emissions in 2018[2]
Progress achieved	13.2% reduction as of 2024 in relation to the 2018 base year

[1] The absolute reduction relative to the 2018 base year considers abated emissions and not the volume that may be offset.
[2] The Scope 3 emissions have been recalculated since the 2018 base year, reflecting new investments incorporated into category 15 in 2024. The emissions of ships under leasing contracts, were also transferred to Scope 1. In previous years, they were accounted for in categories 4 and 9 of Scope 3.

Brussels, Belgium. Vale and Green Energy Park announce a partnership to develop decarbonization solutions for the global steel industry

All financial data is presented in millions of United States dollar, unless otherwise stated

Target: Reach net-zero Scopes 1 and 2 (market-based) emissions	
Metric	Measurement of net Scope 1 and 2 (market-based) emissions up to 2050.
Objective	Mitigation of Scopes 1 and 2 (market-based) GHG emissions, aligned with science-based initiatives. This represents an estimated absolute[1] reduction of 9.5 million tCO_2e, based on the SBTi recommendation.
Coverage	Vale and assets under Vale's operational control
Scope	Scopes 1 and 2 (market-based)
Period	2017 – 2050
Base year	2017
Milestones or interim targets	33% reduction in absolute Scopes 1 and 2 emissions by 2030, compared to the 2017 base year
Methodology for setting the target	Vale established its long-term target to contribute to achieving net-zero global emissions in line with requirements C.1 and C.1.1 of the IPCC's Special Report: Global Warming of 1.5°C. The target was aligned with the ambition of the 2015 Paris Agreement to limit global warming to "well below 2°C" and preferably to 1.5°C above pre-industrial levels. This target does not cover biogenic emissions.
Type of target (absolute or intensity)	Absolute quantitative target
Metrics used to monitor progress	Percentage reduction in market-based net Scopes 1 and 2 (market-based) emissions in the current year compared to market-based absolute Scopes 1 and 2 (market-based) emissions in 2017[2]
Target review frequency	In line with Vale's Climate Change Policy review, which takes place every three to five years
Progress achieved	26.9% reduction as of 2024 in relation to the 2017 base year. The Company did not use any offset mechanisms to compensate for GHG emissions. Therefore, the reduction presented corresponds to the same percentage of absolute emissions.

[1] This absolute reduction in Scopes 1 and 2 (market-based) emissions, relative to the 2017 base year, is estimated based on the SBTi recommendation to neutralize up to 10% of residual emissions. Vale understands that this percentage depends on the evolution of regulated markets and will be reviewed periodically.
[2] Scopes 1 and 2 emissions have been recalculated since the 2017 base year, reflecting divestments of subsidiaries in 2024.

Vale Natural Reserve

All financial data is presented in millions of United States dollar, unless otherwise stated

Approach to reviewing each target and monitoring progress

Review process for climate change-related targets

The process of reviewing and monitoring the targets and the respective methodologies is led by members of the Executive Committee, through Low-Carbon Forum meetings held every four months. These meetings discuss the previous year's performance and future expectations in relation to Scope 1, 2 (market-based) and 3 emissions, and review the roadmap and targets for Scope 1, 2 (market-based) and 3 GHG emissions. The results are reported periodically to the Board of Directors and Sustainability Committee, through a dashboard of ESG-related indicators, which supports continuous monitoring, underpinning discussions on performance, market trends, alignment between Vale projects and the decarbonization targets, stakeholders' expectations and technological advances, as defined in section 5 – Corporate Governance.

The Scope 3 target, established in 2020, is scheduled for review every five years, considering the uncertainties associated with low-carbon technologies and climate policies. Any changes to the targets are communicated together with the respective reasons, whether due to regulatory developments, technological advances, mergers and acquisitions or adjustments to strategy. These changes are disclosed in annual reports and other official Company channels.

In 2024, the Company did not change the targets. However, due to divestments that took place during the period, the comparative baseline was updated.

Performance against climate change-related targets

Progress toward the climate targets is monitored by the Sustainability Vice Presidency using a series of data, such as the emission sources of each plant, types of equipment, calculation methods and performance in each reporting period, among other information required for the proper management of Vale's GHG emissions, including monitoring of implemented emissions reduction projects.

In 2024, the Company made progress toward its targets, cutting its market-based Scopes 1 and 2 (market-based) emissions by 26.9% in relation to the 2017[1] base year. This was mainly due to lower sales volumes and a change in production mix, as well as the implementation of projects to reduce Scopes 1 and 2 (market-based) emissions, growing relative use of biodiesel by trucks and locomotives, and rising consumption of electricity based on renewable energy, backed by certificates and declarations.

Nevertheless, absolute emissions remain strongly linked to production levels, which have risen in recent years. Trend analysis suggests that as production continues to recover, operational emissions may increase in the short term. However, in the medium and long term, a drop in emissions is expected, in line with decarbonization efforts and the implementation of low-carbon initiatives.

Vale's operational GHG emissions profile reflects the evolution of its energy supplies and guides the path toward net-zero emissions. Pelletizing and metallurgical processes continue to be the most carbon-intensive activities, with emissions from coal and coke (22%) and natural gas (17.4%) playing a major role. The use of diesel also contributes significantly, particularly in railroad and mining operations, including the use of large trucks. Electricity, on the other hand, which accounts for a smaller share of emissions, has shown a reduced impact over time, driven by the growing adoption of certified renewable sources in various areas of the business.

With regard to Scope 3 emissions, they fell by 13.2% compared to the 2018[1] base year, mainly due to the drop in sales volume. Initiatives associated with Scope 3 reductions are in the research and development phase, and the Company expects to capture their results once they have been implemented on a large scale. In addition, as with Scopes 1 and 2 (market-based), Scope 3 emissions will tend to grow as production recovers and sales increase, amplifying the Company's decarbonization challenge in the medium term.

To achieve the Scope 3 target, Vale's strategy focuses on three main areas of action: offering a portfolio of high-quality products and innovative technologies to provide solutions that can lead to lower emissions across its value chain; seeking partnerships and engagement with the value chain; and limited use of high-integrity carbon credits, adhering to principles such as additionality, permanence, transparency and contribution to sustainable development.

Use of experts

Bureau Veritas Certification Brasil was commissioned by the Company to conduct an independent analysis of its GHG emission reduction targets. The verification Scope included the following targets:

- 33% reduction in absolute Scopes 1 and 2 (market-based) emissions by 2030, compared to the 2017 base year, in line with the Paris Agreement. This target was defined using the Science Based Targets initiative (SBTi) calculation tool and is therefore compatible with a global temperature increase "well bellow 2°C" (WB2D scenario) and is considered a science-based target;

- 15% reduction in net Scope 3 emissions by 2035, compared to the 2018 base year. The reduction volume was defined using the SBTi calculation tool, based on the Absolute Contraction Approach method, and it is therefore also considered a sciencebased target.

The technical evaluation sought to provide a third-party understanding of how Vale defined its targets. It concluded that the values obtained using the SBTi calculation tool are consistent with the targets presented by the Company.

Regarding the target of reaching net-zero Scopes 1 and 2 (market-based) emissions by 2050, Vale established its long-term goal to contribute to the achievement of net-zero global emissions. This goal aligns with IPCC requirements, which do not provide specific calculation methodologies for defining GHG emission reduction and removal percentages for 2050. As a result, the calculation of this target cannot be verified by a third party.

