Vale SA - Climate Change 2023

C0. Introdução

C0.1

(C0.1) Faça uma descrição e uma introdução geral da organização.

Vale S.A. is one of the largest metals and mining companies in the world, based on market capitalization and one of the world's leading producers of iron ore and nickel, currently present in 18 countries and five continents. The company is headquartered in Rio de Janeiro, Brazil, and also produces iron ore pellets, copper, and platinum group metals, gold, silver and cobalt as by-products of nickel and copper, besides being engaged in greenfield mineral exploration in six countries. In 2022, Vale fully divested on coal in April, manganese (ferroalloy operations), also iron ore, manganese ore, and logistics assets (Midwestern System) both in July. In addition, it operates large logistics systems in Brazil and other regions of the world, including railroads, maritime terminals and ports, which are integrated with its mining operations. The company has distribution centers to support the delivery of iron ore worldwide and also has investments in energy and steel businesses directly and through associates and joint ventures. Vale is a private, publicly traded organization and our purpose is "We exist to improve life and transform the future. Together". The company has the ambition to become a leader in sustainable mining and a benchmark for value creation and sharing with its shareholders, stakeholders and society, besides being committed to improving its performance and contributing to enhancing the lives of people in the areas where it operates. Vale's Board of Directors (BD) has the role of overseeing and supporting our journey towards a more sustainable and safer mining model, allowing for the development of low-carbon solutions, combined with the creation of value for society and a focus on business discipline. Vale recognizes that climate change represents one of the greatest challenges for society and is committed to contributing to solutions that limit the increase in temperature by up to 2°C, as defined in the Paris Agreement (PA). Moreover, the company plays a fundamental role in the global energy transition, with its portfolio of high-quality iron ore products and solutions, essential for decarbonizing steelmaking, and as a producer of metals that are essential for global electrification. In this regard, Vale's BD updated the organization's net-zero strategy in 2019. Aiming to actively support the decarbonization of the steel, metallurgical and shipping chains, the company's main commitment is to become net-zero in its operations (scopes 1 & 2) by 2050, considering the target to reduce 33% of scopes 1&2 and the target to consume 100% of electricity from renewable sources by 2025 in Brazil, and globally in 2030. In addition, in 2020 Vale assumed the goal of reducing Scope 3 net emissions by 15% by 2035, compared to the base year of 2018, which is based on the development of new products, nature-based solutions, partnerships, and engagement with clients and suppliers. The reduction volume was defined based on the Science Based Target Initiative-SBTI calculation tool, Absolute Contraction Approach method. Therefore, to support these goals, an internal carbon price of USD50/tCO2e is in effect to guide Vale's capital allocation decisions aligned with the PA goals and with the 2ºC scenario, following the Carbon Pricing Leadership Coalition recommendations. In this process, the Executive Vice President for Sustainability deploys and monitor advances in the implementation of strategies and policies, and it's an agent of internal and external engagement, through actions and dialogue with stakeholders, as well as strengthening the relationship between Vale and society, being an important facilitator for the implementation of the New Pact with Society, one of Vale's strategic pillars. In addition, acting transparently and considering the expectations of its stakeholders is one of the company's pillars. One of the transparency initiatives related to climate change in which Vale participates, is the Task Force for Climate-Related Financial Disclosures (TCFD), an initiative that aims at promoting transparency regarding climate-related risks and opportunities. Some other relevant forums focused on climate change that Vale is part of are: International Council on Mining and Metals (ICMM), CDP, and the World Business Council for Sustainable Development (WBCSD). In 2020, Vale joined the CDP Supply Chain to report all actions and indicators focused on CO2e emissions in the value chain. Finally, Vale supports efforts to mitigate GHG emissions, in collaboration with peers, by promoting innovation, developing and deploying low emissions technology, and implementing projects that improve energy efficiency. The answers in the CDP questionnaire refer to 100% of Vale's operating units and to the companies over which Vale has operational control, that is, its subsidiaries in Brazil and other countries. This group of entities is called "Grupo Vale". For additional details access https://www.vale.com/pt/web/esg

C0.2

(C0.2) Declare as datas de início e fim do ano cujos dados estão sendo reportados e indique se serão fornecidos dados de emissões para anos de reporte passados.

Ano de reporte

Data de início
janeiro 1 2022

Data de fim
dezembro 31 2022

Indique se estão sendo fornecidos dados de emissões de anos de reporte passados
Sim

Selecione o número de anos de reporte passados cujos dados de emissões de Escopo 1 serão fornecidos
1 ano

Selecione o número de anos de reporte passados cujos dados de emissões de Escopo 2 serão fornecidos
1 ano

Selecione o número de anos de reporte passados cujos dados de emissões de Escopo 3 serão fornecidos
1 ano

C0.3

(C0.3) Selecione os países/áreas onde a empresa opera.
Brasil
Canadá
China
Indonésia
Japan
Malásia
Omã
Reino Unido da Grã-Bretanha e Irlanda do Norte

C0.4

(C0.4) Selecione a moeda usada para todas as informações financeiras divulgadas em sua resposta.
USD

C0.5

(C0.5) Selecione a opção que descreve os limites de reporte para os quais os impactos climáticos em sua empresa estão sendo reportados. Observe que esta opção deve estar alinhada com o método de consolidação escolhido para o inventário de GEEs.
Controle operacional

C-MM0.7

(C-MM0.7) Em qual parte da cadeia de valor dos metais e da mineração a organização opera?

Linha 1

Mineração
Cobre
Minério de ferro
Níquel

Processamento de metais
Cobre
Ouro
Metais do grupo da platina
Prata
Níquel
Outros metais não ferrosos, especifique (Cobalt)

C0.8

(C0.8) A organização tem um código ISIN ou outro identificador único (por ex., Ticker, CUSIP etc.)?

Indique se é possível apresentar um identificador único para a organização	Forneça o identificador único
Sim, um código ISIN	ISIN Code: US91912E1055 (NYSE)
Sim, um código ISIN	ISIN Code: BRVALEACNOR0 (B3 and LATIBEX)
Sim, um número CUSIP	CUSIP number: 91912E 105 (NYSE)
Sim, um símbolo no Ticker	VALE (NYSE)
Sim, um símbolo no Ticker	VALE3 (B3)
Sim, um símbolo no Ticker	XVALO (LATIBEX)

C1. Governança

C1.1

(C1.1) Existe supervisão pelo Conselho sobre as questões climáticas na organização?
Sim

C1.1a

(C1.1a) Identifique o(s) cargo(s) do(s) indivíduo(s) do conselho responsável(is) pelas questões relacionadas ao clima (não inclua os nomes).

Cargo do indivíduo ou comitê	Responsabilidades por questões climáticas
Diretor Executivo (CEO)	As head of the company, The Chief Executive Officer is a position appointed by Vale's Board of Directors and plays a crucial role in shaping the company's strategy and operations. The Board of Directors elects the members of the Executive Board, and the CEO is responsible for submitting the candidates for the Executive Vice-President positions for the Board of Directors' approval. The CEO's duties include preparing and submitting the Company's purpose, strategic guidelines, and strategic plan to the Board of Directors. The strategic guidelines and plan are submitted on annual basis and consider socioenvironmental issues. The CEO is also responsible for the execution of the approved strategic plan besides preparing and submitting the Company's annual and multi-annual budgets to the Board of Directors and executing it. Besides, planning and steering the Company's operations and reporting the Company's economic and financial performance to the Board of Directors, as well as Vale's performance in its sustainability initiatives and producing reports with specific performance indicators are also CEO's responsibilities. Additionally, the CEO also exercises the executive direction of the Company, coordinating and supervising the activities of the other Executive Officers and exerting his best efforts to ensure faithful compliance with the decisions and guidelines laid down by the Board of Directors and the General Meeting. Therefore, to support Vale's commitment to sustainability, the CEO is accountable for overseeing the 33% reduction target for greenhouse gas emissions from Vale's operations (Scopes 1 and 2) by 2030, the 15% reduction target by 2035 for scope 3, and Vale's climate change net-zero strategy. Furthermore, the CEO also leads Vale's Low Carbon Forum – an initiative that reflects top leadership's engagement on the topic, helps to monitor performance in upholding the company's commitments and drives constant advances in Vale's climate agenda through monthly meetings with the participation of the leadership and technical teams that deal with the topic on daily basis.
Diretor de Sustentabilidade (CSO)	The Executive Vice President of Sustainability (EVPS), a position equivalent to the CSO, is a legal representative of the company responsible for day-to-day operations and for the implementation of the general policies and guidelines set forth by the Board of Directors. This role has the function of deploying and monitoring advances in the implementation of strategies and policies, in addition to being an agent of internal and external engagement, through actions and dialogue with stakeholders, one of Vale's strategic pillars. Vale's EVPS coordinated the execution and approval of the company's net-zero strategy, the plan which defines climate change ambitions for Vale for the next years, including guidelines and targets. The EVPS is also responsible for conducting a strategic process of benchmarking and engagement that culminated with the announcement of ambitious climate-related intentions. These innovations include a target for achieving net zero emissions in scopes 1 and 2 by 2050, promoting an emission reduction by 2030 compatible with the Paris Agreement, and, to propel towards decarbonization, an internal carbon price of USD 50/tCO2e is already in effect to guide its capital allocation decisions aligned with the Paris Agreement goals. This price is also aligned with the 2ºC scenario, following the recommendations of the Carbon Pricing Leadership Coalition. Additionally, The Chief Executive Officer established the Low Carbon Forum to manage the implementation of the Vale net-zero strategy, which is coordinated by the CEO and the VP of Sustainability and has the participation of Vale's Executive Vice Presidents; members of the Executive Committee. The Forum meetings involve top leadership and technical groups from the business and corporate areas with monthly meetings to deliver on the commitments assumed through the Vale Carbon Net-Zero strategy. In 2020, the EVPS coordinated the approval by the Board of Directors to reduce Scope 3 net emissions by 15% until 2035, compared to the base year of 2018. The reduction volume was defined based on the Science Based Target Initiative (SBTI) calculation tool, the Absolute Contraction Approach method, so it is also considered a science-based target.
Comitê do conselho	Technical Committees advise the Board of Directors (BD) in monitoring Vale's activities and, oversee the performance and effectiveness of the enterprise risk management conducted by the Board of Executive Officers. In 2022, the statutory advisory committees were reduced from seven to five and the advisory committees now comprise only members of the Board of Directors. The Sustainability Committee is one of these technical committees and evaluates Vale's sustainability and innovation strategies, making sure they are considered in the definition of the company's global strategy. This committee is responsible for monitoring the Sustainability Plan; defining, monitoring, and analyzing indicators; performance ratings, socio-environmental investments; strategies for climate change and carbon pricing; recovering and protecting degraded areas; proposing improvement actions, and evaluating the implementation of mine closure and future use precepts according to best practices. The committee was responsible for establishing the low carbon forum in the organization and for the approval of the scope 3 target, thus establishing a commitment to integrate sustainability into our business, moreover, being responsible for approving Vale's Integrated Report. It works continuously and follows an annual calendar. At least 2 members of the Committee must be also members of the Board. (Note: nowadays, all the CS members are members of the Board). Among some of the attributions that belong to the Sustainability Committee, is possible to highlight the following: Assist in the definition, evaluation and monitoring of the Sustainability indicators and propose improvements (including internal climate change indicators); evaluate and propose Vale's adoption or adherence to initiatives or agreements at the national or international level related to issues of social and environmental responsibility (such as the Global Compact for climate change), as well as monitoring the preparation and dissemination of the Sustainability Report, CDP questionnaire, and GHG inventory; evaluate projects, initiatives as well as the Company's investment proposals from the perspective of sustainability (biodiversity and social perspectives), in addition to making possible recommendations to the BD; and monitor the scope of action and effectiveness of the area of institutional relations in dealings with regulatory bodies and other institutional relations associated with sustainability issues.

C1.1b

(C1.1b) Forneça mais detalhes sobre a supervisão das questões climáticas pelo conselho.

Frequência com a qual as questões climáticas são um item da pauta programada	Mecanismos de governança nos quais as questões climáticas estão integradas	Escopo da supervisão no nível do conselho	Explique
Programada – todas as reuniões	Análise e orientação de orçamentos anuais Supervisão de grandes gastos de capital Supervisão das aquisições, fusões e alienações Análise e orientação de estratégia Outro, especifique (Approve adherence to climate initiatives)	<Not Applicable>	To guide the implementation of our Net Zero Strategy, the Executive Board provides Vale with full support and strategic oversight. It is supported by a Sustainability Committee, comprised of Board members and an external independent advisor, in charge of overseeing Vale's actions. The sustainability Committee advises the Board on sustainability-related issues, including climate change. It is responsible for proposing climate change policies, plans, projects, and targets to the approval of the Executive Board, as well as for implementing the general policies and guidelines set forth by the Executive Board. The Executive Vice President of Sustainability is also responsible for evaluating, monitoring, and reporting Vale's performance, risks and opportunities regarding climate change to the Executive Board. Also, at the C-level, the company created the Low Carbon Forum, a group led by the CEO and composed of vice presidents and their technical teams. The initiative reflects top leadership's engagement on the topic, helps to monitor performance in upholding our commitments, and drives constant advances in Vale's climate agenda. The meetings are held monthly with technical teams that deal with the topic on a day-today basis and quarterly with participation of C-Level leaders, focused on monitoring the delivery of our climate agenda deliverables. There are goals related to the climate agenda for our CEO and executive vice presidents. A goal composed of indicators of greenhouse gas emissions, forest recovery and protection, and renewable energy was also linked to leadership's long-term remuneration. Corporate areas that work on climate change and operational areas that implement the decarbonization strategy also have specific additional variable compensation targets for project implementation, emissions management and/or risk management associated with climate change. The ordinary meetings occur as scheduled in the approved annual calendar. When necessary, extraordinary meetings are arranged. During the meetings, the Company's sustainability strategy, policies, conduct and performance regarding Sustainability aspects (including climate change) are evaluated and improvements based on a long-term vision are proposed. Furthermore, the company's Sustainability indicators are evaluated and monitored. If it is necessary, improvements are proposed. In addition, all the operational risks and controls (including those related to climate change) are monitored and improvements in mitigation plans are proposed. The Board' Sustainability Committee internal rules, which describes its composition, responsibilities and meetings rules are described in the document available at: https://www.vale.com/web/esg/board-of-directors-and-leadership The Board' Sustainability Committee internal rules, which describes its composition, responsibilities and meetings rules are described in the document available at: https://www.vale.com/web/esg/board-of-directors-and-leadership

Frequência com a qual as questões climáticas são um item da pauta programada	Mecanismos de governança nos quais as questões climáticas estão integradas	Escopo da supervisão no nível do conselho	Explique
Programada – algumas reuniões	Análise e orientação de orçamentos anuais Supervisão das aquisições, fusões e alienações Análise das prioridades de inovação / P&D Supervisão e orientação de incentivos para os funcionários Análise e orientação de estratégia Supervisão e orientação de análise de cenários Supervisão da definição de metas corporativas Monitoramento do progresso das metas corporativas Supervisão do engajamento com a cadeia de valor Análise e orientação do processo de gestão de riscos	<Not Applicable>	The Climate change budget is annually discussed with, and approved by, the Executive Vice President of Sustainability after the corporate process of budget and strategic planning. Climate change risks are periodically discussed with the Low Carbon Forum and with the Executive Committee of Executive Vice Presidents. Opportunities, such as changing the internal energetic matrix and energy efficiency, are discussed periodically as well. The overall annual compensation of the members of the Board of Directors, the Executive Committee, the Fiscal Council and the Advisory Committees is set by the Annual General Meeting. The Board of Directors, with the support of the Personnel, Compensation and Governance Committee, is responsible for distributing the compensation approved by the General Meeting. The variable compensation of the members of the Executive Committee includes, among others, metrics focused on environmental, social and governance (ESG) issues, especially in long-term compensation.

C1.1d

(C1.1d) A organização tem pelo menos um membro do conselho com competências para questões climáticas?

	O(s) membro(s) do conselho tem(têm) competências para questões climáticas	Critérios utilizados para avaliar as competências do(s) membro(s) do conselho para questões climáticas	Razão principal para que não haja competências por parte do conselho para questões climáticas	Explique por que a organização não tem pelo menos um membro do conselho com competências para questões climáticas, e quais são os eventuais planos para abordar as competências por parte do conselho no futuro
Linha 1	Sim	The Board of Directors, along with the Nomination Committee and specialized international consultancies, have updated the important qualifications and experience that should be represented on the Board as a whole, in light of Vale's business strategy and future needs. The starting point of the Committee's work was the preparation of the CM (Competency Matrix), designed to meet the present and future objectives of the Company, and to ensure that the consequences of recent critical events (Mariana and Brumadinho) are managed properly. A preliminary CM was developed, segregated into the following competencies: a) administrative; b) functional; and c) sector specific. For functional competencies, the CM contemplates significant experience and knowledge in different areas such as environmental, social, and governance (ESG), including compliance, preferably in the natural resources industry, with experience in community relations. After approval of the CM, the current composition of the Board was evaluated individually and collectively to identify the degree of coverage of the competencies listed in the CM. This evaluation was conducted through questionnaires and interviews with the members of the Board and the main shareholders of the Company. As a result, a Vale's nominated chairman has a long professional history in Sustainability and ESG, with a leading role in Brazil and internationally, in socioenvironmental management of territories, relationship with stakeholders (communities and NGOs), mitigation and adaptation to climate change, especially in relation to Forests and Agriculture. Besides, the Board comprises 13 members, eight of whom are independent, including the Chairman of the Board, and most of whom have expertise in mining (or related industry), ESG, finance, and cultural transformation.	<Not Applicable>	<Not Applicable>

C1.2

(C1.2) Forneça o(s) comitê(s) ou o(s) cargo(s) de gerência de nível mais alto com responsabilidade pelas questões climáticas.

Cargo ou comitê
Diretor Executivo (CEO)

Responsabilidades relacionadas ao clima deste cargo
Gestão dos orçamentos anuais para as atividades de mitigação climática
Gestão de grandes capitais e/ou despesas operacionais relacionadas a produtos ou serviços de baixo carbono (incluindo P&D)
Gestão das aquisições, fusões e alienações relacionadas ao clima
Oferta de incentivos relacionados ao clima para os funcionários
Integração de questões climáticas na estratégia
Definição de metas climáticas corporativas
Monitoramento do progresso com relação às metas climáticas corporativas
Avaliação de riscos e oportunidades climáticos
Gestão de riscos e oportunidades climáticos

Abrangência da responsabilidade
<Not Applicable>

Linha de reporte
Responde diretamente ao conselho

Frequência de reporte ao conselho sobre questões climáticas por meio desta linha de reporte
Frequência maior que trimestral

Explique
Vale's CEO, a position appointed by Vale's Board of Directors, has several duties, such as preparing and submitting to the Board of Directors, the Company's purpose, strategic guidelines, and strategic plan. The company's strategic guidelines and plan consider socioenvironmental issues and, therefore, the CEO is the highest level in a management position responsible for climate change, which includes both assessing and managing climate-related risks and opportunities.
Besides, the CEO also exercises executive direction of the Company, coordinating and supervising the activities of the other Executive Officers and ensuring compliance with the decisions and guidelines of the Board of Directors and the General Assembly. In addition, he also leads Vale's Low Carbon Forum. Therefore, the CEO is informed about and monitors climate-related issues through various processes. At the Low Carbon Forum, for example, he is informed about and monitors climate-related issues through monthly meetings with the participation of the leadership and technical teams that deal with the topic on daily basis. This provides an opportunity for the CEO to receive updates on Vale's progress towards meeting its climate-related targets, as well as to discuss emerging issues and opportunities related to climate change.
Therefore, as the subject of climate change is significant and material for Vale, in seeking to place it consistently on its executive agenda, the responsibilities mentioned above have been assigned to the CEO. This is consistent with the company's commitment to contribute to a more sustainable future.