Pellet Ore Samples. Nova Lima – Minas Gerais, Brazil

[1] The base year is linked to the year in which the target was established

All financial data is presented in millions of United States dollar, unless otherwise stated

Carbon credits to offset Scope 3 GHG emissions

One of the pillars for meeting the Company's decarbonization targets lies in the careful and moderate use of high-integrity carbon credits. To ensure the real impact of this lever, we have adopted principles such as additionality, permanence, transparency and alignment with the UN Sustainable Development Goals. Vale's policy sets a clear limit: by 2035, carbon credits will not represent more than 20% of the reduction target for Scope 3 emissions (equivalent to around 16 $MtCO_2e$ per year) in relation to the 2018 base year.

The Company's strategy is underpinned by supporting nature-based solutions, through long-term investments ranging from early-stage projects to well-established initiatives capable of generating credits certified by global standards. We prioritize initiatives that not only sequester or avoid emissions, but also generate systemic co-benefits, such as biodiversity conservation, social inclusion and the strengthening of local communities. This integrated approach aims to allow our commitment to transcend climate mitigation, becoming a catalyst for resilient ecosystems and fairer societies. In this way, we combine reducing our carbon footprint with legitimately building a sustainable future, balancing corporate responsibility and positive social and environmental impact.

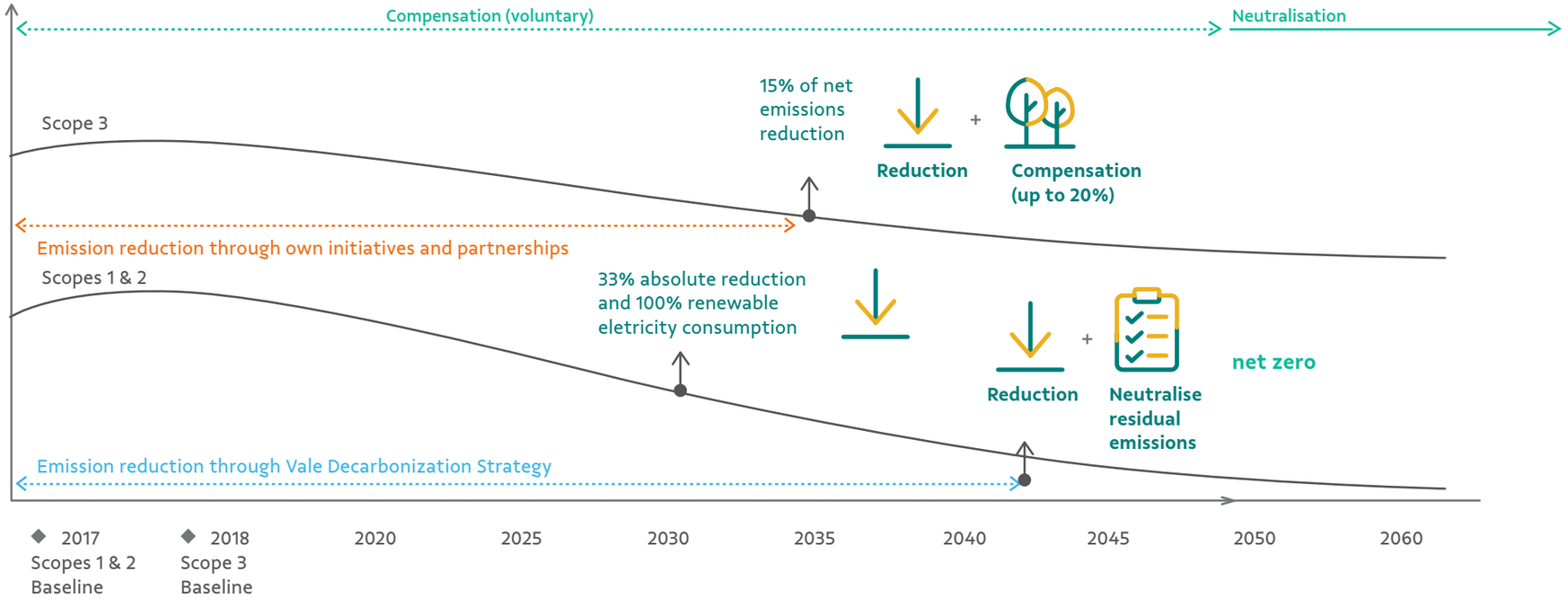
Agreements and partnerships to develop carbon credits

• **Agreement between Vale and Algar:** To support the voluntary carbon credit market, Vale and Algar signed an agreement for the purchase of forest carbon credits until 2030, equivalent to protecting approximately 85,000 hectares of forest. To date, 866,485 credits have been generated, of which 133,175 are in the issuance phase and 733,310 are in the verification phase. In this forest protection project, each carbon credit unit corresponds to one metric ton of carbon dioxide equivalent that was not emitted into the atmosphere.

• **Partnership with Casa dos Ventos:** Vale and renewable energy company Casa dos Ventos have developed a carbon project called Folha Larga Sul de Energia Renovável. This project involves the implementation and operation of wind farms in the state of Bahia, which will reduce GHG emissions by avoiding the generation of electricity from fossil fuel sources. The project has the potential to generate 3,327,530 carbon credits for avoided emissions by 2030.

Both projects are registered under the Verified Carbon Standard (VSC) and are verified by the Verra Registry.

Carbon credits fit into our strategy



Significant judgments and uncertainties

Method for calculating GHG emissions: Scopes 1 and 2 (market-based and location-based) emissions are quantified using internal data sources, such as energy consumption data and process inputs in the Company's operations, as well as external sources, such as surveys and annual updates of emission factors available in nationally and internationally accepted databases and technical references, which gives reasonable certainty to the measurement and quality of the data.

For Scope 3, Vale applies a combination of different calculation methods to determine its GHG emissions. The calculation method used in each category is defined according to the availability and quality of data, and it prioritizes the use of supplier-specific data when available and reliable.

Metrics related to GHG: Scope 3 metrics are subject to significant uncertainties due to the dependence on activity data and emission factors made available by suppliers and value chain partners. When such data and factors are not available, Vale uses estimates and/or secondary data.

Assumptions used to calculate GHG emissions: The Company uses the following data and assumptions to calculate its greenhouse gas emissions.

Scope 1

Scope 1 Assumption	
Assumptions	Scope 1 emission factors vary according to the type of energy source, the equipment used, the location, and the gas considered. Accordingly, this section presents the main Scope 1 emission factors by category, based on the assumptions below, which cover the majority of the Company's emissions.
Locations	Brazil, Canada, Japan, Oman, and the United Kingdom.
Categories	– Combustion (mobile or stationary): We considered the emission factors for diesel and biodiesel, which account for more than 80% of emissions at our mining complexes. – Industrial processes: We selected the emission factors for anthracite and natural gas, the main energy sources used in the Company's pelletizing process. – Fugitive emissions: We considered the emission factors for the two main gases reported in 2024: R-134a and R-410a. – Land use: This indicator is recorded in partnership with the Vale Technological Institute (ITV), using a stock variation approach to quantify emissions and removals between carbon reservoirs at each location. The emission factor reflects the carbon content of each assessed biome and the vegetation stage, which may vary between states and countries. The table presents the average emission per hectare of land cleared in Brazil in 2024.
Judgments	Default emission factors are used, as indicated in the table, when no local or regional reference is available.

Emission category	Emission-generating activity	Data source	Calculation method
Stationary combustion	Burning of fuel used in stationary equipment, as well as the use of explosives in mines	Invoices[1] and internal systems for managing the supply/consumption of fuels and explosives in mines	Based on emission factors, which are updated annually, consumption (expressed in mass, volume or energy) is converted into greenhouse gas emissions.
Mobile combustion	Burning of fuel used in mobile equipment, such as in truck and locomotive fleets	Invoices and internal systems for managing the supply/consumption of fuels	
Industrial process	Physical or chemical processes related to the production of pellets, briquettes, nickel and ferronickel	Invoices and internal systems for managing and analyzing inputs applied to industrial processes	Emissions from industrial processes are accounted for using mass balances of fuels, non-fuel inputs and post-processing products, weighted by their respective carbon content and converted into CO_2 emissions.
Fugitive emissions	Unintentional releases of substances such as sulfur hexafluoride (SF_6) and hydrofluorocarbons (HFCs)	Management and analysis of inputs	Based on emission factors, which are updated annually, consumption (expressed in mass, volume or energy) is converted into greenhouse gas emissions.
Land use	Clearance of native vegetation by the Company	Topography, GPS aided site surveys, remote sensing, among others.	Based on stocks, using reference values for land use and cover, forest type and age of secondary forest.

[1] Documents that record the quantities of inputs, fuels or electricity sold.

All financial data is presented in millions of United States dollar, unless otherwise stated

Reference basis for emission factors

Category	Energy / Gas type	Country	Description	Unit of measure	Value	Reference
Combustion (Mobile or Stationary)	Diesel	Brazil	Carbon emission factor – Diesel – Brazil	t C / TJ	20.2	Value of "Gas/Diesel Oil" 2006 IPCC Guidelines for National Greenhouse Gas Inventories Volume 2: Energy > Chapter 1: Introduction TABLE 1.3. DEFAULT VALUES OF CARBON CONTENT
		Canada	Carbon emission factor – Diesel – Canada	t C / TJ	19.06	Adopted Gas/Diesel Oil: 19.06 t C/TJ GCV. NIR 2024. National Inventory Report 1990 –2022: Greenhouse Gas Sources and Sinks In Canada. Part 2 – Table A4–2 Reference Approach Energy Conversion and Emission Factors for Canada.
		Japan	Carbon emission factor – Diesel – Japan	t C / TJ	18.8	Adopted Gas oil or diesel oil (crude oil origin): 18.8 t C/TJ GCV. National Greenhouse Gas Inventory Report of Japan 2024 Table 3–11 Carbon emission factors for fuel combustion in gross calorific value (Unit: t–C/TJ) – value 2021. Page 3–17
		Oman	Carbon emission factor – Diesel – Oman	t C / TJ	20.2	Value of "Gas/Diesel Oil" 2006 IPCC Guidelines for National Greenhouse Gas Inventories Volume 2: Energy > Chapter 1: Introduction TABLE 1.3. DEFAULT VALUES OF CARBON CONTENT
		United Kingdom	Carbon emission factor – Diesel – United Kingdom	t C / TJ	20.06	C emission factor calculated by mass balance from CO_2 FE: Adopted Diesel (100% mineral diesel) = 0.26475 kg CO_2/ kWh (Net CV) Sheet: "Fuels" DEFRA 2024: Conversion factors 2023 – Full set (for advanced users) – Gov.uk Version: 1,1 It was necessary to convert kWh to TJ.
	Biodiesel – B100	Brazil	Carbon emission factor – B100 – Brazil	t C / TJ	19.3	Value of "Biodiesels" 2006 IPCC Guidelines for National Greenhouse Gas Inventories Volume 2: Energy > Chapter 1: Introduction TABLE 1.3. DEFAULT VALUES OF CARBON CONTENT
		Canada	Carbon emission factor – B100 – Canada	t C / TJ	18.77	Adopted Liquid Biomass: 18.77 t C/TJ GCV. NIR 2024. National Inventory Report 1990 –2022: Greenhouse Gas Sources And Sinks In Canada. Part 2 – Table A4–2 Reference Approach Energy Contents and Emission Factors for Canada.

All financial data is presented in millions of United States dollar, unless otherwise stated

Category	Energy / Gas type	Country	Description	Unit of measure	Value	Reference
Combustion (Mobile or Stationary)	Biodiesel – B100	Default	Carbon emission factor – B100 – Default	t C / TJ	19.3	Value of "Biodiesels" 2006 IPCC Guidelines for National Greenhouse Gas Inventories Volume 2: Energy > Chapter 1: Introduction TABLE 1.3. DEFAULT VALUES OF CARBON CONTENT
		United Kingdom	Carbon emission factor – B100 – United Kingdom	t C / TJ	19.68	Biodiesel= 72,16 kg CO_2/ GJ Sheet: "Outside of Scopes" cell D35 DEFRA 2024: Conversion factors 2024 – Full set (for advanced users) – Gov.uk Version: 1,1
	Diesel	Default	Emission factor for CH_4 – Diesel – Boiler – Default	kg CH_4 / TJ	0.2	Value of "Gas/Diesel Oil Boilers" 2006 IPCC Guidelines for National Greenhouse Gas Inventories Volume 2: Energy > Chapter 2: Stationary Combustion TABLE 2.7 INDUSTRIAL SOURCE EMISSION FACTORS
			Emission factor for N_2O – Diesel – Boiler – Default	kg N_2O / TJ	0.4	Value of "Gas/Diesel Oil Boilers" 2006 IPCC Guidelines for National Greenhouse Gas Inventories Volume 2: Energy > Chapter 2: Stationary Combustion TABLE 2.7 INDUSTRIAL SOURCE EMISSION FACTORS
			Emission factor for CH_4 – Diesel –Furnace – Default	kg CH_4 / TJ	3	Value of "Gas/Diesel Oil" – Default Emission Factor 2006 IPCC Guidelines for National Greenhouse Gas Inventories. Volume 2: Energy > Chapter 2: Stationary Combustion. TABLE 2.3 DEFAULT EMISSION FACTORS FOR STATIONARY COMBUSTION IN MANUFACTURING INDUSTRIES AND CONSTRUCTION
			Emission factor for N_2O – Diesel – Furnace – Default	kg N_2O / TJ	0.6	Value of "Gas/Diesel Oil" – Default Emission Factor 2006 IPCC Guidelines for National Greenhouse Gas Inventories. Volume 2: Energy > Chapter 2: Stationary Combustion. TABLE 2.3 DEFAULT EMISSION FACTORS FOR STATIONARY COMBUSTION IN MANUFACTURING INDUSTRIES AND CONSTRUCTION
			Emission factor for CH_4 – Diesel – Railways – Default	kg CH_4 / TJ	4.15	Railways – Diesel. IPCC 2006, Volume 2, Chapter 3, Table 3.4.1 DEFAULT EMISSION FACTORS FOR THE MOST COMMON FUELS USED FOR RAIL TRANSPORT (value default)
			Emission factor for N_2O – Diesel – Railways – Default	kg N_2O / TJ	28.6	Railways – Diesel. IPCC 2006, Volume 2, Chapter 3, Table 3.4.1 DEFAULT EMISSION FACTORS FOR THE MOST COMMON FUELS USED FOR RAIL TRANSPORT (value default)

All financial data is presented in millions of United States dollar, unless otherwise stated