Cargo ou comitê
Diretor de Sustentabilidade (CSO)

Responsabilidades relacionadas ao clima deste cargo
Gestão dos orçamentos anuais para as atividades de mitigação climática
Gestão de grandes capitais e/ou despesas operacionais relacionadas a produtos ou serviços de baixo carbono (incluindo P&D)
Gestão das aquisições, fusões e alienações relacionadas ao clima
Integração de questões climáticas na estratégia
Definição de metas climáticas corporativas
Monitoramento do progresso com relação às metas climáticas corporativas
Avaliação de riscos e oportunidades climáticos
Gestão de riscos e oportunidades climáticos

Abrangência da responsabilidade
<Not Applicable>

Linha de reporte
Linha de reporte do CEO

Frequência de reporte ao conselho sobre questões climáticas por meio desta linha de reporte
Frequência maior que trimestral

Explique
At Vale, the CSO function is handled by the Executive Vice President of Sustainability, which is a member of the Executive Committee. This position is responsible for preparing, considering socio-environmental issues, the guidelines, and the company's strategic sustainability. The CSO is also responsible for preparing and proposing the sustainability policy and its amendments to the Executive Committee. It is the responsibility of the CSO to promote the dissemination and deployment of all actions related to the sustainability policy. The CSO is accountable for ensuring compliance with the general guidelines of the company's business established by the Board of Directors in the management of the sustainability area. Consequently, the CSO is responsible for proposing climate change policies, plans, projects, and targets and, it's also responsible for evaluating, monitoring, and reporting Vale's performance, risks and opportunities regarding climate-related issues to the Executive Committee and Board of Directors. To make the Sustainability Strategy viable, the Board of Directors counts on a Sustainability Committee for advice.
Vale believes mining is essential to the world's development. To this end, the company promotes management based on voluntary business actions and partnerships with different levels of government, public institutions, other companies and civil society. In this process, the CSO has the function of unfolding and monitoring progress in the execution of strategies and policies, in addition to being an agent of internal and external engagement, through actions and dialogue with stakeholders, as well as strengthening ties between Vale and society, being an important facilitator for the implementation of the New Pact with Society, one of Vale's strategic pillars.
Vale's sustainability team tracks and monitors the performance of KPIs related to climate change through data available in the Credit360 system – a tool in which it is possible to find information such as the action plan to reduce emissions of greenhouse gases, the area responsible, calculation form and performance per period – and the annual budget dedicated to climate change is discussed and approved by the CSO in accordance with the Annual Strategic Planning and Budget Cycle.
Moreover, the Sustainability Department and the Departments of Strategic Planning, Risk Management and the Operational Risk Management teams are responsible for implementing the methodologies and managing the results of these methodologies that are used to monitor climate-related risks. Risks are identified based on strategic business planning, existing risk management processes and regulatory environment monitoring. Besides the risks, the Department of Strategic Planning and Department of Energy work together with Sustainability Department to assess the opportunities related to climate change.

C1.3

(C1.3) Há incentivos para a gestão de questões relacionadas ao clima, incluindo o cumprimento de metas?

	Dar incentivos pela gestão das questões climáticas	Explique
Linha 1	Sim	In 2020, Vale adopted metrics even more focused on environmental, social and governance (ESG) issues when considering its officers' short- and long-term variable compensation, seeking to strengthen Vale's strategic pillars of Safety & Operational Excellence and the New Pact with Society. Compensation alignment with Vale's ambition to be a leader in low carbon mining, through the readjustment of the organizational structure. For the cycle beginning in 2022, it was proposed to increase the weight of the long-term ESG metric from 20% to 25%, reinforcing Vale's commitment to best environmental, social and governance practices. Thus, in 2022 goals related to the climate agenda represent 5% of short-term (out of 10% related to Sustainability) and 6% of long-term compensation (out of 25% ESG-related) including our CEO and executive vice presidents.

C1.3a

(C1.3a) Forneça mais detalhes sobre os incentivos oferecidos pela gestão das questões climáticas (não inclua os nomes dos indivíduos).

Com direito a incentivo
Diretor Executivo (CEO)

Tipo de incentivo
Recompensa monetária

Incentivo(s)
Bônus – porcentagem do salário

Indicador(es) de desempenho
Redução nas emissões absolutas

Plano(s) de incentivo a que este incentivo está vinculado
Plano de incentivo tanto de curto quanto de longo prazo

Outros detalhes do(s) incentivo(s)
The CEO receives incentive payments insofar as Vale meets collective climate change goals and strategic results. In 2022, the targets related to sustainability represented 10% (which 5% are related to the climate agenda) of short-term variable remuneration; and 20% of long-term compensation ESG-related of which 6% were connected to climate change.
The long-term compensation plans offered by Vale are VSP and Matching. In 2020, indicators related to ESG topics were included in the VSP, with 20% weight. Since 2022, this has risen to 25%, placing more focus on these issues.

Explique como este incentivo contribui para a implementação dos compromissos climáticos e/ou do plano de transição climática da organização
The Sustainability targets strengthen the strategy and public commitments of Vale's 2030 Agenda, through the Environmental indicators, related to Climate Change, and Social, related to the Implementation of the Social Action Model: (i) climate change - Reducing greenhouse gas emissions, and (ii) social – evolve in the implementation of the social action model.
The long-term variable compensation is based on shares. In the cycle beginning in 2022, it was proposed to increase the weight of the ESG metric from 20% to 25%, reinforcing Vale's commitment to best environmental, social and governance practices.

Com direito a incentivo
Conselho/Conselho Executivo

Tipo de incentivo
Recompensa monetária

Incentivo(s)
Bônus – porcentagem do salário

Indicador(es) de desempenho
Redução nas emissões absolutas
Outros, especifique (A target composed of indicators for greenhouse gas emissions, recovery and protection of forest areas, and assurance of renewable energy was also tied to the long-term compensation of the leadership)

Plano(s) de incentivo a que este incentivo está vinculado
Plano de incentivo tanto de curto quanto de longo prazo

Outros detalhes do(s) incentivo(s)
The variable compensation of Executive Committee members includes, among others, metrics focused on environmental, social and governance (ESG) issues, both in short-term and long-term compensation. Long-term compensation is applied to the entire leadership, including the president and Executive Committee.
In 2022, the targets related to sustainability represented 10% of the employees' short-term variable remuneration, including the CEO and Executive Committee. Out of those, 5% is related to Vale's climate agenda. For long-term compensation, with 20% of ESG-related goals, 6% of that is connected to its climate challenge. A goal composed of indicators of greenhouse gas emissions, forest recovery and protection, and renewable energy was also linked to leadership's long-term remuneration.
In 2022, a noteworthy advance has been made in executive variable compensation. In the short term, 30% to 40% of collective targets are linked to non-financial indicators and ESG, while 35% are linked to financial targets. In the long term, the contribution of ESG metrics rose from 20% in 2020 to 25% in 2022. This demonstrates the company's commitment to the future impact of our decisions today.

Explique como este incentivo contribui para a implementação dos compromissos climáticos e/ou do plano de transição climática da organização
The Sustainability KPI goals program encourages the continuous improvement of the company's performance on material socio-environmental issues. Environmental and social indicators work as metrics to assess the sustainability of the different business areas, reflecting on the variable remuneration of the teams. All of these goals, once defined, are registered and monitored in the Career, Succession and Performance (CSP) system. The compensation of the members of the Executive Board varies according to metrics focused on environmental, social, and governance (ESG) goals, among others, especially in long-term compensation.

C2. Riscos e oportunidades

C2.1

(C2.1) A organização dispõe de um processo para identificar, avaliar e responder aos riscos e oportunidades climáticos?

Sim

C2.1a

(C2.1a) Como a organização define "horizontes temporais de curto, médio e longo prazo"?

	De (anos)	A (anos)	Explique
Curto prazo	0	3	The environment management area is responsible for the assessment of the climate change's R&O based on the business strategic planning, risk management processes, and regulation monitoring. Therefore, for strategy and climate change analysis, Vale considers 3 years as short-term. Vale's short-term horizons include risk factors related to the increase in the intensity of and frequency flood-causing rains, which can lead to operational stoppages and material environmental impacts; increase ore humidity impacting transportation; and operational accidents (such as train derailment, flooding, equipment damage, etc). In this regard, Vale's methodology for managing physical risks related to climate change allows for short-term analysis and seasonal forecasts, with the main focus on impacts on our operations and product shipment. The analysis of short-term climate risks enables the inclusion of climate variables in the decision-making processes of Vale's operations systematically and also generates a higher control against the impacts of climate change.
Médio prazo	3	10	For the climate change area, the medium-term is equivalent between 3 and 10 years. Medium-term horizons are likely to include risk factors related to regulatory risks such as: i) changes in policies to restrict emissions or adapt to the effects of climate change, imposing costs on issuers, for example more stringent emission regulations and carbon pricing, e.g., carbon boarder taxes, and country-specific carbon pricing policies that will affect margins for carbon intensive businesses ; and ii) market risks such as reduction in demand for thermal coal due to the energy transition and consequential substitution of the fossil fuel by renewables, also changing the met coal market dynamics due to the necessity of low-carbon products for steel industry decarbonization.
Longo prazo	10	30	Vale considers 10 years or more as long-term. For instance, the company conducted a business resilience test in the various climate change scenarios for a twelve-year horizon (until 2030), with the aim of being prepared for the challenges of the transition to a low carbon world. Long-term analysis includes physical chronic and acute risks such as shifts in climate patterns (e.g., sustained higher temperatures). For example: • Changes in precipitation patterns and extreme variability leading to increased operating costs; • Sea-level rise impacting production and distribution of the ore, leading to losses. Event-driven, including increased severity of extreme weather events, such as cyclones, hurricanes, or floods. The long-term analysis for physical risks associated with climate change are focused on identifying necessary investments in facilities to adapt to and/or mitigate impacts due to climate change. Additionally, Vale is mapping key emerging long-term risks that embed transition risks to a low-carbon economy. These risks are those related to technological, market, regulatory and legal or reputational aspects and includes: a) Product substitution due to new technologies and processes may result in the advent or discontinuation of some products in our portfolio; b) Alterations in demand, specifically for low carbon products, may impact our business, according to the scenario variation; c) Changes in public policies, including carbon taxation, may impose higher costs on emitters, which impacts the cost of our products; d) Litigation may occur as a result of more restrictive laws and reputational impacts due to consumer and investor perceptions about Vale's approach to the transition to a low carbon economy.

C2.1b

(C2.1b) Como a organização define um impacto financeiro ou estratégico "significativo" nos seus negócios?

To achieve our goals, maintain financial strength and flexibility, and ensure business continuity, Vale developed an integrated framework for managing the various risks to which the company is exposed. In 2021, we expanded the use of our global risk management platform to promote synergies among our lines of defense, ensuring greater sharing of knowledge and process simplification. Our risk management strategy considers a wide range of factors that could affect our business, including market risk factors (market risk); risks associated with inadequate or failed internal processes, people, systems or external events (operational risk); risks arising from third-party obligations (credit risk); risks from exposure to legal penalties, fines or reputational losses associated with failure to act in accordance with applicable laws and regulations, internal policies or best practices (compliance risk); and risks associated with our business model, ESG, and political and regulatory conditions in countries in which we operate (strategic risk), among others. Our Board of Executive Officers has established five advisory committees (the Business Risk Executive Committees) to advise our management with respect to each of these risks: (i) operational risks, (ii) geotechnical risks, (iii) strategy, finance and cyber risks, (iv) compliance, institutional relations and communication risks and (v) sustainability. The main responsibilities of these committees are, among others: promoting and spreading the culture of risk management throughout the company; supporting the first line of defense; supporting our management on preventive monitoring of potential operational, geotechnical, strategy, finance, compliance, and cyber risks; making preventive recommendations about potential risks; and recommending revisions about management instruments and risk prevention principles, in accordance with the Risk Management Policy. Vale's climate change risks identification and assessment are integrated into the company's corporate risk management process. Vale has adopted TCFD's guidelines to manage the impacts of transition risks to a low carbon economy and physical impacts. The Executive Risk Committee – Sustainability, continuously monitors climate change risks and reports them to the Sustainability Committee. This Committee acts as the second line of defense, continuously evaluating the process of management of climate change risks and opportunities. The main tools Vale uses to identify climate change risks and opportunities are:

• Climate change scenario analysis and Vale Climate Forecast with robust methodologies to evaluate our exposure to climate risks and opportunities.

• External environment monitoring, including new regulations, emerging technologies, market developments and public policies – the company monthly has an internal Climate Intelligence Bulletin that maps the most relevant news for the climate agenda.

• Stakeholder engagement in the most relevant industry forums, in order to monitor new positioning, emerging trends, and regulations.

To better understand, track and estimate the potential exposure to climate change risks, the TCFD established climate-related metrics for transition and physical risks. Vale's results of these metrics are indicated below:

•71% of Vale's assets have been assessed under climate change physical risks exposure.

• *91% of Vale's EBITDA are currently highly exposed to climate opportunities. The EBITDA considered highly exposed are the North Corridor, which represent around 76% of Vale's iron ore EBITDA, and Vale's pellets, copper, and nickel assets. A "substantial impact" for Vale is an impact financial or non-financial that may impair Vale's ability to achieve its strategy*. Although Vale's definition of a noun varies with time and situation, Vale considers a substantial financial impact to be between 5 and 10% of EBITDA, around.US$ 988 MM – 1,976 MM.

C2.2

(C2.2) Descreva o(s) processo(s) para a identificação, a avaliação e a resposta aos riscos e às oportunidades climáticos.

Etapa(s) da cadeia de valor abrangida(s)
Operações diretas
Upstream
Downstream

Processo de gestão de riscos
Integrado no processo de gestão de riscos multidisciplinar da empresa como um todo

Frequência da avaliação
Mais do que uma vez por ano

Horizonte(s) de tempo abrangido(s)
Curto prazo
Médio prazo
Longo prazo

Descrição do processo
At Vale, the identification and analysis of climate-related risks are part of the company's corporate risk management process, that is, integrated into a multi-disciplinary company-wide risk management process. Vale's risk management process considers the present risks (operational and non-operational), business risks, and emerging risks, whose concepts are contemplated in the company's specific norms. Therefore, the three value chain stages (Direct operations, Upstream, and Downstream) are covered, as well as the short (up to 3 years), medium (3 to 10 years), and long-term horizons (more than 10 years).
The company's integrated risk governance practice is based on a three lines of defense model and Vale re-evaluates its risk practices from time to time to ensure the alignment between strategic decisions, performance and the risk approach determined by the Board of Directors (BD). Thus, in December 2022, Vale revised its Risk Management Policy turning it into a more principles-oriented policy and further
clarifying roles and responsibilities of the three lines of defense to facilitate its application in the daily operations. Besides, the company also revised its Risk Management Rules to update the Risk Rulers and Matrices and include concepts of business and emerging risks, priority risk themes and risk appetite, and to reinforce the roles and responsibilities of the three lines of defense.
Vale's BD has established five permanent advisory committees, with the Audit and Risks Committee with major roles in advising the Board on and monitoring the risks. Besides, the Executive Committee has established five advisory committees (the Risk Executive Committees) to advise our management with respect to each of these risks: (i) operational risks, (ii) geotechnical risks, (iii) strategy, finance and cyber risks, (iv) compliance, institutional relations and communication risks and (v) sustainability risks.
All climate-related risks are assessed monthly, bi-montly, bi-annualy and annually. The monthly evaluation is carried out through sustainability KPIs, considering the topic of climate change. The bi-monthly evaluation is included in the monitoring of goals in the Low Carbon Forum. The bi-annual evaluation is conducted by the Sustainability Risk Committee, which advises the BD. Meanwhile, the annual evaluation of climate risks is discussed in the sustainability strategy at the Sustainability Committee meeting with the BD.
Vale uses a risk matrix that considers the severity and probability of each occurrence. For risks related to climate change, the company developed specific analysis methodologies divided between impacts resulting from the transition to a low carbon economy and physical impacts, in line with the guidelines of the Task Force on Climate-related Financial Disclosures - TCFD.
The Executive Risk Committee (ERC) – Sustainability, continuously monitors risks related to climate change and reports it to the Sustainability Committee, which acts as the 2nd line of defense continuously evaluating the process of management of climate change risks and opportunities management. Therefore, these topics are periodically presented to the Risk Management Executive Committee, where they are reviewed for quarterly reporting to the Board of Directors and published in the Annual Report and the Sustainability Report. Besides, the identified risks are monitored and reviewed annually if no material change occurs during the year.
The main tools used at Vale to identify risks and opportunities arising from climate change are: 1. Analysis of climate change scenarios and Vale Climate Forecast, with robust methodologies for analyzing risks and opportunities related to climate change; 2. Monitoring of the external environment, including new regulatory frameworks, emerging technologies, market dynamics, and public policies – the company internally consolidates a Monthly Climate Intelligence Bulletin, which maps the most relevant news for the climate agenda; 3. Engagement with stakeholders in the main industry forums, in order to monitor new positions, trends, and regulations.
As part of the strategy, and in line with the recommendations of TCFD, Vale carried out a preliminary scenario analysis of its business resilience in the three climate change scenarios, considering the International Energy Agency (IEA) scenarios, which are recognized industry-wide and have ample international support. Vale's main risks related to climate change are Regulatory/Legal, Technological, Market, Reputation e Physical risks. The construction of climate-related scenarios allows Vale to identify indicators to monitor the external environment and to recognize changes in scenarios more quickly, enabling agile adaptation to current needs. As a result, the company invests in businesses and technologies that support the growth of a low-carbon economy and provide solutions for the supply chain and society as a whole. Additionally, assessing the impact via scenario analysis demonstrates the material and financial impact of transition risks on the different businesses, in the EBITDA.
Once climate change risks are identified, the main climate-related risks are included in the company's risk management process and are assessed based on their severity and probability of occurrence, through analysis by the ERC and reporting to the BD. In addition, monitoring of the main risks is also communicated within the scope of the Low Carbon Forum.
To make decisions to mitigate, transfer, accept, or control the identified climate-related risks and to capitalize on opportunities, Vale's methodology is dived into transition risks (regulatory, legal, technological, market, and reputational changes) and physical risks (acute and chronic). Thus, for transition risks, Vale developed an internal carbon pricing model to assess the risks linked to climate change through projections of possible impacts on the operating costs of each business unit and additionally, the company participates in external forums and has tools for monitoring and controlling transition risks.
For physical risks, based on the Intergovernmental Panel on Climate Change (IPCC) studies, Vale developed, together with ITV, a projection and mapping model of the possible physical impacts that pose risks to the Company's operation. Climate projection is performed using a climate modelling system that allows future temperature and precipitation scenarios to be obtained. The projection is divided into: 1) Very short-term, medium-term, and seasonal forecasts for the physical risks, whose main focus is the mapping and mitigating impacts on the operations and products shipment; 2) Long-term analysis, in which the main focus is the assessment of the impacts of the climate change in a multi-year horizon on the operational sites, aiming to evaluate the necessary investments in the facilities for their adaptation/mitigation (planning).

C2.2a

(C2.2a) Quais tipos de riscos são levados em conta nas avaliações de riscos climáticos da organização?

	Relevância e inclusão	Explique

	Relevância e inclusão	Explique
Regulamentação atual	Relevante, sempre incluído	Guided by the TCFD, we use a risk matrix that considers the severity and likelihood of occurrence of risk events. In the case of risks related to climate change, Vale's analysis methodologies are divided into the impacts resulting from transition risks (policy and legal, technological, market and reputational changes) and physical risks (acute and chronic). Vale has also implemented a proprietary carbon pricing model to assess risks linked to climate change, by projecting possible impacts on the operating costs of each business unit. This model considers the impacts on direct cost, including impacts on the supply chain. Some examples of the Main Climate-related Regulatory risks mapped by Vale are: • More stringent emission regulations, particularly on the Chinese iron and steel industry, may come to have a negative impact on demand for iron ore and metallurgical coal; • Increasing restrictions, adopted by the International Maritime Organization (IMO), will make it mandatory to reduce shipping emissions, which may be reflected in the average freight cost; In 2021, Vale received an international award (Wind Propulsion Innovation Awards) for its innovative use of rotor sails on its large ships. The award was in the category for companies promoting the adoption of this type of technology through prototypes or commercial use. In the same year, Vale tested the world's first VLOC (Very Large Ore Carrier) equipped with a system that produces air bubbles in its hull to make it more fuel efficient and reduce GHG emissions. • Operating in countries with a sparse or under-developed renewable energy capacity leads to reliance upon an emissions profile that in time may come to be restricted • Country-specific carbon pricing policies will affect margins for carbon intensive businesses. Policy and regulatory risks are particularly relevant for Vale where regulations aimed at reducing emissions may have a particularly direct effect on its operations, value chain, and demand for its products. For example: In 2022, the World Bank, in the "State and Trends of Carbon Pricing 2023", estimated that approximately 23% of global GHG emissions were covered by carbon pricing instruments in operation. Vale has low exposure to carbon pricing, but if Brazil adopts carbon pricing, this reality changes completely and may lead to a consequent increase in the cost of Vale's products.
Regulamentação emergente	Relevante, sempre incluído	Vale follows trends and studies on climate change in global forums, which aim to determine regulatory and economic strategies to mitigate risks and adapt worldwide. COP27 reinforced our view that the increased focus on greenhouse gas emissions pricing and the expansion of carbon markets around the world may impact our operational costs, mainly through carbon taxes, higher price for fossil fuels and higher costs for international freight. The emergence of more restrictive policies and regulations regarding air pollution and resource extraction leads to adaptation challenges for companies involved in the extraction and transformation of natural resources, such as Vale. For example: One study carried out by the IEA (International Energy Agency) in the report entitled "Net Zero by 2050 - A Roadmap for the Global Energy Sector" projects a carbon price of US$ 90/tCO2e for Brazil in 2030 in its net-zero scenario. If Brazil adopts this carbon pricing, the consequence will be an increase in the cost of Vale's products, in addition to indirect costs, such as those of the value chain (mainly energy supply and impacts on contract costs). The construction of climate-related scenarios allows Vale to identify indicators to monitor the external environment and more quickly recognize changes in scenarios, allowing for an agile adaptation to current needs. As a result, the company invests in businesses and technologies that support the growth of a low-carbon economy and provide solutions for the supply chain and for society as a whole. To anticipate this risk Vale has adopted, in 2019, an internal carbon price (shadow price) of USD 50 per ton of CO2 equivalent applicable for economic-financial analysis of current and capital investments, used in Marginal Abatement Cost Curve (MACC) and projects prioritization. The carbon price methodology started to be applied in June 2020. The association of cost to the greenhouse gas emissions in the feasibility analysis enables explaining the impact of the emissions on the project valuation at the time of decision making the projects from the Carbon Target portfolio feasible. This price is also aligned with the 2ºC scenario, following the recommendations of the Carbon Pricing Leadership Coalition. An example of emerging regulation that will impact in Vale is the SEC proposal entitled "The Enhancement and Standardization of Climate-Related Disclosures for Investors" that was released in March 2022.
Tecnológico	Relevante, sempre incluído	Since 2011, Vale's technology department promotes several seminars with the national and international scientific community to discuss the future of the mining sector and the perspectives of the industry. The main topics are climate change and natural phenomena, production and utilization of energy, planning and integrated management of resources, and sustainable practices throughout the value chain. This department has set up a research group focused on climate change that seeks to understand the science of climate change and to develop new technologies aiming for a better adaption of Vale in the new low-carbon economy. More than 90% of our Scope 3 emissions relate to the iron ore processing in the steel industry. We have identified two pillars of the Scope 3 roadmap: (i) portfolio differentiation, with high-quality products, biomass, and low CO2 technologies and low carbon solutions such as Mega Hubs and briquettes; and (ii) partnerships in shipping and in the steel sector. We can offset up to 20% of the target with nature-based solutions. For the first pillar, we are considering our higher-quality iron products and agglomerates which will favor the migration to the lower emitting Electric-Arc Furnace (EAF) route. Moreover, steel emission reductions will be reached based on biomass-based pig iron production (through our proprietary Tecnored technology), among other solutions. Still on this pillar, in 2022 Vale signed a Memorandum of Understanding with the German steel company Stahl-Holding-Saar GmbH & Co. KGaA ("SHS"), as well as signed three agreements to develop Mega Hubs in the Middle East to develop and provide decarbonization solutions for the steel industry, seeking solutions focused on the carbon-neutral steel production process. For the second pillar in the Scope 3 emissions roadmap, we completed an investment of US$6 million in Boston Electrometallurgical Company to acquire a minority stake and promote the development of a technology focused on steel decarbonization by using electricity, in early 2021.
Legal	Relevante, sempre incluído	In connection with the necessary authorizations, licenses, and permits, Vale may be subject to restrictions relating to the operation and maintenance of dams, climate change, protection of indigenous people, protection of caves, fauna and flora, among others. Social, environmental, and health and safety regulations also impose standards, procedures, monitoring, and operational controls on activities relating to mineral research, mining, beneficiation, pelletizing activities, railway and marine services, ports, de-characterization, decommissioning, mine closure activities, distribution and marketing of our products. Such regulation may give rise to significant costs and liabilities as litigation and legal and regulatory uncertainties relating to these or other related matters that can adversely affect our financial condition or cause harm to our reputation. For transition risks (Regulatory changes, Legal, Technological, Market and Reputation), Vale created a carbon shadow pricing tool that foresees possible future impacts on the operational cost for each Project. It includes direct costs due to carbon pricing mechanisms and indirect costs, considering the impact on the supply chain related to carbon pricing mechanisms. Environmental legislation is becoming more stringent around the world, which can lead to higher costs for compliance with environmental laws. Vale expects more attention from several governments on issues associated with reducing greenhouse gas emissions as a result of climate change concerns, especially as of the entry into force of the Paris Agreement at the end of 2016. Through this, Vale works to identify and mitigate legal risks. In 2019, the company reviewed its climate goals, including new commitments to reduce greenhouse gas (GHG) emissions, and bolder goals than previously established in 2018, aiming to become a net zero mining company. The 33% absolute scope 1 and 2 emissions reduction target by 2030, with 2017 as a baseline, is aligned with the Paris Agreement's objective of limiting global warming to below 2ºC. In 2020, Vale committed to a target to reduce scope 3 net emissions by 15% until 2035, with 2018 as a baseline.
Mercado	Relevante, sempre incluído	For transition risks, Vale created a carbon shadow pricing tool that foresees possible future impacts on operational costs for each Project. We developed an integrated framework for managing the risks to which we are exposed, to support the achievement of our goals, financial strength, and business continuity. In 2021, we expanded the use of our global risk management platform to promote synergies among our lines of defense, ensuring greater sharing of knowledge and process simplification. In December 2022, we revised our Risk Management Policy making it more principles-oriented and further clarifying roles and responsibilities. Our risk management strategy considers the impact on our business of market risk factors, risks associated with inadequate or failed internal processes, people, systems or external events (operational risk), risks arising from third-party obligations (credit risk), risks from exposure to legal penalties, fines or reputational losses associated with failure to act according to applicable laws and regulations, internal policies or best practices (compliance risk), and risks associated with our business model, ESG, and political and regulatory conditions in countries in which we operate (strategic risk), among others. One of the market-related climate risks is the change in consumer mentality, with the search for products with a lower carbon footprint, which will drive the reduction in the use of coal. This risk represents a great opportunity to continue to improve Vale's portfolio to provide solutions to its customers and to adapt to potential market demands. Vale has developed premium products that can reduce emissions in steelmaking and fulfill regional needs. There are also other risks such as steel demand may stagnate due to building retrofit, alternative options of urban mobility, assumed efficiencies down the value chain; the possibility of a nickel-free battery arising may suppress nickel demand; and recycling for both Nickel and Copper, where the significant level of recycling is critical for the base metal's strategy. However, the main emerging technologies in a low-carbon economy are based on direct reduction via low-carbon hydrogen and CCUS associated with different commercials or innovator's production routes. These technologies can differently impact Vale's strategy for high-quality products, pushing direct reduction pellets or downplaying the importance of high-quality materials if carbon capture massively succeeds.
Reputação	Relevante, sempre incluído	Risks and opportunities related to climate change are the responsibility of the Sustainability Department. The risks are identified based on strategic business planning, existing risk management processes and regulatory environment monitoring. It is recommended that the risks should be reviewed by each risk owner whenever there are relevant changes in the risk management and/or control performance or at least within a maximum period of 24 months. Regarding Governance, the Sustainability risk theme are monitored and presented to the Sustainability Executive Risk Committee and Sustainability Committee in specific frequencies, where they are reviewed for reporting to the Vale`s Executive Committee and also published in the Annual Integrated Report. The Board of Directors is also continuously evaluating risks as well as opportunities to further align Vale's portfolio to a low carbon economy. In 2019, Vale committed to the New Pact with Society to positively impact society, going beyond taxes, social projects and reparation of Brumadinho, by becoming a development enabler in the areas where Vale operates and fostering a safer and more sustainable Brazilian mining industry. Also, in 2019, the company published a group of sustainability goals (link to the governance part - goals), including new commitments to reduce greenhouse gas (GHG) emissions, bolder than goals established previously in 2018, aiming to become a net zero mining company: • To reduce 33% of the absolute emission of scopes 1 and 2 in 2030, aligned with the Paris Agreement; • To become net zero (scope 1 and 2) by 2050. In 2020, Vale committed to a target to reduce scope 3 net emissions by 15% until 2035, with 2018 as the baseline. Vale monitors the path to meet the scope 1 and 2 emission reduction targets in the 2030 and 2050 horizon. The company plans to review its scope 3 target in 2025.
Parâmetro físico agudo	Relevante, sempre incluído	For managing Climate change's physical risks, Vale developed and is currently implementing the "Vale Climate Forecast" methodology, which is an in-house methodology, developed in conjunction with the ITV, that is intended to enable us to analyze and monitor the short- and long-term physical impacts caused by climate issues, such as changes in rainfall patterns and volumes, temperature variation, lightning incidence and storm occurrence for all the company's operations. The methodology is divided into: (i)Very short-term, midterm, and seasonal forecasts for the physical risks, whose main focus is the mapping and mitigating impacts on the operations and products' shipment; (ii) Long-term analysis, which the main focus is the assessment of the impacts of the climate change in a multi-year horizon on the operational sites, aiming to evaluate the necessary investments in the facilities for their adaptation/mitigation (planning). The long-term analysis has four steps: (i) climate projections and quantification of physical impacts; (ii) identification and quantification of operational risks; (iii) quantification of financial impacts of the mapped risks and (iv) registration of the mapped risks in Vale's risk management systems for constant monitoring and implementing action plans when necessary. Long-term analyses have already been performed for the base metals operations in Canada and all operations in Pará and Maranhão, Brazil – including mines and railroads and the Ponta da Madeira Maritime Terminal. For acute physical risks, the possibility of exacerbation of periods of rain and drought was identified, as well as natural disasters such as hurricanes and tsunamis, which can affect ore production and distribution, leading to losses. Vale considers an average operational loss of 0.5% in production due to abnormal precipitation conditions in Ponta da Madeira Port. Considering 2022's iron ore net operating revenues of USD 30 billion, it would have accrued a loss of about USD 150 million per year. These risks are monitored on an asset level using sensors and satellite data, consolidate in the company's Integrated Operations Center, and mitigated through production planning and emergency response. ~70% of Vale's assets have been assessed under climate change physical risks exposure. Vale has also installed a Weather Radar in the Carajás region to improve short-term climate-related variables forecast.

	Relevância e inclusão	Explique
Físico crônico	Relevante, sempre incluído	For managing Climate change's physical risks, Vale developed and currently, is implementing the "Vale Climate Forecast" methodology, which is an in-house methodology, developed in conjunction with the ITV, that is intended to enable us to analyze and monitor the short- and long-term physical impacts caused by climate issues, such as changes in rainfall patterns and volumes, temperature variation, lightning incidence and storm occurrence for all the company's operations. The methodology is divided into: (i)Very short-term, midterm, and seasonal forecasts for the physical risks, whose main focus is the mapping and mitigating impacts on the operations and products' shipment; (ii) Long-term analysis, which the main focus is the assessment of the impacts of the climate change in a multi-year horizon on the operational sites, aiming to evaluate the necessary investments in the facilities for their adaptation/mitigation (planning). The long-term analysis has four steps: (i) climate projections and quantification of physical impacts; (ii) identification and quantification of operational risks; (iii) quantification of financial impacts of the mapped risks and (iv) registration of the mapped risks in Vale's risk management systems for constant monitoring and implementing action plans when necessary. For the chronic physical risk, it was identified the possibility of sea-level rise which may affect the production and distribution of the ore, leading to losses. For example: a possible long-term mapped impact is Vale's Guaíba Island (TIG) terminal in Mangaratiba, Rio de Janeiro, which due to rising sea levels may become unusable. or will need investment for adaptation. Mitigation actions at TIG that are underway: drainage solutions, containment of overflow water from the patio and emergency/permanent treatment stations. Mitigation actions at Vale's Guaíba Island (TIG) terminal in Mangaratiba, Rio de Janeiro, that are underway: drainage solutions, containment of overflow water from the patio and emergency/permanent treatment stations.

C2.3

(C2.3) Foi identificado algum risco climático inerente com potencial para causar um impacto financeiro ou estratégico considerável nos negócios?
Sim

C2.3a

(C2.3a) Forneça detalhes dos riscos identificados com potencial para causar um impacto financeiro ou estratégico significativo para os negócios.

Identificador
Risco 1

Em que ponto da cadeia de valor ocorre o fator de risco?
Downstream

Tipo de risco e Principal fator de risco climático

Regulamentação atual	Mandatos e regulamentação sobre produtos e serviços existentes

Principal impacto financeiro em potencial
Maiores custos diretos

Tipo de risco climático mapeado conforme a classificação de risco tradicional do setor de serviços financeiros
<Not Applicable>

Descrição específica da empresa
Demand for our iron ore and iron ore pellets is a function of global demand for carbon steel. The demand for steel products, in turn, is influenced by many factors, such as global manufacturing production, civil construction and infrastructure spending. Iron ore and iron ore pellets, which together accounted for 80% of our 2022 net operating revenues from continuing operations, are used to produce carbon steel. In 2022, China accounted for 62.9% of our iron ore and iron ore pellet shipments, and Asia as a whole accounted for 77%, Brazil accounted for 11.8%, Europe accounted for 5.7% followed by the Middle East and Africa with 4.3% and others with 1.2%. Our ten largest customers collectively purchased 130 million metric tons of iron ore and iron ore pellets from us, representing 43% of our 2022 iron ore and iron ore pellet sales volumes and 43% of our total iron ore and iron ore pellet revenues. As a mining company, one of Vale's risks related to emerging regulation is CBAM (Carbon Border Adjustment Mechanism). The implementation of CBAM aims to mitigate "carbon leakage". This mechanism will initially apply to imports of certain goods and selected precursors whose production is carbon intensive and at most significant risk of carbon leakage, impacting sectors such as the iron and steel sector and also impacting Vale as our products are part of the value chain of the previously mentioned sector. The CBAM will enter into force in its transitional phase as of 1 October 2023.

Horizonte de tempo
Curto prazo

Probabilidade
Virtualmente certo

Magnitude do impacto
Média-alta

É possível fornecer um valor para o potencial impacto financeiro?
Sim, uma faixa estimada

Valor do potencial impacto financeiro (moeda)
<Not Applicable>

Valor potencial do impacto financeiro – mínimo (moeda)
15000000

Valor potencial do impacto financeiro – máximo (moeda)
20000000

Explicação do valor do impacto financeiro
According to the proposal, the CBAM will mirror the ETS in the sense that the system is based on the purchase of certificates by importers. The price of the certificates will be calculated depending on the weekly average auction price of EU ETS allowances expressed in € / tonne of CO2 emitted (products' carbon footprint). Importers of the goods will have to, either individually or through a representative, register with national authorities where they can also buy CBAM certificates. Some studies showed when the tax is fully implemented the importers will be required to pay an estimated €75 per metric ton of CO2 emission with projections approaching €100 per metric ton by 2030.
The potential financial impact figure ranges from US$ 15 to 20 million is based on the premise of pellets taxation. We produce iron ore pellets in Brazil and Oman, directly and through joint ventures.

Therefore, to calculate our financial impact we considered the annual volume of scope 1 and 2 emissions (market-based) from pellet production in Brazil and Oman (A), the percentual of pellets' sales to Europe (B) and an estimated allowance of €100 per tCO2e (C), calculating the worst scenario for this risk. Thus, considering Vale's public results from 2022, we would have: A * B * C = 3.1 million tCO2e * 5.7% * 100 €/tCO2e ~ USD 18.8 million per year (considering 1,067 from the Brazilian Central Bank on 12/30/2022 as the conversion factor). Additionally, we highlight that this value is a projection and it's between the values used as minimum and maximum potential financial impact figure, since depending on the conjuncture, which can involve changes in the exchange rate and the possibility of development of the regulated carbon market in Brazil, it can oscillate up or down.

Note: We emphasize that the calculations of potential financial impact figures are exercises, only illustrative, and therefore are not accurate values.

Custo da resposta ao risco
9000000

Descrição da resposta e explicação do cálculo do custo
The scenarios analyzed by Vale showed that the steel industry's decarbonization will put a high value on high-quality, lower-emission products. We continue to improve our portfolio to provide our customers with solutions and to adapt to potential market demands. Our cost of response to this risk includes using our internal carbon price of USD 50/tCO2e. Therefore, to estimate the cost of response we considered the annual pelletizing volume of emissions (X), the percentual of pellets' sales to Europe (Y) and our internal carbon price (Z). Thus, for 2022 we would have: X * Y * Z = 3.1 million tCO2e * 5.7% * 50 USD/tCO2e = ~ US$ 9 million per year.
Case study: Situation: Steel demand will grow steadily over the years based on emerging regions and current megatrends. Task: Decarbonization will create market segmentation with increased appetite for high quality products that can deliver lower CO2 emissions. Our strategy aims to accelerate the implementation of breakthrough iron solutions to attend more stringent demand of steelmakers. As development progresses, an optimized portfolio focused on improving quality and gradually recovering capacity will be achieved. Our goal is to increase the production of agglomerated products – briquettes and pellets – securing the supply of high-grade products to the market. Action: Thus, Vale recently announced it managed to produce commercial quality pellets on an industrial scale without using anthracite coal. In a test carried out in a pellet plant in Vargem Grande, Minas Gerais, Vale replaced 100% of the fossil fuel with biocarbon – that is a renewable, zero-emission product obtained by carbonizing biomass – to fire the pellets. Result: Using biocarbon just in the Vargem Grande pellet plant will cut annual carbon dioxide emissions by roughly 350,000 metric tons, equivalent to the annual emissions of approximately 75,400 small 1-liter cars. It's important to highlight that more tests, of longer duration, will be carried out in 2023 to thoroughly evaluate the process, and only after that Vale will be able to generate information for the development of the necessary engineering work aimed at the definitive implementation of this project.