Category	Energy / Gas type	Country	Description	Unit of measure	Value	Reference
Combustion (Mobile or Stationary)	Diesel	Default	Emission factor for CH_4 – Diesel – Stationary Motor – Default	kg CH_4 / TJ	3	Value of "Gas/Diesel Oil" – Default Emission Factor 2006 IPCC Guidelines for National Greenhouse Gas Inventories. Volume 2: Energy > Chapter 2: Stationary Combustion. TABLE 2.3 DEFAULT EMISSION FACTORS FOR STATIONARY COMBUSTION IN MANUFACTURING INDUSTRIES AND CONSTRUCTION
			Emission factor for N_2O – Diesel – Stationary Motor – Default	kg N_2O / TJ	0.6	Value of "Gas/Diesel Oil" – Default Emission Factor 2006 IPCC Guidelines for National Greenhouse Gas Inventories. Volume 2: Energy > Chapter 2: Stationary Combustion. TABLE 2.3 DEFAULT EMISSION FACTORS FOR STATIONARY COMBUSTION IN MANUFACTURING INDUSTRIES AND CONSTRUCTION
			Emission factor for CH_4 – Diesel – Mobile Motor – Default	kg CH_4 / TJ	4.15	Railways – Diesel. IPCC 2006, Volume 2, Chapter 3, Table 3.4.1 DEFAULT EMISSION FACTORS FOR THE MOST COMMON FUELS USED FOR RAIL TRANSPORT (value default)
			Emission factor for N_2O – Diesel – Mobile Motor – Default	kg N_2O / TJ	28.6	Railways – Diesel. IPCC 2006, Volume 2, Chapter 3, Table 3.4.1 DEFAULT EMISSION FACTORS FOR THE MOST COMMON FUELS USED FOR RAIL TRANSPORT (value default)
	Biodiesel – B100	Default	Emission factor for CH_4 – B100 – Boiler – Default	kg CH_4 / TJ	3	Value of "Biodiesels" – Default Emission Factor 2006 IPCC Guidelines for National Greenhouse Gas Inventories. Volume 2: Energy > Chapter 2: Stationary Combustion. TABLE 2.3 DEFAULT EMISSION FACTORS FOR STATIONARY COMBUSTION IN MANUFACTURING INDUSTRIES AND CONSTRUCTION
			Emission factor for N_2O – B100 – Boiler – Default	kg N_2O / TJ	0.6	Value of "Biodiesels" – Default Emission Factor 2006 IPCC Guidelines for National Greenhouse Gas Inventories. Volume 2: Energy > Chapter 2: Stationary Combustion. TABLE 2.3 DEFAULT EMISSION FACTORS FOR STATIONARY COMBUSTION IN MANUFACTURING INDUSTRIES AND CONSTRUCTION
			Emission factor for CH_4 – B100 – Furnace – Default	kg CH_4 / TJ	3	Value of "Biodiesels" – Default Emission Factor 2006 IPCC Guidelines for National Greenhouse Gas Inventories. Volume 2: Energy > Chapter 2: Stationary Combustion. TABLE 2.3 DEFAULT EMISSION FACTORS FOR STATIONARY COMBUSTION IN MANUFACTURING INDUSTRIES AND CONSTRUCTION
			Emission factor for N_2O – B100 – Furnace – Default	kg N_2O / TJ	0.6	Value of "Biodiesels" – Default Emission Factor 2006 IPCC Guidelines for National Greenhouse Gas Inventories. Volume 2: Energy > Chapter 2: Stationary Combustion. TABLE 2.3 DEFAULT EMISSION FACTORS FOR STATIONARY COMBUSTION IN MANUFACTURING INDUSTRIES AND CONSTRUCTION

All financial data is presented in millions of United States dollar, unless otherwise stated

Category	Energy / Gas type	Country	Description	Unit of measure	Value	Reference
Combustion (Mobile or Stationary)	Biodiesel – B100	Default	Emission factor for CH_4 – B100 – Railways – Default	kg CH_4 / TJ	4.15	Railways – Diesel. IPCC 2006, Volume 2, Chapter 3, Table 3.4.1 DEFAULT EMISSION FACTORS FOR THE MOST COMMON FUELS USED FOR RAIL TRANSPORT (value default)
			Emission factor for N_2O – B100 – Railways – Default	kg N_2O / TJ	28.6	Railways – Diesel. IPCC 2006, Volume 2, Chapter 3, Table 3.4.1 DEFAULT EMISSION FACTORS FOR THE MOST COMMON FUELS USED FOR RAIL TRANSPORT (value default)
			Emission factor for CH_4 – B100 – Stationary Motor – Default	kg CH_4 / TJ	3	Value of "Biodiesels" – Default Emission Factor 2006 IPCC Guidelines for National Greenhouse Gas Inventories. Volume 2: Energy > Chapter 2: Stationary Combustion. TABLE 2.3 DEFAULT EMISSION FACTORS FOR STATIONARY COMBUSTION IN MANUFACTURING INDUSTRIES AND CONSTRUCTION
			Emission factor for N_2O – B100 – Stationary Motor – Default	kg N_2O / TJ	0.6	Value of "Biodiesels" – Default Emission Factor 2006 IPCC Guidelines for National Greenhouse Gas Inventories. Volume 2: Energy > Chapter 2: Stationary Combustion. TABLE 2.3 DEFAULT EMISSION FACTORS FOR STATIONARY COMBUSTION IN MANUFACTURING INDUSTRIES AND CONSTRUCTION
			Emission factor for CH_4 – B100 – Mobile Motor – Default	kg CH_4 / TJ	4.15	Off-road source – Industry – Diesel. IPCC 2006, Volume 2, Chapter 3, Table 3.3.1 DEFAULT EMISSION FACTORS FOR OFF-ROAD MOBILE SOURCES AND MACHINERY (value default)
			Emission factor for N_2O – B100 – Mobile Motor – Default	kg N_2O / TJ	28.6	Off-road source – Industry – Diesel. IPCC 2006, Volume 2, Chapter 3, Table 3.3.1 DEFAULT EMISSION FACTORS FOR OFF-ROAD MOBILE SOURCES AND MACHINERY (value default)
Industrial Processes	Anthracite	Default	Carbon Emission Factor – Anthracite – Default	t C / TJ	26.8	Value of "Anthracite" 2006 IPCC Guidelines for National Greenhouse Gas Inventories Volume 2: Energy > Chapter 1: Introduction TABLE 1.3. DEFAULT VALUES OF CARBON CONTENT
	Natural Gas	Default	Carbon Emission Factor – Natural Gas – Default	t C / TJ	15.3	Value of "Natural Gas" 2006 IPCC Guidelines for National Greenhouse Gas Inventories Volume 2: Energy > Chapter 1: Introduction TABLE 1.3. DEFAULT VALUES OF CARBON CONTENT

All financial data is presented in millions of United States dollar, unless otherwise stated