Explique
The risk 1 reported here has been completely reformulated compared to the previous year. We understand that the update was necessary to make the inherent risk of the company clearer and to encompass the company's business more broadly. Over the years, Vale has had a learning curve and has a better understanding of inherent risks and has more efficient response actions and case studies to create the necessary resilience to mitigate them.

Identificador
Risco 2

Em que ponto da cadeia de valor ocorre o fator de risco?
Operações diretas

Tipo de risco e Principal fator de risco climático

Tecnológico	Outro, especifique (Unavailability or lack of readiness of the required technologies in the market)

Principal impacto financeiro em potencial
Maiores custos diretos

Tipo de risco climático mapeado conforme a classificação de risco tradicional do setor de serviços financeiros
<Not Applicable>

Descrição específica da empresa
According to the TCFD, transitioning to a lower-carbon economy may entail extensive technology, policy, legal, and market changes to address climate related mitigation and adaptation requirements. Among those, technological improvements or innovations that support the transition to a lower-carbon, energy efficient economic system can have a significant impact on organizations. The development and use of emerging technologies such as renewable energy, energy efficiency, battery storage, and carbon capture and storage, for example, will affect the competitiveness of certain organizations, their production and distribution costs, and the demand for their products and services.
However, there is a technological risk given the uncertainties regarding low carbon technologies, which is a risk related to technological maturity curve, and the uncertainty in technological development and deployment that may lead to unavailability or lack of readiness of the required technologies in the market.
This risk could affect Vale as we are committed to fully integrating sustainability into our business through a comprehensive approach based on systematic planning and execution, prioritizing risk and impact management, and establishing a positive social, economic and environmental legacy in the places where we operate; our practices related to ESG are evolving; and we are focused on the decarbonization of our operations. More specifically, it could result affecting Vale's capacity to reduce its Scopes 1 and 2 absolute emissions by 33% by 2030, with 2017 as baseline.

Horizonte de tempo
Longo prazo

Probabilidade
Muito improvável

Magnitude do impacto
Média-alta

É possível fornecer um valor para o potencial impacto financeiro?
Sim, uma faixa estimada

Valor do potencial impacto financeiro (moeda)
<Not Applicable>

Valor potencial do impacto financeiro – mínimo (moeda)
6000000000

Valor potencial do impacto financeiro – máximo (moeda)
9000000000

Explicação do valor do impacto financeiro
Considering the possibility of this risk materializing and, consequently, Vale not being able to reduce its emissions, we would have an increase in the company's direct

costs, given the following: The potential financial impact figure calculated only considers the impact of taxing residual emissions and, therefore, does not contemplate reputational impact, share prices, among others. Thus, the 8 billion is based on Vale's perpetuity value of the payment stream, as of 2030, estimated as follows: perpetuity of ((A-B) x C) / (D).
Where:
• A = Business as Usual (BAU) emissions in 2030 as published at Vale ESG Webinar for Climate Change with investors = 18.4 million tCO2e
• B = Emissions limit assuming a target of 33% as published at Vale ESG Webinar for Climate Change with investors = 9.5 million tCO2e
• C = carbon cost of ranging from 100 to 150 USD/tCO2e
• D = Average market WACC, according to the benchmarking of the mining sector = 15%

Considering an internal carbon pricing of 100 USD/tCO2e we would have a minimum financial impact of approximately USD 6 billion. Substituting the internal carbon pricing for 150 USD/tCO2e we would have a maximum financial impact of approximately USD 9 billion.

Note: We emphasize that the calculations of potential financial impact figures are exercises, only illustrative, and therefore are not accurate values.

Custo da resposta ao risco
6000000000

Descrição da resposta e explicação do cálculo do custo
Case study: Situation: To support its sustainability goals, focusing on the transition to a low-carbon economy Vale created an internal program called PowerShift. Task: We are focused on the decarbonization of our operations, and we plan to reduce our Scopes 1 and 2 absolute emissions by 33% by 2030, with 2017 as baseline. PowerShift aims to make the Company's energy matrix clean by focusing on the use of renewable energy and alternative fuels, greater efficiency of operations using new technologies, and forest promotion. Action: Vale's cost of response to this risk is included in the expected investment of up to USD 6 billion in our operations by 2030. We have built a roadmap, with clear milestones, with a plan to invest US$4 to US$6 billion until 2030 to develop low carbon solutions, such as biofuels use, electrification and renewable electricity generation. Our current portfolio of initiatives consolidates more than 40 projects, based on a Marginal Abatement Cost Curve ("MAC Curve"). We intend to reduce GHG in our operations by increasing the processes' energy efficiency, and by developing solutions based on replacing usual energy sources by low carbon and renewable alternatives. These initiatives include, among others, the use of biofuels replacing fossil fuels, electrification of equipment and processes, use of alternative fuels, carbon capture technologies, and development of alternative processes. The investment considers that fossil fuel consumption, mainly in furnaces, is the biggest source of Vale's scope 1 emissions, representing more than 55% of the company's annual emissions. Result: As part of the PowerShift initiatives, recently Vale carried out a test at the Vargem Grande pelletizing plant to replace up to 50% of anthracite consumption with biochar. Using biocarbon just in the Vargem Grande pellet plant will cut annual carbon dioxide emissions by roughly 350,000 metric tons.
Value breakdown: 44% will be allocated to biofuels, bioenergy, and electrification projects; 47% for renewable electricity and energy efficiency; and 9% for new processes, process changes, and CCS. The project pipeline is updated annually, which may lead to changes in the estimated percentages for each project.
Note: We emphasize that the breakdown of the cost of response to risk provided is an exercise, only illustrative, and therefore it's not accurate, once Vale's MAC Curve varies and the exact investments are strategic and confidential.

Explique
The risk 2 reported here has been completely reformulated compared to the previous year. We understand that the update was necessary to make the inherent risk of the company clearer and to encompass the company's business more broadly. Over the years, Vale has had a learning curve and has a better understanding of inherent risks and has more efficient response actions and case studies to create the necessary resilience to mitigate them.

Identificador
Risco 3

Em que ponto da cadeia de valor ocorre o fator de risco?
Operações diretas

Tipo de risco e Principal fator de risco climático

Físico crônico	Alterações nos padrões e nos tipos de precipitações (chuva, granizo, neve/gelo)

Principal impacto financeiro em potencial
Maiores custos indiretos (operacionais)

Tipo de risco climático mapeado conforme a classificação de risco tradicional do setor de serviços financeiros
<Not Applicable>

Descrição específica da empresa
Vale assesses physical risks using the in-house methodology called "Vale Climate Forecast". The analysis is done by mapping impacts on Vale's operations caused by climate-related variables which are forecasted by Vale using IPCC scenarios such as RCP 4.5 and RCP 8.5. These mapped risks and impacts are registered in Vale's risks management tools to be monitored and, when necessary, action plans to minimize and/or mitigate its impacts are created. ~70% of Vale's assets have been assessed under climate change physical risks exposure. The lack of water resources may jeopardize the maintenance of air quality in operations, a mandatory condition to operate. On the other hand, a heavy rainy season may impact the piles' stability, railway operation and the quality of the product (high humidity in the ores). Changes in precipitation patterns may present a risk to Vale's operations, as heavier rainfall may cause damage to equipment and logistic assets, reducing or even disrupting production. The failure or unavailability of any critical asset, whether resulting from natural events or operational issues, could have a material adverse effect on our business. Substantially all of our iron ore production from the Northern system is transported from Carajás-PA to the port of Ponta da Madeira-MA through the Carajás railroad (EFC). Any interruption related to flooding of the EFC or of the port of Ponta da Madeira could significantly impact our ability to sell our products from the Northern system. With respect to the EFC, there is a particular risk of interruption at the bridge over the Tocantins River, in which the trains run on a single line railway. In the port of Ponta da Madeira, there is a particular risk of interruption at the São Marcos access channel, a deep-water channel that provides access to the port. The EFC railroad links our Northern System mines in the Carajás region in the Brazilian state of Pará to the Ponta da Madeira maritime terminal, in São Luis-MA. In 2022, the EFC railroad transported 173,167 thousand metric tons of iron ore and 16,018 thousand metric tons of other cargo. EFC also carried 329 thousand passengers in 2022. EFC supports the largest train, in terms of capacity, in Latin America, which measures approximately 3.4 kilometers, weighs approximately 41.5 thousand gross metric tons when loaded and has 333 cars. In 2022, EFC had a fleet of 298 locomotives and 20,941 wagons, which were operated by us and third parties.

Horizonte de tempo
Longo prazo

Probabilidade
Mais provável que improvável

Magnitude do impacto
Alta

É possível fornecer um valor para o potencial impacto financeiro?
Sim, uma estimativa de valor único

Valor do potencial impacto financeiro (moeda)
150000000

Valor potencial do impacto financeiro – mínimo (moeda)
<Not Applicable>

Valor potencial do impacto financeiro – máximo (moeda)
<Not Applicable>

Explicação do valor do impacto financeiro
It depends on the type of asset/operation that will be impacted. There may be Capital Expenditure necessary to replace a damaged asset. The physical impact may increase operational costs, maintenance costs, etc. For the estimation. Vale considers an average operational loss of 0.5% in the production due to abnormal precipitation conditions in Ponta da Madeira Port. Considering 2022's iron ore net operating revenues of approximately USD 30,000 million, it would have accrued a loss of about USD 150 million per year, therefore, our potential financial impact. This value represents 0.5% of the net operating revenues from iron ore (USD 30,000 million x 0.5% = US$ 150 million). Moreover, damages suffered by Vale's logistics complex in the Northern region of Brazil can affect the entire operation, because all product from the Carajás mine is transported by rail to the port.

Note: We emphasize that the calculations of potential financial impact figures are exercises, only illustrative, and therefore are not accurate values.

Custo da resposta ao risco
1800000

Descrição da resposta e explicação do cálculo do custo
Case: Situation: At Vale, nearby 67% of Vale's assets were evaluated for climate change physical risks exposure. Task/Action: In partnership with ITV, we downscaled the global warming models referenced by the IPCC - RCP 4.5 and 8.5 - to Vale's operation. For managing Climate changes physical risks, Vale developed and currently, is implementing the "Vale Climate Forecast" (VCF) methodology, which is an in-house developed methodology to map possible operational impacts due to climate-related variables. The methodology considers variables such as precipitation, flooding, increase in temperature, increase in wind speed, among others. Result: To be implemented in Port of Ponta da Madeira, the site for the pilot, the VCF short-term analysis had an investment of approximately US$ 10,000 (BRL 50,000). Vale developed an app and a dashboard to disseminate precipitation forecast data on daily basis to help operators on their port activities. This data is now available to assist in Vale's Production Programing, helping decision-making in the operations of shipments and distribution of iron ore and other products. With these forecasts in hand, the operators optimize the product shipment plans and minimize the risk of non-shipment due to excessive humidity content in the iron ore. The analysis of short-term climate risks enables the inclusion of climate variables in the decision-making processes of Vale's operations systematically. It generates a higher control against the impacts of climate change impacts which are already being witnessed in/around Vale's operations.
Vale has also installed a Weather Radar (1) in the Carajás region to improve short-term climate-related variables forecast. Vale also has an operational risk area that conducts periodic risk analyses for all Vale businesses and operations, including those related to climate change. This risk management staff is supported by the Climate Change team and Strategic Planning and Risk Management teams. The costs of responding to the risk of changes in precipitation patterns and extreme variability in weather patterns are the sum of the investments in VCF (2) and Physical Impact Map (3) which includes the investment in the weather radar and studies regarding long-term forecast data based on IPCC scenarios RCP 4.5 and RCP 8.5 that was carried out in 2021
Cost breakdown: (1) 85%; (2) 14%; (3) 1%.

Explique
The risk 3 reported here has been completely reformulated compared to the previous year. We understand that the update was necessary to make the inherent risk of the company clearer and to encompass the company's business more broadly. Over the years, Vale has had a learning curve and has a better understanding of inherent risks and has more efficient response actions and case studies to create the necessary resilience to mitigate them.

C2.4

(C2.4) A organização identificou alguma oportunidade relacionada ao clima com potencial para causar um impacto financeiro ou estratégico significativo em seus negócios?
Sim

C2.4a

(C2.4a) Forneça detalhes sobre as oportunidades identificadas com potencial para causar um impacto financeiro ou estratégico significativo para os negócios.

Identificador
Opp1

Em que ponto da cadeia de valor ocorre a oportunidade?
Operações diretas

Tipo de oportunidade
Produtos e serviços

Principal fator de oportunidade climática
Desenvolvimento e/ou expansão de bens e serviços com baixos índices de emissões

Principal impacto financeiro em potencial
Aumento de receita resultante de uma maior demanda por produtos e serviços

Descrição específica da empresa
The global demand for copper is expected to be driven by its use in electric passenger vehicles, solar energy systems, and wind turbines, while nickel is primarily used for electric vehicle batteries.
To meet this global demand, Vale has a robust pipeline of projects focused on nickel and copper production, with operations in the North Atlantic, South Atlantic, and Indonesia. The expected capacity of these projects ranges from 20 to 40 kt of Ni eq and from 50 to 100 kt of Cu eq.
One of Vale's strategic pillars is to foster low-carbon solutions, which include: Focus on high quality products and resources; Iron solutions; Energy transition metals; and Circular mining.
Our plan is to debottleneck the supply of sustainable energy transition metals through an agile project development and flexible approach to adapt to evolving technologies, including by: Expanding copper production to approximately 900 ktpy after 2030; being the preferred nickel supplier to the electric vehicle industry, with 30% to 40% of our Class I nickel; supplied to the electric vehicle market; accelerating growth through our energy transition operations by seeking partnerships; and pursuing selective

inorganic growth.

Horizonte de tempo
Médio prazo

Probabilidade
Muito provável

Magnitude do impacto
Média-alta

É possível fornecer um valor para o potencial impacto financeiro?
Sim, uma faixa estimada

Valor do potencial impacto financeiro (moeda)
<Not Applicable>

Valor potencial do impacto financeiro – mínimo (moeda)
6900000000

Valor potencial do impacto financeiro – máximo (moeda)
9500000000

Explicação do valor do impacto financeiro
The potential financial impact will come from the increase in Vale's EBITDA for nickel (Ni) and copper (Cu) estimated for 2030.
Cost breakdown: (a x c) + (b x d) = potential EBITDA
Parameter a: copper price ranging from US$7,000-10,000/ton
Parameter b: nickel price ranging from US$18,000-24,000/ton
Parameter c: copper volume: ~430 ktpa
Parameter d: nickel volume: ~218 ktpa

Note: We emphasize that the calculations of potential financial impact figures are exercises, only illustrative, and therefore are not accurate values.

Custo para concretizar a oportunidade
2300000000

Estratégia para materializar a oportunidade e explicação do cálculo dos custos
Breakdown cost ($2.3 billion): The Copper Cliff project in Canada is divided into three phases, with Phase 1 accounting for 41% of the total investment, while Phases 3 and 4 account for 23% and 36%, respectively. So far, only Phase 1 has been executed, while Phases 3 and 4 are still under feasibility evaluation.
The case study we highlighted was the South Complex of this Copper Cliff project:
Situation: The world is on the threshold of a powerful energy transition. At the same time, companies and governments are faced with the task of overcoming the challenges posed by an increasingly complex world including geopolitical concerns, energy crises in Europe and in global supply chains, etc. Task: Climate change mitigation directs the world towards a necessary energy transition. Our business needs to respond both globally and within the mining industry. Action: To meet this global demand, Vale has a robust pipeline of projects focused on nickel and copper production, with operations in the North Atlantic, South Atlantic, and Indonesia. The expected capacity of these projects ranges from 20 to 40 kt of Ni eq and from 50 to 100 kt of Cu eq. Result: One of Vale's costs to meet the increase in nickel and copper production volume is related to the expansion of the Copper Cliff Complex South (CCCS) mine project. The project involved re-opening the former South Mine, the construction of more than 12 km of tunnels to reunite the existing the north shaft to the rejuvenated south shaft, creating a new Copper Cliff Mine Complex. It will also create ~270 new jobs.

Explique
The opportunity 1 reported here has been completely reformulated compared to the previous year. This update was a result of the update of the MAC curve and internal debates in Vale's climate change department.

Identificador
Opp2

Em que ponto da cadeia de valor ocorre a oportunidade?
Operações diretas

Tipo de oportunidade
Mercados

Principal fator de oportunidade climática
Acesso a novos mercados

Principal impacto financeiro em potencial
Aumento de receita por meio do acesso a mercados novos e emergentes

Descrição específica da empresa
Vale’s commitment to net zero Scopes 1 and 2 emissions by 2050 is based on the neutralization of residual emissions through initiatives that remove carbon from the atmosphere such as Nature-based Solutions (NbS) and qualified carbon credits aligned with best practices. Vale's Net Zero goal is in line with its Forestry Goal, this commitment involves 500,000 hectares: conservation of 400,000 hectares of forest and restoration of 100,000 hectares of degraded areas through Fundo Vale, a network of partners and positive social and environmental impact business arrangements. This work will generate income and jobs while helping restore biomes, which in turn will sequester carbon from the atmosphere during the growth phase of trees. The objective is to strengthen the regenerative business environment, permitting scale gains in more sustainable production chains and positive social and environmental impacts. Fundo Vale has already begun a feasibility study for the generation of forest carbon credits by reducing emissions from deforestation and forest degradation, linking the forest component to its climate change commitments. The idea is to test the feasibility of creating carbon credits, combining sustainable resource extraction or management with forest conservation, preventing deforestation and generating income through social and biological diversity businesses. We call this “impact carbon.” Thus, in future, Vale could use these credits in a complementary way in its net zero strategy.

Horizonte de tempo
Médio prazo

Probabilidade
Provável

Magnitude do impacto
Média

É possível fornecer um valor para o potencial impacto financeiro?

Sim, uma faixa estimada

Valor do potencial impacto financeiro (moeda)
<Not Applicable>

Valor potencial do impacto financeiro – mínimo (moeda)
360000000

Valor potencial do impacto financeiro – máximo (moeda)
800000000

Explicação do valor do impacto financeiro
The company “Biomas”, made up of Vale and other partners, aims to restore, conserve and preserve 4 million hectares of forests. One of the goals is, over 20 years, to reach a total area of 4 million hectares of native forests in different Brazilian biomes, such as the Amazon, Atlantic Forest and Cerrado, restored and protected. In a scenario of reforestation and carbon removal, there is an opportunity to generate carbon credits represented above. It is emphasized that the opportunity is for the group of companies and individual opportunities will depend on specific project scopes

Breakdown of value: a x b
Parameter a: 4 million tCO2e captured over 4 million hectares for approximately 20 years.
Parameter b: Carbon price ranging from USD 90/tCO2e (minimum) to USD 200/tCO2e (maximum).

Note: We emphasize that the calculations of potential financial impact figures are exercises, only illustrative, and therefore are not accurate values.

Custo para concretizar a oportunidade
24000000

Estratégia para materializar a oportunidade e explicação do cálculo dos custos
Case study - Situation: During the COP27, in Egypt, Vale, Itaú Unibanco, Marfrig, Rabobank, Santander and Suzano, announced the creation of a company dedicated to forest restoration, conservation, and preservation activities in Brazil: Biomas - which foresees the planting of approximately 2 billion native trees.
Task: Vale is confident that the initiatives undertaken by Biomas will generate long-term value for our stakeholders and contribute towards a more sustainable future for everyone. Action: As part of these initiatives, the group expects to stimulate regional development and strengthen local communities. Biomas will have an initial contribution of US$ 3.9M from each partner in the first year. The objective is to promote a financially sustainable business model, making each restoration, conservation, and preservation project viable by selling carbon credits. Result: The Biomas project aims, over 20 years, to achieve a restored and protected area of 4 million hectares of native forests in different Brazilian biomes, such as the Amazon, Atlantic Forest, and Cerrado. The area is equivalent to the territory of Switzerland or the state of Rio de Janeiro. The plan is to restore 2 million hectares of degraded areas by planting approximately 2 billion native trees in a large-scale business model. The company will also conserve and preserve 2 million hectares and predict between removals and avoided emissions, reducing from the atmosphere approximately 900 million tons of carbon equivalent over a period of two decades. In addition, it is estimated that the new company will contribute to the protection of more than 4,000 species of animals and plants.
Initial financial contribution (USD 24 MM) from partners to Biomas. It is assumed that through Biomas, the cost of carbon removal will be optimized and shared among the partners.
Breakdown of value: Announced value of USD 24 MM (R$120 million) divided equally among the 6 companies (USD 4MM each) that make up the initiative, with 20% (USD 0.8MM) for SG&A plus project finance. So, Vale contributed with approx. USD 5 million in the first phase of the company's composition. The exchange rate used is 5 BRL/USD.

Explique
The opportunity 2 reported here has been completely reformulated compared to the previous year. This update was a result of the update of the MAC curve and internal debates in Vale's climate change department.

Identificador
Opp3

Em que ponto da cadeia de valor ocorre a oportunidade?
Downstream

Tipo de oportunidade
Produtos e serviços

Principal fator de oportunidade climática
Desenvolvimento e/ou expansão de bens e serviços com baixos índices de emissões

Principal impacto financeiro em potencial
Retornos de investimento em tecnologias com baixo índice de emissões

Descrição específica da empresa
We continue to improve our portfolio to provide our customers with solutions and to adapt to potential market demands. Steel demand will grow steadily over the years based on emerging regions and current megatrends. Decarbonization will create market segmentation with increased appetite for high quality products that can deliver lower CO2 emissions. Our strategy aims to accelerate the implementation of breakthrough iron solutions to attend more stringent demand of steelmakers. As development progresses, an optimized portfolio focused on improving quality and gradually recovering capacity will be achieved. Our goal is to increase the production of agglomerated products –briquettes and pellets –securing the supply of high-grade products to the market. The iron ore briquettes are part of our iron solutions portfolio, as a result of a breakthrough technology developed in-house over 18 years of research and patented by Vale. The company’s iron ore briquettes are low temperature, low CO2 agglomerated alternative to lump, pellets and sinter. They can provide a reduction of up to 10% of greenhouse gases emissions in the steel industry production chain, while the low temperature (approximately 200°C) required for its production process allows for up to 80% less CO2 emissions when compared to traditional agglomeration routes (approximately 1300°C). The briquette had its performance proven by several industrial trials conducted since 2019 in different clients, delivering excellent results. It also connects with circular economy, as the binder production can use sand from our mining tailings as a raw material.
One of Vale's strategic pillars is to foster low-carbon solutions, which include: Focus on high quality products and resources; Iron solutions; Energy transition metals; and Circular mining.
Vale’s plan is to lead the development of zero- and low-carbon emission solutions for ironmaking through a customer-centric approach, fast product development and customized business models, including by: Developing and guaranteeing iron ore concentration solutions; Optimizing product portfolio with higher-grade products; and fostering metallics hubs initiatives with partners, offering high quality agglomerates.

Horizonte de tempo
Médio prazo

Probabilidade
Muito provável

Magnitude do impacto

Média-alta

É possível fornecer um valor para o potencial impacto financeiro?
Sim, uma faixa estimada

Valor do potencial impacto financeiro (moeda)
<Not Applicable>

Valor potencial do impacto financeiro – mínimo (moeda)
4000000000

Valor potencial do impacto financeiro – máximo (moeda)
10000000000

Explicação do valor do impacto financeiro
The potential financial impact lies in the potential contribution to EBITDA. Considering the addition of high-quality capacity to obtain higher premiums has the potential to increase EBITDA. For example, the production of briquettes.
The premises behind the potential increase in EBITDA refer to data on production volume, product mix, and product quality (iron ore content).
The following values are assumed for production:
(a1) Year 2026: 340-360 million tons of iron ore
(a2) Year 2030+: >360 million tons of iron ore
Assuming the following values for agglomerate mix (superior quality products):
(b1) Year 2026: 50-55 million tons of agglomerates
(b2) Year 2030+: ~100 million tons of agglomerates
Assuming the following potential average premiums:
(c1) Year 2026: US$8-12 per metric ton
(c2) Year 2030+: US$18-25 per metric ton.

Cost Breakdown: (a1* average of c1)+(b1* average of c1); (a2* average of c2)+(b2* average of c2).

Note: We emphasize that the calculations of potential financial impact figures are exercises, only illustrative, and therefore are not accurate values.

Custo para concretizar a oportunidade
182000000

Estratégia para materializar a oportunidade e explicação do cálculo dos custos
Case study - Situation: The Scope 3 reduction target is part of Vale's strategy to zero net direct and indirect carbon emissions (scopes 1 and 2) by 2050. As part of these initiatives, the company will invest between US$ 4 and 6 billion towards reducing these emissions by 33% by 2030. Since Vale announced its Scope 3 targets, the company has been creating a roadmap with steelmaking clients in order to discuss partnerships for decarbonization projects. On August 19th, 2021, Vale and Ternium signed a Memorandum of Understanding (MoU) in which both companies agree to develop economic feasibility studies of potential investment in a briquette plant located at Ternium Brasil facility. Task: As part of its plan to reach Scope 3 targets, Vale is investing in sustainable solutions for steel production inputs for both electric furnaces and conventional blast furnaces used in steelmaking. As well as invests in research and innovation to revolutionize the steel production process and reduce CO2 emissions. Action: In September 2021, Vale introduced the briquette, a new product developed by the company over almost 20 years; it may reduce by up to 10% the emission of greenhouse gases (GHG) in steel production by its steelmaking customers. The product also reduces the emission of particulates and gases such as sulfur dioxide (SOX) and nitrogen oxide (NOX) and eliminates water use in its production. Result: The production of briquette will initially be carried out at pellet plants 1 and 2, at the Tubarão Unit, in Vitória (ES), which are being converted for this purpose, and at the Vargem Grande Complex, in Minas Gerais, where a new plant is being installed. The estimate is that, in the long term, the company will have the capacity to produce more than 50 million tons per year of briquette, which would lead to a potential emission reduction of more than 6 million tons of carbon equivalent per year (MtCo2e/year) with the use of the technology.
Cost Breakdown (182 MM): Investment in two briquette plants in Tubarão in 2023 being 50% for plant 1 and 50% for plant 2 with a total capacity of 6 million tons per year and additional investment forecast for another seven plants co-located with customers.

Explique
The opportunity 3 reported here has been completely reformulated compared to the previous year. This update was a result of the update of the MAC curve and internal debates in Vale's climate change department.

C3. Estratégia de negócios

C3.1

(C3.1) A estratégia da organização inclui um plano de transição climática que se alinhe a um mundo de 1,5 °C?

Linha 1

Plano de transição climática

Não, mas nossa estratégia foi influenciada por riscos e oportunidades climáticos e vamos desenvolver um plano de transição climática dentro de dois anos

Plano de transição climática publicamente disponível

<Not Applicable>

Mecanismo pelo qual o feedback dos acionistas sobre o plano de transição climática é coletado

<Not Applicable>

Descrição do mecanismo de feedback

<Not Applicable>

Frequência de coleta do feedback

<Not Applicable>

Anexe eventuais documentos relevantes que deem detalhes sobre o plano de transição climática da organização (opcional)

<Not Applicable>

Explique por que a organização não tem um plano de transição climática que se alinhe a um mundo de 1,5 °C e se há eventuais planos para desenvolvê-lo no futuro

As a mining industry, Vale has some challenges to reduce its emissions in line with the 1.5°C world and therefore also to develop a climate transition plan in line with this 1.5°C world. The high degree of technological uncertainty is one of those challenges. Thus, so far, Vale's interim targets are aligned with a well below 2°C scenario (-33% scopes 1 and 2 by 2030 versus 2017; and -15% net scope 3 emissions by 2035 versus 2018).
Our goal of a 15% reduction in Scope 3 net emissions was set using the absolute shrinkage approach, a science-based methodology, and aligned with the 2ºC temperature increase scenario. In working to achieve our commitments, we intend to rely on three main pillars: a high-quality product portfolio, partnerships with customers and suppliers, and the limited use of high-integrity carbon credits, following principles such as additionality, permanence, transparency, and contribution to sustainable development. The use of carbon credits will be a maximum of 20% of the absolute reduction of Scope 3 emissions by 2035, equivalent to 17 $MtCO_2e$. Due to low-carbon technologies and climate policy uncertainties, we intend for our targets to be reviewed in 2025 and every five years. On the other hand, our target of a 33% reduction of Scopes 1 and 2 emissions by 2030 was also established according to a science-based methodology, and we aim not to use carbon credits to achieve this commitment. Nevertheless, we have the ambition to develop a transition plan in line with the commitment to limit the global temperature rise to 1.5°C and we have been working towards achieving that ambition. So, in the meantime, as part of its commitment to lead the transition towards low-carbon mining, Vale has set a target for net-zero scopes 1 and 2 emissions by 2050, aligned with a 1.5 °C scenario. Also, through its annually updated marginal abatement cost curve (MACC), Vale has mapped a set of solutions with the potential to reduce the companies' scopes 1 and 2 emissions with a 1.5°C trajectory by 2030, for example, new low-carbon products, such as the briquette and Tecnored. Additionally, the company is continuously monitoring technological development in order to better align its business and climate targets with a 1.5°C scenario, and in 2023, Vale will update its scenario analysis, adding a scenario in which the global temperature increase is limited to 1.5 °C.

Explique por que os riscos e as oportunidades climáticos não exerceram influência na estratégia

<Not Applicable>

C3.2

(C3.2) A organização usa a análise de cenários climáticos para informar sua estratégia?

	Uso da análise de cenários climáticos para informar a estratégia	Razão principal pela qual a organização não usa a análise de cenários climáticos para informar sua estratégia	Explique por que a organização não usa a análise de cenários climáticos para informar sua estratégia, e se há eventuais planos para usá-la no futuro
Linha 1	Sim, qualitativa e quantitativa	<Not Applicable>	<Not Applicable>

C3.2a

(C3.2a) Forneça detalhes do uso da análise de cenários climáticos pela organização.

Cenário climático	Abrangência da análise de cenários	Alinhamento de temperatura do cenário	Parâmetros, suposições, escolhas analíticas
Cenários de transição: IEA SDS	Na empresa como um todo	<Not Applicable>	In 2020, Vale conducted a climate change scenario analysis of its portfolio based on the International Energy Agency (IEA) scenarios, which are recognized industry-wide and have ample international support. While the Current Policies Scenario (CPS) and the Stated Policies Scenario (STEPS) illustrate the consequences of ongoing policies and stated commitments, respectively, the Sustainable Development Scenario (SDS) identifies the policies and assumptions needed to achieve the UN Sustainable Development Goals related to energy i.e., (i) ensure universal access to electricity, (ii) reduce severe health impacts caused by air pollution, and (iii) address climate change. Once climate change risks are identified, they are included in Vale's risk management process and are assessed based on their severity and probability of occurrence. To measure Vale's impact, we use internal carbon pricing, one of the tools to manage transition risks. The use of the shadow price of USD 50/tCO2e, established in accordance with the Carbon Pricing Leadership Coalition (CPLC), is integrated into the decision-making process to guide our capital allocation enabling a faster and more effective transition to a low-carbon economy. Assumptions/Analytical choices: The different behaviors of supply and demand under IEA's three scenarios result in changing competitive dynamics that impact the long-term price of our key commodities and our strategy by extension. For Vale, the Current Policies Scenario partially impacts our capacity to generate value. In addition to greater exposure to physical risks, CPS does not consider the opportunity for growth in renewables, transport electrification and the need to decarbonize the steel industry, which are nowadays fundamental parts of our strategy. In turn, the SDS creates an ecosystem that encourages our growth options and amplifies the relevance of our strategic pillars i.e., Base Metals Transformation and the Maximization of flight to quality in Iron Ore. All scenarios analyzed showed that the steel industry decarbonization will put a high value in high-quality, lower-emission products. Vale's current strategy already considers a portfolio with a 90% share of these products by 2024.For further details, access: https://vale.com/documents/d/guest/cenarios-de-transicao-energetica-en

Cenário climático	Abrangência da análise de cenários	Alinhamento de temperatura do cenário	Parâmetros, suposições, escolhas analíticas
Cenários de transição: IEA STEPS (antes IEA NPS)	Na empresa como um todo	<Not Applicable>	In 2020, Vale conducted a climate change scenario analysis of its portfolio based on the International Energy Agency (IEA) scenarios, which are recognized industry-wide and have ample international support. While the Current Policies Scenario (CPS) and the Stated Policies Scenario (STEPS) illustrate the consequences of ongoing policies and stated commitments, respectively, the Sustainable Development Scenario (SDS) identifies the policies and assumptions needed to achieve the UN Sustainable Development Goals related to energy i.e., (i) ensure universal access to electricity, (ii) reduce severe health impacts caused by air pollution, and (iii) address climate change. Once climate change risks are identified, they are included in Vale's risk management process and are assessed based on their severity and probability of occurrence. To measure Vale's impact, we use internal carbon pricing, one of the tools to manage transition risks. The use of the shadow price of USD 50/tCO2e, established in accordance with the Carbon Pricing Leadership Coalition (CPLC), is integrated into the decision-making process to guide our capital allocation enabling a faster and more effective transition to a low-carbon economy. Assumptions/Analytical choices: The different behaviors of supply and demand under IEA's three scenarios result in changing competitive dynamics that impact the long-term price of our key commodities and our strategy by extension. For Vale, the Current Policies Scenario partially impacts our capacity to generate value. In addition to greater exposure to physical risks, CPS does not consider the opportunity for growth in renewables, transport electrification and the need to decarbonize the steel industry, which are nowadays fundamental parts of our strategy. In turn, the SDS creates an ecosystem that encourages our growth options and amplifies the relevance of our strategic pillars i.e., Base Metals Transformation and the Maximization of flight to quality in Iron Ore. All scenarios analyzed showed that the steel industry decarbonization will put a high value in high-quality, lower-emission products. Vale's current strategy already considers a portfolio with a 90% share of these products by 2024.For further details, access: https://vale.com/documents/d/guest/cenarios-de-transicao-energetica-en
Cenários de transição: IEA CPS	Na empresa como um todo	<Not Applicable>	In 2020, Vale conducted a climate change scenario analysis of its portfolio based on the International Energy Agency (IEA) scenarios, which are recognized industry-wide and have ample international support. While the Current Policies Scenario (CPS) and the Stated Policies Scenario (STEPS) illustrate the consequences of ongoing policies and stated commitments, respectively, the Sustainable Development Scenario (SDS) identifies the policies and assumptions needed to achieve the UN Sustainable Development Goals related to energy i.e., (i) ensure universal access to electricity, (ii) reduce severe health impacts caused by air pollution, and (iii) address climate change. Once climate change risks are identified, they are included in Vale's risk management process and are assessed based on their severity and probability of occurrence. To measure Vale's impact, we use internal carbon pricing, one of the tools to manage transition risks. The use of the shadow price of USD 50/tCO2e, established in accordance with the Carbon Pricing Leadership Coalition (CPLC), is integrated into the decision-making process to guide our capital allocation enabling a faster and more effective transition to a low-carbon economy. Assumptions/Analytical choices: The different behaviors of supply and demand under IEA's three scenarios result in changing competitive dynamics that impact the long-term price of our key commodities and our strategy by extension. For Vale, the Current Policies Scenario partially impacts our capacity to generate value. In addition to greater exposure to physical risks, CPS does not consider the opportunity for growth in renewables, transport electrification and the need to decarbonize the steel industry, which are nowadays fundamental parts of our strategy. In turn, the SDS creates an ecosystem that encourages our growth options and amplifies the relevance of our strategic pillars i.e., Base Metals Transformation and the Maximization of flight to quality in Iron Ore. All scenarios analyzed showed that the steel industry decarbonization will put a high value in high-quality, lower-emission products. Vale's current strategy already considers a portfolio with a 90% share of these products by 2024.For further details, access: https://vale.com/documents/d/guest/cenarios-de-transicao-energetica-en
Cenários climáticos físicos: RCP 4.5	Na empresa como um todo	<Not Applicable>	In partnership with ITV, we downscaled the global warming models referenced by the IPCC - RCP 4.5 and 8.5 - to Vale's operation. For managing Climate changes physical risks, Vale developed and currently, is implementing the "Vale Climate Forecast" methodology, which is an in-house developed methodology to map possible operational impacts due to climate-related variables. The methodology considers variables such as precipitation, flooding, increase in temperature, and increase in wind speed, among others. The methodology is divided into: i) Very short-term, midterm, and seasonal forecasts for the physical risks, whose main focus is the mapping and mitigating impacts on the operations and in shipment of products; ii) Long-term analysis, which the main focus is the assessment of the impacts of the climate change in a multi-year horizon on the operational sites, aiming to evaluate the necessary investments in the facilities for their adaptation/mitigation (planning). The long-term analysis has four steps: i. climate projections and quantification of physical impacts; ii identification and quantification of operational risks; iii quantification of financial impacts of the mapped risks; and iv registration of the mapped risks in Vale's risk management systems for constant monitoring and implementing action plans when necessary. For the short-term analysis, the Ponta da Madeira Port was the site for the implementation pilot of the Vale Climate Forecast methodology. Vale developed an app and a dashboard to disseminate precipitation forecast data on a daily basis to help operators on their port activities. This data is now available to assist in Vale's Production Programming, helping decision-making in the operations of shipments and distribution of iron ore and other products. The analysis of short-term climate risks enables the inclusion of climate variables in the decision-making processes of Vale's operations systematically. It generates a higher control against the impacts of climate change impacts which are already being witnessed in/around Vale's operations. For the long-term analysis, performed for the base metals operations in Canada and all operations in Pará and Maranhão, the results indicate that sites located in Canada like Long Harbour, for example, may deal with precipitation increase and flooding in access roads, in the next decades, as well as increase in average temperature. These impacts can cause equipment damages and operational disruptions.
Cenários climáticos físicos: RCP 8.5	Na empresa como um todo	<Not Applicable>	In partnership with ITV, we downscaled the global warming models referenced by the IPCC - RCP 4.5 and 8.5 - to Vale's operation. For managing Climate changes physical risks, Vale developed and currently, is implementing the "Vale Climate Forecast" methodology, which is an in-house developed methodology to map possible operational impacts due to climate-related variables. The methodology considers variables such as precipitation, flooding, increase in temperature, and increase in wind speed, among others. The methodology is divided into: i) Very short-term, midterm, and seasonal forecasts for the physical risks, whose main focus is the mapping and mitigating impacts on the operations and in shipment of products; ii) Long-term analysis, which the main focus is the assessment of the impacts of the climate change in a multi-year horizon on the operational sites, aiming to evaluate the necessary investments in the facilities for their adaptation/mitigation (planning). The long-term analysis has four steps: i. climate projections and quantification of physical impacts; ii identification and quantification of operational risks; iii quantification of financial impacts of the mapped risks; and iv registration of the mapped risks in Vale's risk management systems for constant monitoring and implementing action plans when necessary. For the short-term analysis, the Ponta da Madeira Port was the site for the implementation pilot of the Vale Climate Forecast methodology. Vale developed an app and a dashboard to disseminate precipitation forecast data on a daily basis to help operators on their port activities. This data is now available to assist in Vale's Production Programing, helping decision-making in the operations of shipments and distribution of iron ore and other products. The analysis of short-term climate risks enables the inclusion of climate variables in the decision-making processes of Vale's operations systematically. It generates a higher control against the impacts of climate change impacts which are already being witnessed in/around Vale's operations. For the long-term analysis, performed for the base metals operations in Canada and all operations in Pará and Maranhão, the results indicate that sites located in Canada like Long Harbour, for example, may deal with precipitation increase and flooding in access roads, in the next decades, as well as increase in average temperature. These impacts can cause equipment damages and operational disruptions.
Cenários climáticos físicos: RCP 2.6	Atividade de negócio	<Not Applicable>	In addition to the RCP 4.5 and 8.5 scenarios widely used in Vale's operations, the RCP 2.6 scenario was also considered for Porto Ponto da Madeira. For this, perils modeled were Precipitation, Coastal Storm, Tidal Flood and Combined Flood. Precipitation - Rainfall expected under the SSP1-2.6 scenario was modeled with a coastal boundary condition reflecting sea-level rise consistent with this climate scenario. Coastal Storm - Coastal flooding due to storm surge depends on the sea level and tide when the surge hits. Tidal - Some coastal regions are particularly susceptible to periods of very high tides that can lead to nuisance flooding. Combined - In the coastal zone, the probability of flooding from various hazards (coastal surges that include tide-surge interactions, and intense rainfall) are explicitly combined by assuming that multiple factors that can cause flooding are independent (a good assumption in most locations and most of the time).