Category	Energy / Gas type	Country	Description	Unit of measure	Value	Reference
Industrial Processes	Natural Gas	Canada	Carbon Emission Factor – Natural Gas – Canada	t C / TJ	13.79	Adopted Natural Gas: 13.79 t C/TJ GCV. NIR 2024. National Inventory Report 1990 –2022: Greenhouse Gas Sources and Sinks In Canada. Part 2 – Table A4–2 Reference Approach Energy Conversion and Emission Factors for Canada.
		Japan	Carbon Emission Factor – Natural Gas – Japan	t C / TJ	13.9	Adopted Indigenous natural gas: 13.9 t C/TJ GCV. National Greenhouse Gas Inventory Report of Japan 2024. Table 3–11 Carbon emission factors for fuel combustion in gross calorific value (Unit: t–C/TJ) – value 2021. Page 3–17
		Oman	Carbon Emission Factor – Natural Gas – Oman	**t C / TJ**	15.3	Value of "Natural Gas" 2006 IPCC Guidelines for National Greenhouse Gas Inventories Volume 2: Energy > Chapter 1: Introduction TABLE 1.3. DEFAULT VALUES OF CARBON CONTENT
		United Kingdom	Carbon Emission Factor – Natural Gas – United Kingdom	**t C / TJ**	15.32	C emission factor calculated by mass balance from CO_2 FE: Adopted Natural gas = 0.20223 $kgCO_2$/ kWh (Net CV) Sheet: "Fuels" DEFRA 2023: Conversion factors 2023 – Full set (for advanced users) – Gov.uk Expiry: 10/06/2024 Version: 1.1 It was necessary to convert kWh to TJ.
	Anthracite	Default	Emission factor for CH_4 – Anthracite – Boiler – Default	kg CH_4 / TJ	10	Value of "Anthracite" – Default Emission Factor 2006 IPCC Guidelines for National Greenhouse Gas Inventories. Volume 2: Energy > Chapter 2: Stationary Combustion. TABLE 2.3 DEFAULT EMISSION FACTORS FOR STATIONARY COMBUSTION IN MANUFACTURING INDUSTRIES AND CONSTRUCTION.
			Emission factor for N_2O – Anthracite –Boiler – Default	kg N_2O / TJ	1.5	Value of "Anthracite" – Default Emission Factor 2006 IPCC Guidelines for National Greenhouse Gas Inventories. Volume 2: Energy > Chapter 2: Stationary Combustion. TABLE 2.3 DEFAULT EMISSION FACTORS FOR STATIONARY COMBUSTION IN MANUFACTURING INDUSTRIES AND CONSTRUCTION.
			Emission factor for CH_4 – Anthracite – Furnace – Default	kg CH_4 / TJ	10	Value of "Anthracite" – Default Emission Factor 2006 IPCC Guidelines for National Greenhouse Gas Inventories. Volume 2: Energy > Chapter 2: Stationary Combustion. TABLE 2.3 DEFAULT EMISSION FACTORS FOR STATIONARY COMBUSTION IN MANUFACTURING INDUSTRIES AND CONSTRUCTION.

All financial data is presented in millions of United States dollar, unless otherwise stated

Category	Energy / Gas type	Country	Description	Unit of measure	Value	Reference
Industrial Processes	Anthracite	Default	Emission factor for N_2O – Anthracite –Furnace – Default	kg N_2O / TJ	1.5	Value of "Anthracite" – Default Emission Factor 2006 IPCC Guidelines for National Greenhouse Gas Inventories. Volume 2: Energy > Chapter 2: Stationary Combustion. TABLE 2.3 DEFAULT EMISSION FACTORS FOR STATIONARY COMBUSTION IN MANUFACTURING INDUSTRIES AND CONSTRUCTION.
			Emission factor for CH_4 – Anthracite – Stationary Motor – Default	kg CH_4 / TJ	10	Value of "Anthracite" – Default Emission Factor 2006 IPCC Guidelines for National Greenhouse Gas Inventories. Volume 2: Energy > Chapter 2: Stationary Combustion. TABLE 2.3 DEFAULT EMISSION FACTORS FOR STATIONARY COMBUSTION IN MANUFACTURING INDUSTRIES AND CONSTRUCTION.
			Emission factor for N_2O – Anthracite – Stationary Motor – Default	kg N_2O / TJ	1.5	Value of "Anthracite" – Default Emission Factor 2006 IPCC Guidelines for National Greenhouse Gas Inventories. Volume 2: Energy > Chapter 2: Stationary Combustion. TABLE 2.3 DEFAULT EMISSION FACTORS FOR STATIONARY COMBUSTION IN MANUFACTURING INDUSTRIES AND CONSTRUCTION.
	Natural Gas	Default	Emission factor for CH_4 – Natural gas – Boiler – Default	kg CH_4 / TJ	1	Value of "Natural Gas / Boilers" 2006 IPCC Guidelines for National Greenhouse Gas Inventories. Volume 2: Energy > Chapter 2: Stationary Combustion. TABLE 2.7 INDUSTRIAL SOURCE EMISSION FACTORS
			Emission factor for N_2O – Natural gas – Boiler – Default	kg N_2O / TJ	1	Value of "Natural Gas / Boilers" 2006 IPCC Guidelines for National Greenhouse Gas Inventories. Volume 2: Energy > Chapter 2: Stationary Combustion. TABLE 2.7 INDUSTRIAL SOURCE EMISSION FACTORS
			Emission factor for CH_4 – Natural gas – Furnace – Default	kg CH_4 / TJ	1	Value of "Natural Gas" – Default Emission Factor 2006 IPCC Guidelines for National Greenhouse Gas Inventories. Volume 2: Energy > Chapter 2: Stationary Combustion. TABLE 2.3 DEFAULT EMISSION FACTORS FOR STATIONARY COMBUSTION IN MANUFACTURING INDUSTRIES AND CONSTRUCTION
			Emission factor for N_2O – Natural gas – Furnace – Default	kg N_2O / TJ	0.1	Value of "Natural Gas" – Default Emission Factor 2006 IPCC Guidelines for National Greenhouse Gas Inventories. Volume 2: Energy > Chapter 2: Stationary Combustion. TABLE 2.3 DEFAULT EMISSION FACTORS FOR STATIONARY COMBUSTION IN MANUFACTURING INDUSTRIES AND CONSTRUCTION
			Emission factor for CH_4 – Natural gas – Stationary Motor – Default	kg CH_4 / TJ	1	Value of "Natural Gas" – Default Emission Factor 2006 IPCC Guidelines for National Greenhouse Gas Inventories. Volume 2: Energy > Chapter 2: Stationary Combustion. TABLE 2.3 DEFAULT EMISSION FACTORS FOR STATIONARY COMBUSTION IN MANUFACTURING INDUSTRIES AND CONSTRUCTION
			Emission factor for N_2O – Natural gas – Stationary Motor – Default	kg N_2O / TJ	0.1	Value of "Natural Gas" – Default Emission Factor 2006 IPCC Guidelines for National Greenhouse Gas Inventories. Volume 2: Energy > Chapter 2: Stationary Combustion. TABLE 2.3 DEFAULT EMISSION FACTORS FOR STATIONARY COMBUSTION IN MANUFACTURING INDUSTRIES AND CONSTRUCTION

All financial data is presented in millions of United States dollar, unless otherwise stated

Category	Energy / Gas type	Country	Description	Unit of measure	Value	Reference
Industrial Processes	Natural Gas	Default	Emission factor for CH_4 – Natural gas – Mobile Motor – Default	kg CH_4 / TJ	92	Natural Gas. IPCC 2006 Guidelines for National Greenhouse Gas Inventories – Volume 2: Energy – Chapter 3: Table 3.2.2 ROAD TRANSPORT N_2O AND CH_4 DEFAULT EMISSION FACTORS AND UNCERTAINTY RANGES
			Emission factor for N_2O – Natural gas – Mobile Motor – Default	kg N_2O / TJ	3	IPCC 2006 Guidelines for National Greenhouse Gas Inventories – Volume 2: Energy – Chapter 3: Table 3.2.2 ROAD TRANSPORT N_2O AND CH_4 DEFAULT EMISSION FACTORS AND UNCERTAINTY RANGES
			Emission factor for CH_4 – Natural gas – Turbine – Default	kg CH_4 / TJ	4	Value of "Natural Gas / Gas-Fired Gas Turbines >3MW" 2006 IPCC Guidelines for National Greenhouse Gas Inventories. Volume 2: Energy > Chapter 2: Stationary Combustion. TABLE 2.7 INDUSTRIAL SOURCE EMISSION FACTORS
			Emission factor for N_2O – Natural gas – Turbine – Default	kg N_2O / TJ	1	Value of "Natural Gas / Gas-Fired Gas Turbines >3MW" 2006 IPCC Guidelines for National Greenhouse Gas Inventories. Volume 2: Energy > Chapter 2: Stationary Combustion. TABLE 2.7 INDUSTRIAL SOURCE EMISSION FACTORS
Fugitive Emissions	R-134a	Default	HFC	GWP	1300	GWP for 100-yr (IPCC, 2013) IPCC Fifth Assessment Report: Climate Change 2013: The Physical Science Basis (AR5) Table 8 A.1 : Lifetimes, Radiative Efficiencies and Metric Values(Page 747) link:<https://www.ipcc.ch/site/assets/uploads/2018/02/WG1AR5_all_final.pdf>
	R-410a	Default	Blend	GWP	2087.5	GWP for 100-yr PBGHG Tool (v2021.0.1) Tab: Emission Factors > Section 5: Global Warming Potential (GWP) > Table 21. Global warming potential (GWP) of greenhouse gases controlled by the Kyoto Protocol.
Land Use	Land Use Emissions	Brazil	Average emissions per hectare suppressed in 2024	t CO_2e / ha	149.4	Information provided by Instituto Tecnológico Vale (ITV)