C3.2b

(C3.2b) Dê detalhes sobre as questões prioritárias que a organização busca abordar utilizando a análise de cenários climáticos, e faça um resumo dos resultados com relação a estas questões.

Linha 1

Questões prioritárias

Focal question 1 (F1): In 2020, Vale conducted a climate change scenario analysis of its portfolio based on the International Energy Agency (IEA) scenarios, which are recognized industry-wide and have ample international support. While the Current Policies Scenario (CPS) and the Stated Policies Scenario (STEPS) illustrate the consequences of ongoing policies and stated commitments, respectively, the Sustainable Development Scenario (SDS) identifies the policies and assumptions needed to achieve the UN Sustainable Development Goals related to energy i.e., (i) ensure universal access to electricity, (ii) reduce severe health impacts caused by air pollution, and (iii) address climate change. The different behaviors of supply and demand under IEA's three scenarios result in changing competitive dynamics that impact the long-term price of our key commodities and our strategy by extension. For Vale, the Current Policies Scenario partially impacts our capacity to generate value. In addition to greater exposure to physical risks, CPS does not consider the opportunity for growth in renewables, transport electrification, and the need to decarbonize the steel industry, which are today fundamental parts of our strategy. The SDS creates an ecosystem that encourages our growth options and amplifies the relevance of our strategic pillars i.e., Base Metals Transformation and the Maximization of flight to quality in Iron Ore.

Focal question 2 (F2): At Vale, nearby ~70% of Vale's assets were evaluated for climate change physical risks exposure. In partnership with the Vale Institute of Technology, we downscaled the global warming models referenced by the Intergovernmental Panel on Climate Change (IPCC). This allowed Vale to identify changes in rainfall patterns and volumes, and temperature variation for all operations in Brazil. The RCP 4.5 and 8.5 models were regionalized. This methodology to identify physical impacts of climate change in Vale is called The Vale Climate Forecast, which enables: Short-term analysis and seasonal forecasts for physical risks associated with climate change, with the main focus on impacts on our operations and product shipment. For the long-term analysis, Vale has carried out the implementation of Vale Climate Forecast methodology for the sites located in Canada like Long Harbour, for example, may deal with precipitation increase and flooding in access roads, in the next decades, as well as an increase in average temperature. These impacts can cause equipment damages and operational disruptions.

Resultados da análise de cenários climáticos com relação às questões prioritárias

Result-F1: The different behaviors of supply and demand under IEA's three scenarios result in changing competitive dynamics that impact the long-term price of our key commodities and our strategy by extension. All scenarios analyzed showed that the steel industry decarbonization will put a high value on high-quality and lower-emission products. Vale's current strategy already considers a portfolio with a 90% share of these products by 2024. To reinforce our position and offer additional solutions to the steel industry, we are focused on increasing the supply of our high-quality sinter feed from the North System, offering higher-grade products using New Steel technology, leading the world production of pellets and other direct-charge products, and finally, promoting Metallics, which through partnerships and in an asset light platform provides low-carbon solutions.
Each scenario was evaluated in a 12-year horizon (up to 2030). The analysis enabled identifying Vale's high degree of resilience of segments of ferrous minerals and base metals. To prioritize the most cost-competitive initiatives to achieve i its 2030 target, Vale has drawn up a marginal abatement cost curve (MAC curve), which analyses more than 40 projects, and it is constantly evolving.

Result-F2: In the Port of Ponta da Madeira, the site for the pilot implementation of the Vale Climate Forecast, an application with daily rain forecasts was developed making it feasible to disseminate the data to all operators at the Port. This helps decision-making in the operations of shipments and distribution of iron ore and other products. With these forecasts in hand, the operators optimize the product shipment plans and minimize the risk of non-shipment due to excessive humidity content in the ore. Vale considers an average operational loss of 0.5% in production due to abnormal precipitation conditions in Ponta da Madeira Port. Considering 2022's iron ore net operating revenues of USD 30 billion, it would have accrued a loss of about USD 150 million per year. Vale Climate Forecast also enables long-term physical risks identification, such as future exposure to flood, heat, wind, and precipitation. We have run a pilot for Vale's Canadian operations, including Long Harbour, Voisey's Bay, Sudbury, Port Colborne, and Thompson. To identify potential physical impacts, we used the climate scenario SSP5-8 and the thirty-year timeframe. We have found that, Long Harbour, for example, may deal with precipitation increase and flooding in access roads, in the next decades, as well as an increase in average temperature. These impacts can cause equipment damages and operational disruptions. However, Vale can be resilient to extreme events in the next decades, because already has action plans to deal with these possible impacts.

C3.3

(C3.3) Descreva onde e como os riscos e as oportunidades climáticos exerceram influência na estratégia.

	As oportunidades e os riscos climáticos exerceram influência na estratégia desta área?	Descrição da influência
Produtos e serviços	Sim	One of the market-related climate risks is the change in consumer mentality, with the search for products with a lower carbon footprint, which may also represent opportunities for positively transforming the company's products and services. Thus, Vale is making possible the Substitution of existing products and services with lower emissions options in a short term and conducts a business resilience test in the various climate change scenarios for a long-term horizon (10 years or more), to be prepared for the challenges of the transition to a low-carbon world. Costumer and investors are searching for companies with a transition to a low carbon economy aim and Vale is focused on building a greener portfolio, exemplified by the iron ore briquette. In Ferrous, to increase company's value in a sustainable way, we developed a portfolio of initiatives where the briquette has a prominent position as a new product with low energy intensity and with the potential to reduce both ours and our customers' emissions. Developed by Vale, the briquette is already patented in more than 47 countries, with three plants already approved and another five in the analysis phase. In December 2020, we approved the conversion of pelletizing plants 1 and 2 at the Tubarão complex, into iron ore briquetting plants, to produce the briquette. This project is part of the effort to reduce Scope 3 net emissions by 15% by 2035, with 2018 as the baseline. We also approved the construction of a new briquette plant in the Vargem Grande complex. In 2021, we announced the launch of iron ore briquette, a new proprietary product, developed by the company through over 20 years of research, which can allow a reduction of over 10% of greenhouse gases emissions in steel production by our steel-making clients. In 2022, we signed agreements to create mega hubs in the Middle East, focused on low-carbon products such as briquettes. The briquette is a result of the cold agglomeration of iron ore, by using a breakthrough technology solution that can use in its binder a composition of sand from the treatment of mining tailings, resisting the blast furnace's high temperatures without disintegrating. The low temperature of cold agglomeration (200ºc) allows for 80% less CO2 emission when compared to pelletizing process (approximately 1300ºc).
Cadeia de fornecimento e/ou cadeia de valor	Sim	Vale supports the shipping industry in meeting the goals of the International Maritime Organization (IMO), which include reducing member countries' emissions intensity by 40% by 2030 and absolute emissions by 50% by 2050, when compared to 2008 levels. Vale is also developing solutions for alternative fuels. in June 2021 we signed a MoU with different mining, shipping, O&G companies, and port terminals to test ammonia usage in ships, including safety standards, procedures for fueling, and GHG emissions. In 2022, we achieved a milestone with the multi-fuel tanks, initiative that is part of the Ecoshipping program. The emissions reduction from ships in the Guaibamax category is estimated at between 40% and 80% when powered by methanol and ammonia or up to 23% when using liquefied natural gas. Besides, Vale partnered in 2020 with Pan Ocean and in 2021 delivered 2 pioneering projects: the 325,000 DWT VLOC MV Sea Zhoushan and Sea Victoria, respectively the largest Rotor Sails installation and the largest Air Lubrication System onboard. Both considered the world's most efficient class of vessels and the energy efficiency technologies installation are expected to show it is possible to further reduce emissions. In addition, Vale received an international award for its innovative use of rotor sails on its large ships. Vale has also used its influence with partners to identify strategic opportunity(opp) to implement projects with the potential to achieve more material emissions reductions, such as the charter of 30 Valemax2G and 47 Guaibamax ships, which reduce emissions by 41% and 38%, respectively, when compared to previously used vessels. Moreover, Vale encourages emissions management in its value chain through a contractual clause and the application of an annual questionnaire on GHG. Since 2020, Vale suppliers considered key in terms of emissions in the Supply Chain-SC are annually invited to participate in the CDP SC program. In 2022, 492 suppliers were selected, with an 84% response rate, which is 10% higher than the previous cycle, reflecting greater engagement by our suppliers with climate change issues. Of the respondents, 192 participated in all 3 cycles, demonstrating their continuous commitment to managing the topic. We identified a total of 288 opp with substantial strategic or financial impact and emission reduction partnership opp with many suppliers.
Investimento em P&D	Sim	Through the adoption of existing technologies into new forms or developing new technologies and processes in R&D initiatives, Vale seeks to transform its businesses. At Vale, the use of technology seeks to redesign the way Vale works, helping to eliminate certain risk scenarios, positioning us as a leader in safety and risk management and promoting sustainability and adaptation to climate change. Vale enrols in partnerships with academies and scientific institutions, and with local governments aiming at the development of Brazilian scientific capacity to study physical impacts and to propose adaptation measures. Investment in R&D represents a crucial risk mitigation strategy for a long-term horizon (10 years or more) and a substantial opportunity, generating the development of new technologies capable of increasing productivity and decreasing GHG emissions. Case: Vale created the Center for Advanced Climate Studies in partnership with the Espírito Santo Government and the University of Espírito Santo. The center has the objective of conducting climate-related research that will assist the state, the country, and Vale itself to better understand the climate change issues and how to deal with them. The center had an initial financial contribution of US$175,000 from Vale and already has 21 projects under development. Another example is the Vale Technological Institute (ITV), founded in 2010, which is developing low-carbon and clean/renewable energy R&D and products. This institute has a dedicated research group focused on climate change that seeks to understand the science of climate change and to develop new technologies in order for Vale to better adapt to the new low-carbon economy. So far, 85 masters have graduated, 45% of whom are Vale professionals. In 2019, ITV created the Resident Master's Student Program with the purpose of boosting and influencing local professionals' training on topics related to the 17 SDGs, offering 10 scholarships. Since 2011, ITV invested USD 151.2 MM, with USD 12.3 MM invested in R&D in 2022 alone. Vale also has 8 internal innovation hubs and participation in the Mining Hub, and 48 patents granted since 2011, with 10 in 2022. In order to prioritize the most cost-efficient low carbon technologies and R&D projects, Vale uses a Marginal Abatement Cost Curve (MACC).
Operações	Sim	For the physical risks of climate change, in partnership with the Vale Institute of Technology, we downscaled the global warming models referenced by the IPCC - RCP 4.5 and 8.5 - to Vale's operation. This methodology to identify physical impacts of climate change in Vale is called The Vale Climate Forecast. In the Port of Ponta da Madeira, site for the pilot for the implementation of the Vale Climate Forecast, an application with daily rain forecasts was developed making it feasible to disseminate the data to all operators at the Port. Vale considers an average operational loss of 0.5% in production due to abnormal precipitation conditions in Ponta da Madeira Port. Considering 2022's iron ore net operating revenues of USD 30 billion, it would have accrued a loss of about USD 150 million per year. Also, environmental legislation is becoming more stringent around the world, which can lead to higher costs for compliance with environmental laws. Thus, in the medium-term, Vale will have to be in compliance with regulations and laws. This strategy is aligned with the Paris Agreement's to become a net zero mining company. At Vale, nearby ~70% of Vale's assets were evaluated for climate change physical risks exposure. Once climate change risks are identified, they are included in Vale's risk management process and are assessed based on their severity and probability of occurrence. For transition risk, Vale uses internal carbon pricing, one of the tools to manage this risk. The use of the shadow price of USD 50/tCO2e is integrated into the decision-making process to guide our capital allocation enabling a faster and more effective transition to a zero-carbon economy. The association of cost to the greenhouse gas emissions in the feasibility analysis enables explaining the impact of the emissions on the project valuation at the time of decision making the projects from the Carbon Target portfolio feasible. Estimating the financial implications may be complex since it depends on how legislation will be downscaled for each sector. Indirect impacts, such as those in the value chain (mainly energy supply and impacts in contract costs) are also difficult to be estimated. However, an approximation can be done considering the risk if Vale's total scope 1 in 2022 were taxed. This tax would represent US$ 430,000,000 = 8.6 MtCO2e x USD50/tCO2e.

C3.4

(C3.4) Descreva onde e como os riscos e as oportunidades climáticos exerceram influência no planejamento financeiro.

	Elementos do planejamento financeiro que sofreram influência	Descrição da influência
Linha 1	Receitas Custos diretos Custos indiretos Gastos de capital Alocação de capital Aquisições e alienações	Revenues: Natural disasters can cause serious damage to operations and projects in countries where Vale operates and may have a negative impact on sales to countries affected by such disasters. In its turn, transition risks, in particular, may affect demand for its products and, consequently, revenues. In countries such as Canada, China, Japan and the United Kingdom for example, emissions from thermal electricity generation or from the use of fossil fuels for other purposes are already being considering for taxation. In this challenging context of decarbonization, our key commodities will be at the forefront of the challenges and opportunities posed by the climate crisis. In 2020, Vale conducted a climate change scenario analysis of its portfolio based on the International Energy Agency (IEA) scenarios, which are recognized industry-wide and have ample international support. All scenarios analyzed showed that the steel industry decarbonization will put a high value in high-quality, lower-emission products. Vale's current strategy already considers a portfolio with a 90% share of these products by 2024. Vale have been looking beyond for a greener portfolio in the long term and a great example of that is our Class 1 nickel assets, that place us in a unique position with competitive operations in the North Atlantic. The base metals transformation follows a net zero agenda geared towards recycling electric vehicle batteries, using biofuel and biomass, decarbonizing rotary kilns and electrification from renewables. In addition, as part of Vale's Nickel strategy, investment opportunities in Indonesia through JVs in the Bahodopi and Pomalaa projects, production stabilization in the South Atlantic and other projects ensure options capable of sustaining a significant EBITDA increase in 2040 in SDS. Direct costs: Demand for our iron ore and nickel products depends on global demand for steel. Iron ore and iron ore pellets, which together accounted for 80% of our 2022 net operating revenues from continuing operations, are used to produce carbon steel. Nickel, which accounted for 15% of our 2022 net operating revenues from continuing operations, is used mainly to produce stainless and alloy steels. The demand for copper is affected by the demand for copper wire, and a sustained decline in the construction industry could have a negative impact on our copper business. Copper products accounted for 4% of our 2022 net operating revenues from continuing operations. Demand for steel products is influenced by many factors, such as global manufacturing production, civil construction and infrastructure spending. Our nickel customers are broadly distributed on a global basis. In 2022, 45% of our refined nickel sales were delivered to customers in Asia, 23% in Europe, 30% in North America and 2% in other markets. Our nickel production represented 6.13% of global consumption for primary nickel in 2022. The European Union's carbon border adjustment mechanism (CBAM) was approved in April 2023 and may potentially impact the direct cost of Vale's products sold considering the worst scenario where our assets will be taxed. This risk can represent an opportunity to continue to improve our portfolio in order to provide solutions to our customers and to adapt to potential market demands. Indirect costs: Considering a future scenario, Vale faces the risk of energy shortages in countries where the company maintains operations and projects, especially in Brazil, due to lack of infrastructure or climatic conditions such as floods or droughts. Future scarcity and government efforts to respond to or avoid shortages can have an adverse impact on the cost or supply of electricity in its operations, this cost is also related to carbon pricing, as well as the cost of fossil fuel production. Vale is an energy intensive industry, if fossil fuels and electricity are taxed (and increase their prices), it is very likely that Vale will face higher direct and indirect costs. This impact on its revenues is considered to be medium-high magnitude and the time horizon covered by the financial planning is short-term. Vale currently has a direct participation in three hydroelectric power plants and three small hydroelectric plants in operation, besides the indirect participation in other ones. Vale anticipated its goal for self-sufficiency in clean energy in Brazil to 2025 and globally to 2030. To achieve this goal, the company, among other actions, has structured a roadmap of initiatives, which involves restructuring the current generation portfolio to implement projects and partnerships to insert wind and solar energy sources. An example of these initiatives [study case] is the Sol do Cerrado, project which in November 2022, in Jaíba (Minas Gerais), began to generate renewable energy. With an installed capacity of 766 megawatts-peak, the project will produce a mean capacity of approximately 193 megawatts of energy per year, aiming to generate renewable energy to meet 16% of Vale's estimated consumption by 2025, and reducing our emissions by 134,000 tCO2e/year. Capital Allocation: Climate issues are considered in its capital allocation framework. Vale shifting its energy matrix to renewable is an example of how climate change issues are being discussed at capital allocation discussions, that serve as an action plan for us to reassess the resiliency of its portfolio, with the aggregate magnitude of the risk being low. example: in 2019 Vale has developed a proprietary carbon pricing model to assess risks linked to climate change, by projecting possible impacts on the operating costs of each business unit. This model was officially implemented on June 1, 2020 and takes into account the impacts on direct and indirect costs, including impacts on the supply chain. All project/investments that have a GHG emission associated to its operation and/or will be responsible for the deforestation of native forest during its implantation will estimate its GHG emission and incorporate the shadow price for the project/investiment's evaluation and approval. Also, Vale's investments in R&D represent a crucial risk mitigation strategy and a substantial opportunity, generating the development of new technologies capable of increasing productivity and decreasing GHG emissions. In 2021, Vale announced investments of USD 4 to 6 billion by 2030 to reduce its Scope 1 and 2 emissions. Reduction initiatives are prioritized by the company according to its emission abatement curve. Divestments: In April 2022, we concluded the sale of our coal operations, consisting of Moatize mine and the Nacala Logistics Corridor ("NLC") to Vulcan Resources (formerly Vulcan Minerals), were the portfolio's carbon intensive assets.