Scope 2

Emission category	Emission-generating activity	Data source	Calculation method	Emission Factor References
Purchased electricity	Generation of electricity purchased and consumed by the Company	Invoices and internal systems for measuring and managing electricity consumption	Based on the emission factors of the power grids where Vale operates, Scope 2 (location-based) emissions are calculated for the consumption invoiced and managed by the Company.	MCTI – Ministério da Ciência, Tecnologia e Inovação do Brasil IEA – International Energy Agency DEFRA – Department for Environment, Food & Rural Affairs

All financial data is presented in millions of United States dollar, unless otherwise stated

Scope 3

Emission category	Emission-generating activity	Data source	Calculation method
1 – Purchased goods and services	Upstream emissions (cradle-to-gate) arising from the extraction, production and transportation of goods and services purchased by the Company in the reporting year, when not otherwise included in categories 2 to 8	Internal procurement management systems	Average-data
2 – Capital goods	Emissions derived from the extraction, production and transportation of capital goods (machinery, real estate, plant, property and equipment) purchased or acquired	Internal procurement management systems	Average-data
3 – Fuel- and energy-related activities not included in Scopes 1 and 2	Emissions related to the extraction, production and transportation of fuels and energy purchased and consumed by the Company. The energy purchased for processes (Scope 2) includes transmission and distribution losses in the system, which are also quantified in this category.	Invoices and internal systems for managing consumption of fuels and electricity	Average-data
4 – Upstream transportation and distribution	Emissions related to the transportation and distribution of Vale's inputs, products and waste, when carried out by a tier 1 supplier (both inbound, meaning transportation from suppliers to Vale, and outbound, meaning transportation from Vale to the client or final destination). This category also includes emissions from the transportation of materials between the Company's sites.	Internal systems for managing fuel consumption as well as transportation and distribution distances traveled	Fuel-based and Distance-based
6 – Business travel	Emissions derived from business travel, covering both domestic and international flights made by employees, as well as other services related to business travel, such as hotel accommodations and car rental.	Systems for managing business travel	Distance-based
7 – Employee commuting	Emissions from transportation of employees between their homes and worksites during the reporting year (in vehicles not owned or operated by Vale).	Internal systems for managing fuel consumption for employee commuting	Fuel-based
9 – Downstream transportation and distribution	Emissions arising from the transportation and distribution of products sold by the Company in the reporting year, between Vale's operations and the end consumer (if not paid for by the reporting company), including retail and storage (in vehicles and facilities not owned or controlled by the Company).	Internal systems for managing fuel consumption as well as transportation and distribution distances traveled	Fuel-based and Distance-based
10 – Processing of sold products	Emissions from the industrial processing of products sold by the Company. This category includes emissions generated up to the end of the chain (final consumer).	Systems for managing sold products	Average-data
15 – Investments	Emissions associated with the operation of the Company's investments in the reporting year, including equity and debt investments and project finance, and not yet incorporated into the Scope 1 and/or Scope 2 emissions inventory.	Internal investment management systems, GHG inventories, and financial and production data disclosed by Vale's investees	Investment-specific

Reference Basis for Emission Factors

Key Emission Factors Used in Calculating Scope 3, Category 10, Related to the Processing of Sold Iron Ore. Emissions from the processing of sold iron ore represent approximately 93% of Vale's total Scope 3 emissions.

Main Emissions Factors – Scope 3 (Category 10: Processing of Sold Products)	Value	Unit of measure	Reference
CO_2 emission factor for Direct Reduced Iron – DRI production	0.7	t CO_2 / t DRI	IPCC 2019 Refinement: Guidelines for National GHG Inventories. Volume 3, Chapter 4: Metal Industry Emissions. TABLE 4.1B (NEW) TIER 1 DEFAULT CO_2 EMISSION FACTORS FOR IRON AND STEEL PRODUCTION
CO_2 emission factor for Hot Metal Production in Blast Furnace – BF	1.43	t CO_2 / t HM	IPCC 2019 Refinement: Guidelines for National GHG Inventories. Volume 3, Chapter 4: Metal Industry Emissions. TABLE 4.1B (NEW) TIER 1 DEFAULT CO_2 EMISSION FACTORS FOR IRON AND STEEL PRODUCTION
CO_2 emission factor for Sinter production	0.21	t CO_2 / t sinter	IPCC 2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories – Volume 3 – Industrial Processes and Product Use, Chapter 4: Metal Industry Emissions. TABLE 4.1A (NEW) TIER 1 DEFAULT CO_2 EMISSION FACTORS FOR SINTER AND PELLET PRODUCTION
CO_2 emission factor for Steel Production in Blast Oxigen Furnace – BOF	0.174	t CO_2 / t liquid steel	Maximum value: 0.174 t CO_2 / t liquid steel (Joint Research Center 2013), Table 7.3, p. 369 (22.6–174 kg CO_2/t liquid steel), without considering blast furnace emissions. IPCC 2019 Refinement: Guidelines for National GHG Inventories. Volume 3, Chapter 4: Metal Industry Emissions. TABLE 4.1b (New) TIER 1 DEFAULT CO_2 EMISSION FACTORS FOR IRON & STEEL PRODUCTION
CO_2 emission factor for Steel Production in Electric Arc Furnace – EAF	0.126	t CO_2 / t liquid steel	Value of "Electric Arc Furnace (EAF) (tonne CO_2 per tonne of steel produced)": average 0.126 t CO_2/ t liquid steel. (average 0.072 – 0.18 t CO_2/ t steel produced). Note: 1) The emission factor for EAF steelmaking does not include emissions from iron production. 2) (EU IPPC BREF 2013), Chapter 8, Table 8.1 p.429 (0.072– 0.180 t CO_2/t of steel produced) IPCC 2019 Refinement: Guidelines for National GHG Inventories. Volume 3, Chapter 4: Metal Industry Emissions. TABLE 4.1b (New) TIER 1 DEFAULT CO_2 EMISSION FACTORS FOR IRON & STEEL PRODUCTION
CO_2 emission factor for Steel Production via BF / BOF route	1.58	t CO_2 / t liquid steel	IPCC 2019 Refinement: Guidelines for National GHG Inventories. Volume 3, Chapter 4: Metal Industry Emissions. TABLE 4.1B (NEW) TIER 1 DEFAULT CO_2 EMISSION FACTORS FOR IRON AND STEEL PRODUCTION

All financial data is presented in millions of United States dollar, unless otherwise stated

Disclaimer

This report has been prepared to present Vale's climate change-related risks and opportunities that are relevant to the principal users of general-purpose financial reports, in alignment with Brazilian Securities and Exchange Commission (CVM) resolutions 193, 217 and 218. Vale has endeavored to ensure the accuracy and completeness of the information contained herein. However, this document is subject to limitations, uncertainties and other constantly evolving factors characteristic of complex issues.