C3.5

(C3.5) Na contabilidade financeira da organização, são identificados gastos/receitas alinhados com a transição climática da organização?

	Identificação dos gastos/receitas alinhados com a transição climática da organização	Indique em que nível é identificado o alinhamento dos gastos/receitas da organização com uma taxonomia financeira sustentável
Linha 1	Não, mas planejamos fazê-lo nos próximos dois anos	<Not Applicable>

C4. Metas e desempenho

C4.1

(C4.1) Havia uma meta de emissões ativa no ano de reporte?

Meta absoluta

C4.1a

(C4.1a) Forneça detalhes da(s) meta(s) de emissões absoluta(s) e do progresso em relação a essas metas.

Número de referência da meta

Abs 1

Esta meta tem base científica?

Sim, consideramos essa meta como sendo de base científica e, no momento, a meta está sendo analisada pela Science Based Targets initiative

Meta desejada

Alinhada com menos de 2 °C

Ano em que a meta foi definida

2019

Abrangência da meta

Na empresa como um todo

Escopo(s)
Escopo 1
Escopo 2

Método de contabilização do Escopo 2
Com base no mercado

Categoria(s) do Escopo 3
<Not Applicable>

Ano-base
2017

Emissões de Escopo 1 do ano-base abrangidas pela meta (toneladas métricas de CO2e)
10918638.89

Emissões de Escopo 2 do ano-base abrangidas pela meta (toneladas métricas de CO2e)
1294622.29

Ano-base Escopo 3, categoria 1: Emissões de bens e serviços adquiridos abrangidas pela meta (toneladas métricas de CO2e)
<Not Applicable>

Ano-base Escopo 3, categoria 2: Emissões provenientes de bens de capital abrangidas pela meta (toneladas métricas de CO2e)
<Not Applicable>

Ano-base Escopo 3, categoria 3: Emissões provenientes de atividades relacionadas a combustíveis e energia (não incluídas no Escopo 1 ou 2) abrangidas pela meta (toneladas métricas de CO2e)
<Not Applicable>

Ano-base Escopo 3, categoria 4: Emissões relacionadas a transporte e distribuição upstream abrangidas pela meta (toneladas métricas de CO2e)
<Not Applicable>

Ano-base Escopo 3, categoria 5: Resíduos gerados em emissões de operações abrangidas pela meta (toneladas métricas de CO2e)
<Not Applicable>

Ano-base Escopo 3, categoria 6: Emissões provenientes de viagens de negócios abrangidas pela meta (toneladas métricas de CO2e)
<Not Applicable>

Ano-base Escopo 3, categoria 7: Emissões no transporte de funcionários abrangidas pela meta (toneladas métricas de CO2e)
<Not Applicable>

Ano-base Escopo 3, categoria 8: Emissões provenientes de ativos arrendados upstream abrangidas pela meta (toneladas métricas de CO2e)
<Not Applicable>

Ano-base Escopo 3, categoria 9: Emissões relacionadas a transporte e distribuição downstream abrangidas pela meta (toneladas métricas de CO2e)
<Not Applicable>

Ano-base Escopo 3, categoria 10: Emissões pelo processamento de produtos vendidos abrangidas pela meta (toneladas métricas de CO2e)
<Not Applicable>

Ano-base Escopo 3, categoria 11: Emissões pelo uso de produtos vendidos abrangidas pela meta (toneladas métricas de CO2e)
<Not Applicable>

Ano-base Escopo 3, categoria 12: Emissões no tratamento de produtos vendidos ao final da vida útil abrangidas pela meta (toneladas métricas de CO2e)
<Not Applicable>

Ano-base Escopo 3, categoria 13: Emissões provenientes de ativos arrendados downstream abrangidas pela meta (toneladas métricas de CO2e)
<Not Applicable>

Ano-base Escopo 3, categoria 14: Emissões provenientes de franquias abrangidas pela meta (toneladas métricas de CO2e)
<Not Applicable>

Ano-base Escopo 3, categoria 15: Emissões provenientes de investimentos abrangidas pela meta (toneladas métricas de CO2e)
<Not Applicable>

Ano-base Escopo 3, Outras emissões (upstream) abrangidas pela meta (toneladas métricas de CO2e)
<Not Applicable>

Ano-base Escopo 3, outras emissões (downstream) abrangidas pela meta (toneladas métricas de CO2e)
<Not Applicable>

Emissões totais de Escopo 3 do ano-base abrangidas pela meta (toneladas métricas de CO2e)
<Not Applicable>

Emissões totais do ano-base abrangidas pela meta em todos os Escopos selecionados (toneladas métricas de CO2e)
12213261.18

Emissões de Escopo 1 do ano-base abrangidas pela meta como porcentagem das emissões totais do ano-base no Escopo 1
100

Emissões de Escopo 2 do ano-base abrangidas pela meta como porcentagem das emissões totais do ano-base no Escopo 2
100

Ano-base Escopo 3, categoria 1: Emissões de bens e serviços adquiridos abrangidas pela meta como porcentagem do total de emissões do ano-base no Escopo 3, categoria 1: Bens e serviços adquiridos (toneladas métricas de CO2e)
<Not Applicable>

Ano-base Escopo 3, categoria 2: Emissões de bens de capital abrangidas pela meta como porcentagem do total de emissões do ano-base no Escopo 3, categoria 2: Bens de capital (toneladas métricas de CO2e)
<Not Applicable>

Ano-base Escopo 3, categoria 3: Emissões provenientes de atividades relacionadas a combustíveis e energia (não incluídas no Escopo 1 ou 2) abrangidas pela meta como porcentagem do total de emissões do ano-base no Escopo 3, categoria 3: Atividades relacionadas a combustíveis e energia (não incluídas no Escopo 1 ou 2) (toneladas métricas de CO2e)
<Not Applicable>

Ano-base Escopo 3, categoria 4: Transporte e distribuição (upstream) abrangidos pela meta, como porcentagem do total de emissões do ano-base no Escopo 3, categoria 4: Transporte e distribuição upstream (toneladas métricas de CO2e)
<Not Applicable>

Ano-base Escopo 3, categoria 5: Emissões de resíduos gerados em operações abrangidas pela meta como porcentagem do total de emissões do ano-base no Escopo 3, categoria 5: Resíduos gerados nas operações (toneladas métricas de CO2e)
<Not Applicable>

Ano-base Escopo 3, categoria 6: Emissões de viagens de negócios abrangidas pela meta como porcentagem do total de emissões do ano-base no Escopo 3, categoria 6: Viagens de negócios (toneladas métricas de CO2e)
<Not Applicable>

Ano-base Escopo 3, categoria 7: Transporte de funcionários abrangido pela meta como porcentagem do total de emissões do ano-base no Escopo 3, categoria 7: Deslocamento de funcionários (ida e volta do trabalho) (toneladas métricas de CO2e)
<Not Applicable>

Ano-base Escopo 3, categoria 8: Emissões de ativos arrendados upstream abrangidas pela meta como porcentagem do total de emissões do ano-base no Escopo 3, categoria 8: Ativos arrendados upstream (toneladas métricas de CO2e)
<Not Applicable>

Ano-base Escopo 3, categoria 9: Emissões relacionadas a transporte e distribuição (downstream) abrangidas pela meta, como porcentagem das emissões totais do ano-base no Escopo 3, categoria 9: Transporte e distribuição downstream (toneladas métricas de CO2e)
<Not Applicable>

Ano-base Escopo 3, categoria 10: Emissões pelo processamento de produtos vendidos abrangidas pela meta como porcentagem do total de emissões do ano-base no Escopo 3, categoria 10: Processamento de produtos vendidos (toneladas métricas de CO2e)
<Not Applicable>

Ano-base Escopo 3, categoria 11: Emissões pelo uso de produtos vendidos abrangidas pela meta como porcentagem do total de emissões do ano-base no Escopo 3, categoria 11: Uso de produtos vendidos (toneladas métricas de CO2e)
<Not Applicable>

Ano-base Escopo 3, categoria 12: Emissões pelo tratamento de produtos vendidos ao final de sua vida útil abrangidas pela meta como porcentagem do total de emissões do ano-base no Escopo 3, categoria 12: Tratamento de produtos vendidos ao final da vida útil (toneladas métricas de CO2e)
<Not Applicable>

Ano-base Escopo 3, categoria 13: Emissões de ativos arrendados downstream abrangidas pela meta como porcentagem do total de emissões do ano-base no Escopo 3, categoria 13: Ativos arrendados downstream (toneladas métricas de CO2e)
<Not Applicable>

Ano-base Escopo 3, categoria 14: Emissões de franquias abrangidas pela meta como porcentagem do total de emissões do ano-base no Escopo 3, categoria 14: Franquias (toneladas métricas de CO2e)
<Not Applicable>

Ano-base Escopo 3, categoria 15: Emissões de investimentos abrangidas pela meta como porcentagem do total de emissões do ano-base no Escopo 3, categoria 15: Investimentos (toneladas métricas de CO2e)
<Not Applicable>

Ano-base Escopo 3, Outras emissões (upstream) abrangidas pela meta como porcentagem do total de emissões do ano-base no Escopo 3, Outra (upstream) (toneladas métricas de CO2e)
<Not Applicable>

Ano-base Escopo 3, Outras emissões (downstream) abrangidas pela meta como porcentagem do total de emissões do ano-base no Escopo 3, Outra (downstream) (toneladas métricas de CO2e)
<Not Applicable>

Total de emissões de Escopo 3 do ano-base abrangidas pela meta como porcentagem do total de emissões do ano-base no Escopo 3 (todas as categorias do Escopo 3)
<Not Applicable>

Emissões do ano-base abrangidas pela meta em todos os Escopos selecionados, como porcentagem das emissões totais do ano-base em todos os Escopos selecionados
100

Ano da meta
2030

Meta de redução com relação ao ano-base (%)
33

Emissões totais no ano da meta abrangidas pela meta em todos os Escopos selecionados (toneladas métricas de CO2e) [calculadas automaticamente]
8182884.9906

Emissões de Escopo 1 no ano de reporte abrangidas pela meta (toneladas métricas de CO2e)
8552734.84

Emissões de Escopo 2 no ano de reporte abrangidas pela meta (toneladas métricas de CO2e)
342228.31

Escopo 3, categoria 1: Emissões de bens e serviços adquiridos no ano de reporte abrangidas pela meta (toneladas métricas de CO2e)
<Not Applicable>

Escopo 3, categoria 2: Emissões de bens de capital no ano de reporte abrangidas pela meta (toneladas métricas de CO2e)
<Not Applicable>

Escopo 3, categoria 3: Emissões provenientes de atividades relacionadas a combustíveis e energia (não incluídas no Escopo 1 ou 2) no ano de reporte abrangidas pela meta (toneladas métricas de CO2e)
<Not Applicable>

Escopo 3, categoria 4: Emissões relacionadas a transporte e distribuição upstream no ano de reporte abrangidas pela meta (toneladas métricas de CO2e)
<Not Applicable>

Escopo 3, categoria 5: Resíduos gerados em emissões de operações no ano de reporte abrangidas pela meta (toneladas métricas de CO2e)
<Not Applicable>

Escopo 3, categoria 6: Emissões de viagens de negócios no ano de reporte abrangidas pela meta (toneladas métricas de CO2e)
<Not Applicable>

Escopo 3, categoria 7: Emissões no transporte de funcionários no ano de reporte abrangidas pela meta (toneladas métricas de CO2e)
<Not Applicable>

Escopo 3, categoria 8: Emissões de ativos arrendados upstream no ano de reporte abrangidas pela meta (toneladas métricas de CO2e)
<Not Applicable>

Escopo 3, categoria 9: Emissões relacionadas a transporte e distribuição downstream no ano de reporte abrangidas pela meta (toneladas métricas de CO2e)
<Not Applicable>

Escopo 3, categoria 10: Emissões pelo processamento de produtos vendidos no ano de reporte abrangidas pela meta (toneladas métricas de CO2e)
<Not Applicable>

Escopo 3, categoria 11: Emissões pelo uso de produtos vendidos no ano de reporte abrangidas pela meta (toneladas métricas de CO2e)
<Not Applicable>

Escopo 3, categoria 12: Emissões no tratamento de produtos vendidos ao final da vida útil no ano de reporte abrangidas pela meta (toneladas métricas de CO2e)
<Not Applicable>

Escopo 3, categoria 13: Emissões de ativos arrendados downstream no ano de reporte abrangidas pela meta (toneladas métricas de CO2e)
<Not Applicable>

Escopo 3, categoria 14: Emissões de franquias no ano de reporte abrangidas pela meta (toneladas métricas de CO2e)
<Not Applicable>

Escopo 3, categoria 15: Emissões de investimentos no ano de reporte abrangidas pela meta (toneladas métricas de CO2e)
<Not Applicable>

Escopo 3, Outras emissões (upstream) no ano de reporte abrangidas pela meta (toneladas métricas de CO2e)
<Not Applicable>

Escopo 3, Outras emissões (downstream) no ano de reporte abrangidas pela meta (toneladas métricas de CO2e)
<Not Applicable>

Total de emissões de Escopo 3 no ano de reporte abrangidas pela meta (toneladas métricas de CO2e)
<Not Applicable>

Emissões totais no ano de reporte abrangidas pela meta em todos os escopos selecionados (toneladas métricas de CO2e)
8894963.16

Esta meta abrange alguma emissão relacionada à terra?
Não, não abrange nenhuma emissão relacionada à terra (por ex., SBT não FLAG)

Porcentagem da meta alcançada com relação ao ano-base [calculada automaticamente]
82.3322157551251

Status da meta no ano de reporte
Em andamento

Explique a abrangência da meta e identifique eventuais exclusões
This target is company-wide and covers 100% of both our Scope 1 and 2 emissions. Vale doesn't have any exclusions for this target.

Plano para alcançar a meta e progresso realizado até o fim do ano de reporte
Vale's first pillar of climate action is related to minimizing our operational emissions. We have a target of reducing scope 1 and 2 emissions by 33% by 2030, aligned with the Paris Agreement goal of limiting global average temperature rise to well-below 2 degrees Celsius. To achieve our Scope 1 and 2 emission reduction commitment, we have announced in 2021 that we will invest USD 4-6 billion until 2030. One important component to deliver that reduction is achieving 100% renewable electricity consumption in our operations. We will do that in Brazil within only 4 years, by 2025, and globally, by 2030. In order to prioritize the most cost-efficient initiatives to be implemented, the company has an annually updated marginal abatement cost curve (MACC).
Our current portfolio of initiatives comprises more than 40 projects, prioritizing the most cost-competitive ones in an effort to meet the 2030 target, based on a Marginal Abatement Cost
(MACC) curve.
We are committed to developing and implementing innovative lower carbon technologies, and ~50% of commercial initiatives mapped in our MACC are already entering FEL stage. Also, ~80% of initiatives mapped are NPV positive[2] at the shadow price of USD 50/tCO_2e.
In 2022, our direct emissions including fuels, industrial processes and other minor sources (Scope 1) and indirect market-based emissions regarding electricity purchase (Scope 2) totaled 8.9 $MtCO_2e$, a reduction of 27% when compared to 2017 baseline. This reduction is mainly due to the decrease in production volumes compared to 2017. Nevertheless, An increase in production is expected in the short term, according to Vale's production and sales report, which may lead to an increase in emissions, given the current correlation between production volume and emissions. In the medium term, a drop in emissions is expected, in line with decarbonization efforts, which is related to the implementation of low carbon initiatives by the PowerShift program.

Liste as iniciativas de redução das emissões que mais contribuíram para se atingir essa meta
<Not Applicable>

Número de referência da meta
Abs 2

Esta meta tem base científica?
Sim, consideramos essa meta como sendo de base científica e, no momento, a meta está sendo analisada pela Science Based Targets initiative

Meta desejada
Alinhada com os 2 °C

Ano em que a meta foi definida
2020

Abrangência da meta
Na empresa como um todo

Escopo(s)
Escopo 3

Método de contabilização do Escopo 2
<Not Applicable>

Categoria(s) do Escopo 3
Categoria 1: Bens e serviços adquiridos
Categoria 2: Bens de capital
Categoria 3: Atividades relacionadas a combustíveis e energia (não incluídas nos Escopos 1 ou 2)
Categoria 4: Transporte e distribuição upstream
Categoria 6: Viagens de negócios
Categoria 7: Deslocamentos diários dos funcionários para/do trabalho
Categoria 9: Transporte e distribuição downstream
Categoria 10: Processamento de produtos vendidos
Categoria 15: Investimentos

Ano-base
2018

Emissões de Escopo 1 do ano-base abrangidas pela meta (toneladas métricas de CO2e)
<Not Applicable>

Emissões de Escopo 2 do ano-base abrangidas pela meta (toneladas métricas de CO2e)
<Not Applicable>

Ano-base Escopo 3, categoria 1: Emissões de bens e serviços adquiridos abrangidas pela meta (toneladas métricas de CO2e)
1740953.8

Ano-base Escopo 3, categoria 2: Emissões provenientes de bens de capital abrangidas pela meta (toneladas métricas de CO2e)
26918.2

Ano-base Escopo 3, categoria 3: Emissões provenientes de atividades relacionadas a combustíveis e energia (não incluídas no Escopo 1 ou 2) abrangidas pela meta (toneladas métricas de CO2e)
1565294.4

Ano-base Escopo 3, categoria 4: Emissões relacionadas a transporte e distribuição upstream abrangidas pela meta (toneladas métricas de CO2e)
13903675.1

Ano-base Escopo 3, categoria 5: Resíduos gerados em emissões de operações abrangidas pela meta (toneladas métricas de CO2e)
<Not Applicable>

Ano-base Escopo 3, categoria 6: Emissões provenientes de viagens de negócios abrangidas pela meta (toneladas métricas de CO2e)
6573.3

Ano-base Escopo 3, categoria 7: Emissões no transporte de funcionários abrangidas pela meta (toneladas métricas de CO2e)
41482.1

Ano-base Escopo 3, categoria 8: Emissões provenientes de ativos arrendados upstream abrangidas pela meta (toneladas métricas de CO2e)
<Not Applicable>

Ano-base Escopo 3, categoria 9: Emissões relacionadas a transporte e distribuição downstream abrangidas pela meta (toneladas métricas de CO2e)
5054628.8

Ano-base Escopo 3, categoria 10: Emissões pelo processamento de produtos vendidos abrangidas pela meta (toneladas métricas de CO2e)
506625441.6

Ano-base Escopo 3, categoria 11: Emissões pelo uso de produtos vendidos abrangidas pela meta (toneladas métricas de CO2e)
<Not Applicable>

Ano-base Escopo 3, categoria 12: Emissões no tratamento de produtos vendidos ao final da vida útil abrangidas pela meta (toneladas métricas de CO2e)
<Not Applicable>

Ano-base Escopo 3, categoria 13: Emissões provenientes de ativos arrendados downstream abrangidas pela meta (toneladas métricas de CO2e)
<Not Applicable>

Ano-base Escopo 3, categoria 14: Emissões provenientes de franquias abrangidas pela meta (toneladas métricas de CO2e)
<Not Applicable>

Ano-base Escopo 3, categoria 15: Emissões provenientes de investimentos abrangidas pela meta (toneladas métricas de CO2e)
24143521.3

Ano-base Escopo 3, Outras emissões (upstream) abrangidas pela meta (toneladas métricas de CO2e)
<Not Applicable>

Ano-base Escopo 3, outras emissões (downstream) abrangidas pela meta (toneladas métricas de CO2e)
<Not Applicable>