This document, along with the information and data presented herein, was developed based on current information, estimates and judgments, using models, methodologies and standards that are subject to certain assumptions and limitations. These include, but are not limited to, data availability and accuracy, lack of standardization and historical data, and other future contingencies, dependencies, risks and uncertainties (arising from, among other factors, legislative, judicial, tax, technological and regulatory developments at both global and regional levels, including regulatory measures related to deforestation, climate change and corporate sustainability disclosures). As a result, these models, methodologies and standards may be subject to adjustments beyond Vale's control and may change over time.

This report may contain forward-looking statements that reflect Vale's expectations regarding future events or results. Such statements include, but are not limited to, targets, projections, time estimates, expected technological developments, regulatory scenarios and strategic initiatives related to climate change. Many of these forward-looking statements may be identified by the use of forward-looking words, such as "believe," "may," "expect," "likely," "could," "will," "plan," "intend," "estimate," "target," "ambition" and "potential," among others. These statements are based on assumptions, current expectations and estimates made by management, many of which are beyond Vale's control. Factors that may influence these results include, but are not limited to: (i) changes in public policies or regulations; (ii) economic and market fluctuations; (iii) technological advances and innovations in the sector; (iv) climatic conditions and natural events; (v) geopolitical and social factors that may impact operations; (vi) industry trends, including the direction of prices and expected levels of supply and demand; (vii) the implementation of our financing strategy and investment plans; (viii) our ability to comply with and implement new technologies to mitigate operational risks or achieve our goals and commitments; and (ix) other unforeseen risks and uncertainties. Potential investors should be aware that forward-looking statements are not guarantees of future performance and that Vale's actual performance may differ significantly from what has been stated or suggested in the statements contained in this report.

Given the nature of these variables, there is no guarantee that the plans, initiatives or targets described in this report will be achieved in whole or in part, or that future results will be in line with the expectations expressed herein. Vale reserves the right, at its discretion, to revise, adjust or reassess its strategy, objectives and operational approaches in response to changes in internal or external conditions, without any obligation to give prior notice or update this document.

This report is for informative purposes only and should not be construed as an offer, commitment or guarantee of future performance. Likewise, it does not constitute legal, financial, tax or investment advice and nor should it be used as such. Any decisions or actions taken on the basis of the information contained herein are the sole responsibility of the reader.

Neither Vale nor its executives, directors, managers, committee members or representatives assume any responsibility for misinterpretations of this report, or for any decisions, actions or losses arising from its use. The preparation of this document reflects the Company's perspective at a specific time, but does not imply, under any circumstances, the assumption of obligations on the part of Vale or its directors and committee members, whose actions are limited to their statutory duties and applicable legislation.

Independent auditor's limited assurance report on the information included in the 2024 Sustainability-Related Financial Information Report

To the Board of Directors and Stockholders
Vale S.A.
Rio de Janeiro - RJ

Introduction

We have been engaged by Vale S.A. ("Company" or "Vale") to present our limited assurance report on the sustainability information included in the 2024 Sustainability-Related Financial Information Report of Vale, as detailed in Appendix I, for the year ended December 31, 2024.

Our limited assurance does not cover prior-period information, or any other information disclosed together with the 2024 Sustainability-Related Financial Information Report, including any incorporated images, audio files, linked files or videos.

Responsibility of Vale's management

The management of Vale is responsible for:

(a) selecting or establishing adequate criteria for the preparation and presentation of the information included in the 2024 Sustainability-Related Financial Information Report;
(b) preparing the information in accordance with the Sustainability Disclosure Pronouncements issued by the Brazilian Committee of Sustainability Pronouncements (CBPS) and the IFRS Sustainability Disclosure Standards issued by the International Sustainability Standards Board (ISSB);
(c) designing, implementing and maintaining internal control over the significant information for the preparation of the information included in the 2024 Sustainability-Related Financial Information Report, so that it is free from material misstatement, whether due to fraud or error.

Limitations in the preparation and presentation of sustainability information and indicators

In preparing and presenting the sustainability information and indicators, management followed the definitions of the CBPS Sustainability Disclosure Pronouncements and the IFRS Sustainability Disclosure Standards; therefore, the information presented in the 2024 Sustainability-Related Financial Information Report is not intended to ensure compliance with social, economic, environmental or engineering laws and regulations. These standards, however, provide for the presentation and disclosure of any risks related to such regulations when considered financially significant.

The absence of a significant set of established practices on which to base the evaluation and measurement of sustainability information allows for different but acceptable evaluation and measurement techniques, which can affect comparability between entities and over time.

Our independence and quality control

We comply with the independence and other ethical requirements of the Federal Accounting Council (CFC) in NBCs PG 100 and 200 and NBC PA 291, which are based on the principles of integrity, objectivity and professional competence, and which also consider the confidentiality and behavior of professionals.

We apply the Brazilian and international quality control standards established in NBC PA 01, issued by the CFC, and thus maintain an appropriate quality control system that includes policies and procedures related to compliance with ethical requirements, professional standards, legal requirements and regulatory requirements.

Independent auditor's responsibility

Our responsibility is to express a conclusion on the sustainability information included in the 2024 Sustainability-Related Financial Information Report, based on our limited assurance engagement carried out in accordance with the Technical Communication CTO 01/12, "Issuance of an Assurance Report Related to Sustainability and Social Responsibility", issued by the CFC, based on the Brazilian standard NBC TO 3000, "Assurance Engagements Other Than Audit and Review", also issued by the CFC, which is equivalent to the international standard ISAE 3000, "Assurance engagements other than audits or reviews of historical financial information", issued by the International Auditing and Assurance Standards Board (IAASB).

Those standards require that the work be planned and performed to obtain limited assurance that the sustainability information included in the 2024 Sustainability-Related Financial Information Report, taken as a whole, is free from material misstatement, whether due to fraud or error, and to issue a limited assurance report that includes our conclusion.

A limited assurance engagement conducted in accordance with the Brazilian standard NBC TO 3000 (ISAE 3000) mainly consists of making inquiries of management and other professionals of Vale involved in the preparation of the information, as well as applying analytical procedures to obtain evidence that allows us to issue a limited assurance conclusion on the information, taken as a whole. A limited assurance engagement also requires the performance of additional procedures when the independent auditor becomes aware of matters that lead him to believe that the information disclosed in the 2024 Sustainability-Related Financial Information Report taken as a whole might present material misstatements.

As part of a limited assurance engagement in accordance with NBC TO 3000 (ISAE 3000), we exercise professional judgment and maintain professional skepticism during our work. We also:

(a) Determine the appropriateness, under the Company's circumstances, of using the CBPS Sustainability Disclosure Pronouncements and the IFRS Sustainability Disclosure Standards as the basis for preparing the sustainability information and indicators.

(b) Perform risk assessment procedures, including obtaining an understanding of internal controls relevant to the work to identify areas where material misstatements may arise, whether due to fraud or error, but not for the purpose of expressing a conclusion on the effectiveness of the Company's internal controls.
(c) Design and perform procedures responsive to cases in which it is probable that material misstatements in sustainability information and indicators will arise. The risk of not detecting a material misstatement resulting from fraud is higher than that arising from errors, since fraud may involve collusion, forgery, intentional omissions or the override of internal controls.

Summary of the procedures performed

The procedures selected are based on our understanding of the aspects related to the compilation, materiality, and presentation of the information included in the 2024 Sustainability-Related Financial Information Report, other circumstances of the engagement and our analysis of the activities and processes associated with the material information disclosed in the 2024 Sustainability-Related Financial Information Report in which significant misstatements might exist. The procedures comprised:

(a) planning the work to understand the process of preparing sustainability information, taking into consideration the materiality, the volume of quantitative and qualitative information, and the operating and internal control systems that were used to prepare the information included in the 2024 Sustainability-Related Financial Information Report;
(b) assessing whether the structure and presentation of the sustainability information comply with the CBPS/ISSB standards;
(c) understanding the calculation methodology and the procedures adopted for the compilation of indicators through interviews with the managers responsible for the preparation of the information;
(d) applying analytical procedures to quantitative information and making inquiries regarding the qualitative information and its correlation with the indicators disclosed in the 2024 Sustainability-Related Financial Information Report;
(e) applying substantive tests to certain sustainability information and indicators; and
(f) when sustainability information relates to financial indicators, comparing these indicators with the Company's audited financial statements for the year ended December 31, 2024.

The limited assurance engagement also included the analysis of the compliance with respect to the CBPS Sustainability Disclosure Pronouncements and the IFRS Sustainability Disclosure Standards.

Our procedures did not include assessing the adequacy of the design or operating effectiveness of the controls, testing the data on which the estimates are based or separately developing our own estimate to compare with Vale's estimate.

Basis for conclusion

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

Scope and limitations

The procedures applied in a limited assurance engagement are substantially less detailed than those applied in a reasonable assurance engagement, the objective of which is the issuance of an opinion on the information included in the 2024 Sustainability-Related Financial Information Report. Consequently, we were unable to obtain reasonable assurance that we would become aware of all significant matters that might be identified in a reasonable assurance engagement, the objective of which is the issue of an opinion. If we had performed an engagement with the objective of issuing an opinion, we might have identified other matters and possible misstatements in the information included in the 2024 Sustainability-Related Financial Information Report. Therefore, we do not express an opinion on this information.

Sustainability data are subject to more inherent limitations than financial data, due to the nature and diversity of the methods used to determine, calculate and estimate these data. Qualitative interpretations of the relevance, materiality, and accuracy of the data are subject to individual assumptions and judgments. Furthermore, we did not consider in our engagement the data reported for prior periods, nor future projections and goals. Our assurance report should be read and understood in the context of the limitations inherent in the process of preparation of sustainability information and indicators by management, including the fact that this information does not have the objective of providing assurance with regard to the compliance with social, economic, environmental or engineering laws and regulations.

The contents included within the Scope of this assurance are presented in the 2024 Sustainability-Related Financial Information Report.

Conclusion

Based on the procedures performed, described herein, and the evidence obtained, no matter has come to our attention that causes us to believe that the sustainability information included in the 2024 Sustainability-Related Financial Information Report does not present, in all material respects, the sustainability information in accordance with the CBPS Sustainability Disclosure Pronouncements and the IFRS Sustainability Disclosure Standards.

Other matters – Restriction on use and distribution

This report was prepared for the use of Vale and may be presented or distributed to third parties, as long as they are familiar with the object and criteria applicable to this assurance engagement, considering its specific purpose described in the first paragraph of this report.

Any party other than Vale who obtains access to this report, or a copy thereof, and relies on the information contained therein does so at their own risk. We do not accept or assume any responsibility and deny any liability to any party other than Vale for our wok, the assurance report or our conclusions.

São Paulo, June 02, 2025

PricewaterhouseCoopers
Auditores Independentes Ltda.
CRC 2SP000160/O-5

Maurício Colombari
Contador CRC 1SP195838/O-3

All financial data is presented in millions of United States dollar, unless otherwise stated

Appendix I to the independent auditor's limited assurance report

Information in scope of the limited assurance

Pronouncement Reference CBPS 02	Location of information in the Report (section – pages)
6.a (i, ii, iii, iv and v)	Section 5 – Pages 8 and 9 Section 6 – Page 11
6.b (i and ii)	Section 5 – Pages 8 and 9
9.a	Section 4 – Page 7 Section 8 – Pages 14 to 23
9.b	Section 8 – Pages 14 to 23
9.c	Section 7 – Pages 12 and 13 Section 8 – Pages 14 to 22
9.d	Section 8 – TR1: Page 16; TR2: Page 18; TR3: Page 18; PR1: Page 20; OP1: Page 21; and OP2: Page 22.
9.e	Section 9 – Pages 24, 25 and 26
10.a	Section 4 – Page 7 Section 8 – Pages 14 to 23
10.b	Section 4 – Page 7 Section 8 – Pages 14 to 23
10.c	Section 8 – Pages 14 to 23
10.d	Section 4 – Page 7

Pronouncement Reference CBPS 02	Location of information in the Report (section – pages)
13.a	Section 8 – Pages 14 to 23
13.b	Section 8 – TR1: Page 14; TR2: Page 17; TR3: Page 18; FR1: Page 19; OP1: Page 20 and OP2: Page 22
14.a (i, iv and v)	Section 8 – Pages 14 to 23 Section 7 – Pages 12 and 13 Section 10 – Pages 31 to 45
14.b	Section 6 – Page 11
15.a	Section 8 – TR1: Page 16; TR2: Page 18; TR3: Page 18; PR1: Page 20; OP1: Pages 21; and OP2: Page 22.
15.b	Section 8 – TR1: Page 16; TR2: Page 18; TR3: Page 18; PR1: Page 20; OP1: Page 21; and OP2: Page 22.
16.a	Section 8 – TR1: Page 16; TR2: Page 18; TR3: Page 18; FR1: Page 20; OP1: Page 21 and OP2: Page 22

Pronouncement Reference CBPS 02	Location of information in the Report (section – pages)
16.c (i and ii)	Section 6 – Page 11 Section 8 – Pages 14 to 23
16.d	Section 8 – TR1: Page 16; TR2: Page 18; TR3: Page 18; FR1: Page 20; OP1: Page 21 and OP2: Page 22
22.a (i and ii)	Section 9 – Pages 24 to 26
22.b (i.1, i.2, i.3, i.4, i.5, i.6 and i.7)	Section 9 – Pages 24 to 26
22.b. (ii.1, ii.2, ii.3, ii.4 and ii.5)	Section 9 – Pages 24 to 26
22.b.iii	Section 9 – Pages 24 and 25
25.a (i, iii and v)	Section 5 – Page 10 Section 6 – Page 11
25.b	Section 6 – Page 11
25.c	Section 6 – Page 11
29.a (i.1, i.2, i.3)	Section 10 – Pages 27 to 29
29.a (iii.1, iii.2)	Section 10 – Pages 27 to 45
29.a.v	Section 10 – Page 28

Pronouncement Reference CBPS 02	Location of information in the Report (section – pages)
29.a.vi.1	Section 10 – Pages 27 to 29
29.b	Section 8 – TR1: Page 14; TR2: Page 17 and TR3: Page 18
29.c	Section 8 – FR1 – Page 19
29.d	Section 8 – OP1: Page 20 and OP2: Page 22
29.e	Section 8 – Page 14 to 23
34.a	Section 10 – Page 34
34.b	Section 5 – Pages 8 and 9 Section 10 – Pages 31 to 34
34.c	Section 10 – Pages 31 to 33
34.d	Section 10 – Pages 31 to 33
36.a	Section 10 – Pages 31 to 33
36.b	Section 10 – Pages 31 to 33
36.c	Section 10 – Pages 31 to 33
B55	Section 10 – Page 29