Emissões totais de Escopo 3 do ano-base abrangidas pela meta (toneladas métricas de CO2e)

553108488.7

Emissões totais do ano-base abrangidas pela meta em todos os Escopos selecionados (toneladas métricas de CO2e)
553108488.7

Emissões de Escopo 1 do ano-base abrangidas pela meta como porcentagem das emissões totais do ano-base no Escopo 1
<Not Applicable>

Emissões de Escopo 2 do ano-base abrangidas pela meta como porcentagem das emissões totais do ano-base no Escopo 2
<Not Applicable>

Ano-base Escopo 3, categoria 1: Emissões de bens e serviços adquiridos abrangidas pela meta como porcentagem do total de emissões do ano-base no Escopo 3, categoria 1: Bens e serviços adquiridos (toneladas métricas de CO2e)
0.31

Ano-base Escopo 3, categoria 2: Emissões de bens de capital abrangidas pela meta como porcentagem do total de emissões do ano-base no Escopo 3, categoria 2: Bens de capital (toneladas métricas de CO2e)
0

Ano-base Escopo 3, categoria 3: Emissões provenientes de atividades relacionadas a combustíveis e energia (não incluídas no Escopo 1 ou 2) abrangidas pela meta como porcentagem do total de emissões do ano-base no Escopo 3, categoria 3: Atividades relacionadas a combustíveis e energia (não incluídas no Escopo 1 ou 2) (toneladas métricas de CO2e)
0.28

Ano-base Escopo 3, categoria 4: Transporte e distribuição (upstream) abrangidos pela meta, como porcentagem do total de emissões do ano-base no Escopo 3, categoria 4: Transporte e distribuição upstream (toneladas métricas de CO2e)
2.51

Ano-base Escopo 3, categoria 5: Emissões de resíduos gerados em operações abrangidas pela meta como porcentagem do total de emissões do ano-base no Escopo 3, categoria 5: Resíduos gerados nas operações (toneladas métricas de CO2e)
<Not Applicable>

Ano-base Escopo 3, categoria 6: Emissões de viagens de negócios abrangidas pela meta como porcentagem do total de emissões do ano-base no Escopo 3, categoria 6: Viagens de negócios (toneladas métricas de CO2e)
0

Ano-base Escopo 3, categoria 7: Transporte de funcionários abrangido pela meta como porcentagem do total de emissões do ano-base no Escopo 3, categoria 7: Deslocamento de funcionários (ida e volta do trabalho) (toneladas métricas de CO2e)
0.01

Ano-base Escopo 3, categoria 8: Emissões de ativos arrendados upstream abrangidas pela meta como porcentagem do total de emissões do ano-base no Escopo 3, categoria 8: Ativos arrendados upstream (toneladas métricas de CO2e)
<Not Applicable>

Ano-base Escopo 3, categoria 9: Emissões relacionadas a transporte e distribuição (downstream) abrangidas pela meta, como porcentagem das emissões totais do ano-base no Escopo 3, categoria 9: Transporte e distribuição downstream (toneladas métricas de CO2e)
0.91

Ano-base Escopo 3, categoria 10: Emissões pelo processamento de produtos vendidos abrangidas pela meta como porcentagem do total de emissões do ano-base no Escopo 3, categoria 10: Processamento de produtos vendidos (toneladas métricas de CO2e)
91.6

Ano-base Escopo 3, categoria 11: Emissões pelo uso de produtos vendidos abrangidas pela meta como porcentagem do total de emissões do ano-base no Escopo 3, categoria 11: Uso de produtos vendidos (toneladas métricas de CO2e)
<Not Applicable>

Ano-base Escopo 3, categoria 12: Emissões pelo tratamento de produtos vendidos ao final de sua vida útil abrangidas pela meta como porcentagem do total de emissões do ano-base no Escopo 3, categoria 12: Tratamento de produtos vendidos ao final da vida útil (toneladas métricas de CO2e)
<Not Applicable>

Ano-base Escopo 3, categoria 13: Emissões de ativos arrendados downstream abrangidas pela meta como porcentagem do total de emissões do ano-base no Escopo 3, categoria 13: Ativos arrendados downstream (toneladas métricas de CO2e)
<Not Applicable>

Ano-base Escopo 3, categoria 14: Emissões de franquias abrangidas pela meta como porcentagem do total de emissões do ano-base no Escopo 3, categoria 14: Franquias (toneladas métricas de CO2e)
<Not Applicable>

Ano-base Escopo 3, categoria 15: Emissões de investimentos abrangidas pela meta como porcentagem do total de emissões do ano-base no Escopo 3, categoria 15: Investimentos (toneladas métricas de CO2e)
4.37

Ano-base Escopo 3, Outras emissões (upstream) abrangidas pela meta como porcentagem do total de emissões do ano-base no Escopo 3, Outra (upstream) (toneladas métricas de CO2e)
<Not Applicable>

Ano-base Escopo 3, Outras emissões (downstream) abrangidas pela meta como porcentagem do total de emissões do ano-base no Escopo 3, Outra (downstream) (toneladas métricas de CO2e)
<Not Applicable>

Total de emissões de Escopo 3 do ano-base abrangidas pela meta como porcentagem do total de emissões do ano-base no Escopo 3 (todas as categorias do Escopo 3)
100

Emissões do ano-base abrangidas pela meta em todos os Escopos selecionados, como porcentagem das emissões totais do ano-base em todos os Escopos selecionados
100

Ano da meta
2035

Meta de redução com relação ao ano-base (%)
15

Emissões totais no ano da meta abrangidas pela meta em todos os Escopos selecionados (toneladas métricas de CO2e) [calculadas automaticamente]
470142215.395

Emissões de Escopo 1 no ano de reporte abrangidas pela meta (toneladas métricas de CO2e)
<Not Applicable>

Emissões de Escopo 2 no ano de reporte abrangidas pela meta (toneladas métricas de CO2e)
<Not Applicable>

Escopo 3, categoria 1: Emissões de bens e serviços adquiridos no ano de reporte abrangidas pela meta (toneladas métricas de CO2e)
1526668.33

Escopo 3, categoria 2: Emissões de bens de capital no ano de reporte abrangidas pela meta (toneladas métricas de CO2e)
10627.02

Escopo 3, categoria 3: Emissões provenientes de atividades relacionadas a combustíveis e energia (não incluídas no Escopo 1 ou 2) no ano de reporte abrangidas pela meta (toneladas métricas de CO2e)
1299068.74

Escopo 3, categoria 4: Emissões relacionadas a transporte e distribuição upstream no ano de reporte abrangidas pela meta (toneladas métricas de CO2e)
11275249.32

Escopo 3, categoria 5: Resíduos gerados em emissões de operações no ano de reporte abrangidas pela meta (toneladas métricas de CO2e)
<Not Applicable>

Escopo 3, categoria 6: Emissões de viagens de negócios no ano de reporte abrangidas pela meta (toneladas métricas de CO2e)
15365.98

Escopo 3, categoria 7: Emissões no transporte de funcionários no ano de reporte abrangidas pela meta (toneladas métricas de CO2e)
48591.05

Escopo 3, categoria 8: Emissões de ativos arrendados upstream no ano de reporte abrangidas pela meta (toneladas métricas de CO2e)
<Not Applicable>

Escopo 3, categoria 9: Emissões relacionadas a transporte e distribuição downstream no ano de reporte abrangidas pela meta (toneladas métricas de CO2e)
2347955.37

Escopo 3, categoria 10: Emissões pelo processamento de produtos vendidos no ano de reporte abrangidas pela meta (toneladas métricas de CO2e)
434868587.83

Escopo 3, categoria 11: Emissões pelo uso de produtos vendidos no ano de reporte abrangidas pela meta (toneladas métricas de CO2e)
<Not Applicable>

Escopo 3, categoria 12: Emissões no tratamento de produtos vendidos ao final da vida útil no ano de reporte abrangidas pela meta (toneladas métricas de CO2e)
<Not Applicable>

Escopo 3, categoria 13: Emissões de ativos arrendados downstream no ano de reporte abrangidas pela meta (toneladas métricas de CO2e)
<Not Applicable>

Escopo 3, categoria 14: Emissões de franquias no ano de reporte abrangidas pela meta (toneladas métricas de CO2e)
<Not Applicable>

Escopo 3, categoria 15: Emissões de investimentos no ano de reporte abrangidas pela meta (toneladas métricas de CO2e)
26419326.48

Escopo 3, Outras emissões (upstream) no ano de reporte abrangidas pela meta (toneladas métricas de CO2e)
<Not Applicable>

Escopo 3, Outras emissões (downstream) no ano de reporte abrangidas pela meta (toneladas métricas de CO2e)
<Not Applicable>

Total de emissões de Escopo 3 no ano de reporte abrangidas pela meta (toneladas métricas de CO2e)
477811440.12

Emissões totais no ano de reporte abrangidas pela meta em todos os escopos selecionados (toneladas métricas de CO2e)
477811440.12

Esta meta abrange alguma emissão relacionada à terra?
Não, não abrange nenhuma emissão relacionada à terra (por ex., SBT não FLAG)

Porcentagem da meta alcançada com relação ao ano-base [calculada automaticamente]
90.7562140379544

Status da meta no ano de reporte
Em andamento

Explique a abrangência da meta e identifique eventuais exclusões
This company-wide target covers 100% of all our Scope 3 emissions, focusing on the largest categories most relevant to our business activities (Purchased goods and services, Fuel-and-energy-related activities [not included in Scope 1 or 2], Upstream transportation and distribution, Downstream transportation and distribution, Processing of sold products) while excluding just two categories (Waste generated in operations - the calculations demonstrated that the emissions from Solid Waste and Wastewater treatment remains not material, representing 0.04% of Vale's Scope 3 emissions in 2022 and; Upstream leased assets - This category may cause double counting at Vale's scope 1 emission).
Also the category 11 that was reported due to the Coal Business that was disinvested in 2022.

Plano para alcançar a meta e progresso realizado até o fim do ano de reporte

We recognize that we can only lead the mining industry toward a low carbon economy if we induce our value chain in the same direction. Vale's scope 3 emissions, annually calculated and verified by independent third parties, represent 98% of our total emissions as of 2022, but they are not under our direct control. About 92% of these Scope 3 emissions are downstream in our value chain, in other words, they were due to the processing, transport and use of products sold by Vale in 2022. In late 2020, Vale set the first quantitative scope 3 targets among our peers. We will reduce net scope 3 emissions by 15% by 2035, based on the development of new products, nature-based solutions, partnerships and engagement with clients and suppliers. This means a reduction from 553.1 MtCO2e in 2018 to 470.1 MtCO2e in 2035. Vale will review its scope 3 targets by 2025 and every five years, given the uncertainties regarding low-carbon technologies and climate policies. Vale's scope 3 targets were set based on the Science Based Target Initiative (SBTi) Target Setting Tool as of December 2020, given a scope 3 SBT target needed to encompass at least 2/3 of total scope 3 emissions, and these should be reduced by 21% as of 2035 in order to be aligned with a 2°C scenario. Considering that the other 1/3 of emissions could remain flat, the total scope 3 emissions would reduce by 14-15% by 2035, versus 2018 levels, that are in 13.6% reduction in the reporting year. Scope 3 emissions totaled, in 2022, 477.8 million tons of CO2e, representing a reduction of 3% compared to 2021, and a decrease of approximately 14% compared to the 2018 base year. This variation in emissions is mainly due to the reduction in the sales volume of our products. However, for the next years. An increase in Vale's Scope 3 emissions is expected due to the growth in sales volume, due to a perspective of increased demand for our products.

Liste as iniciativas de redução das emissões que mais contribuíram para se atingir essa meta

<Not Applicable>

C4.2

(C4.2) Havia alguma outra meta climática ativa no ano de reporte?

Meta(s) para aumentar o consumo ou a produção de energia de baixo carbono
Meta(s) de zero líquido

C4.2a

(C4.2a) Forneça detalhes da(s) meta(s) para aumentar o consumo ou a produção de energia de baixo carbono.

Número de referência da meta
Low 1

Ano em que a meta foi definida
2019

Abrangência da meta
Na empresa como um todo

Tipo de meta: vetor de energia
Eletricidade

Tipo de meta: atividade
Consumo

Tipo de meta: fonte de energia
Somente fonte(s) de energia renovável

Ano-base
2017

Consumo ou produção do vetor de energia selecionado no ano-base (MWh)
17317873

Participação percentual das energias renováveis ou de baixo carbono no ano-base
79

Ano da meta
2030

Participação percentual das energias renováveis ou de baixo carbono no ano da meta
100

Participação percentual das energias renováveis ou de baixo carbono no ano de reporte
86.7

Porcentagem da meta alcançada com relação ao ano-base [calculada automaticamente]
36.6666666666667

Status da meta no ano de reporte
Em andamento

Esta meta faz parte de uma meta de emissões?
ABS1 (C4.1a question)

Esta meta faz parte de uma iniciativa abrangente?
Science Based Targets initiative

Explique a abrangência da meta e identifique eventuais exclusões
In 2019, the company reviewed its climate goals, including new commitments to reduce greenhouse gas (GHG) emissions, bolder goals than previously established in 2018, aiming to become a net zero mining company. The reduction of scope 2 emissions has an important contribution to this climate goal, as the company is committed to consuming 100% of electricity based on renewable energy sources until 2030.

Plano para alcançar a meta e progresso realizado até o fim do ano de reporte
To achieve our target to get 100% renewable electricity globally by 2030 we have some initiatives to drive it. The Sol do Cerrado Project stands out among the initiatives on this front for generating solar energy in the municipality of Jaíba (MG), in Brazil. With an installed capacity of 766 megawatts-peak, the project will produce a mean capacity of approximately 193 megawatts of energy per year for Vale's operations, corresponding to 13% of our demand for 2025. The operations of Sol do Cerrado solar farm, whitch is one of the biggest solar farms in Latin America, started in 2022, and the power generated by it, will reduce Vale's emissions by 134,000 tCO2e per year. In addition to investing in a generation, Vale entered into agreements in 2021 to use energy storage batteries in its operations at the Ilha da Guaíba Terminal and in Sudbury, Canada, thus helping to ensure greater competitiveness and security of energy supply to these operations. Besides, in Canada, Vale recently signed a power purchase agreement (PPA) with Indigenous partners to provide wind power to our Voisey's Bay operations, thus partially replacing diesel oil consumption with renewable electricity. Commercial operation of the wind project is planned for 2026 and we are aimed at reducing emissions by 34,602 tCO2e annually - equivalent to 16% of the emissions from Voisey's Bay operations.

Liste as ações que mais contribuíram para se alcançar essa meta
<Not Applicable>

C4.2c

(C4.2c) Forneça detalhes da(s) sua(s) meta(s) de zero líquido.

Número de referência da meta
NZ1

Abrangência da meta
Na empresa como um todo

Meta(s) de emissões aboluta(s)/de intensidade relacionadas a esta meta de zero líquido
Abs1

Ano da meta para atingir o zero líquido
2050

Esta meta tem base científica?
Não, mas prevemos definir uma nos próximos dois anos

Explique a abrangência da meta e identifique eventuais exclusões
Vale is committed to leading the transition towards a net-zero mining industry. Vale is committed to contributing to solutions that will help limit the increase in the average global temperature to well below 2ºC, as set forth in the Paris Agreement. Vale endorses and follow the Task Force on Climate-related financial disclosures (TCFD) framework for risks and opportunities related to climate change. We have ambitious goals related to climate change risk management, including targets to reduce scopes 1 and 2 absolute emissions by 33% until 2030, with 2017 as a baseline, and to become net zero by 2050. Vale recognizes that it can only lead the mining industry toward a low carbon economy if the company induces its value chain in the same direction. Vale's scope 3 emissions, annually calculated and verified by independent third parties, represent 98% of its total emissions and are not under our direct control. In 2020 Vale assumed the goal of reducing Scope 3 net emissions by 15% until 2035, compared to the base year of 2018. The reduction volume was defined based on the Science Based Target Initiative (SBTI) calculation tool, the Absolute Contraction Approach method, so it is also considered a science-based target. The scope 3 targets will be revised every five years, given the uncertainties regarding low-carbon technologies and climate policies. Both targets are aligned with the Paris Agreement's ambition.

A organização pretende neutralizar eventuais emissões inalteradas com remoções permanentes de carbono no ano da meta?
Sim

Marcos planejados e/ou investimentos de curto prazo para a neutralização no ano da meta
To reach our net zero target by 2050, our number one priority is to continuously reduce our operational emissions, through innovation and technology. Science recognizes that, as a hard-to-abate sector, we may also rely to a limited extent on carbon offsets and removals. We will leverage our expertise and know-how to address sound nature-based solutions. Also, we will count on high-quality and credible carbon markets, aligned with international best practices for offsetting the residual emissions.

Ações planejadas para mitigar as emissões além da cadeia de valor da organização (opcional)
n.a.

C4.3

(C4.3) Existiam iniciativas de redução de emissões ativas no ano de reporte? Observe que isto pode incluir aquelas nas fases de planejamento e/ou implementação.
Sim

C4.3a

(C4.3a) Identifique o número total de iniciativas em cada estágio de desenvolvimento; para aquelas em fase de implementação, identifique a economia de CO2e estimada.

	Número de iniciativas	Economia anual total estimada de CO2e em toneladas métricas de CO2e (somente para linhas marcadas com *)
Em fase de pesquisa	157	9875212
A ser implementada*	4	491712
Implementação iniciada*	1	134000
Implementada*	6	74888
Não será implementada	7	103511

C4.3b

(C4.3b) Forneça detalhes na tabela abaixo sobre as iniciativas implementadas no ano de reporte.

Categoria de iniciativa e Tipo de iniciativa

Eficiência energética nos processos de produção	Automação

Economia anual estimada de CO2e (toneladas métricas de CO2e)
3045

Escopo(s) ou categoria(s) do Escopo 3 em que ocorrem as reduções nas emissões
Escopo 1

Voluntário/obrigatório
Voluntária

Economia monetária anual (unidade monetária – conforme especificada em C0.4)
0

Investimento necessário (unidade monetária – conforme especificado em C0.4)
7420925

Período de retorno
Nenhum retorno

Vida útil estimada da iniciativa
Em andamento

Explique
n.a.

Categoria de iniciativa e Tipo de iniciativa

Eficiência energética nos processos de produção	Otimização de processos

Economia anual estimada de CO2e (toneladas métricas de CO2e)
12679

Escopo(s) ou categoria(s) do Escopo 3 em que ocorrem as reduções nas emissões
Escopo 1

Voluntário/obrigatório
Voluntária

Economia monetária anual (unidade monetária – conforme especificada em C0.4)
3955542

Investimento necessário (unidade monetária – conforme especificado em C0.4)
1379231

Período de retorno
< 1 ano

Vida útil estimada da iniciativa
Em andamento

Explique
n.a.

Categoria de iniciativa e Tipo de iniciativa

Eficiência energética nos processos de produção	Otimização de processos

Economia anual estimada de CO2e (toneladas métricas de CO2e)
55600

Escopo(s) ou categoria(s) do Escopo 3 em que ocorrem as reduções nas emissões
Escopo 1

Voluntário/obrigatório
Voluntária

Economia monetária anual (unidade monetária – conforme especificada em C0.4)
11554904

Investimento necessário (unidade monetária – conforme especificado em C0.4)
2326174

Período de retorno
< 1 ano

Vida útil estimada da iniciativa
Em andamento

Explique
n.a.

Categoria de iniciativa e Tipo de iniciativa

Eficiência energética nos processos de produção	Otimização de processos

Economia anual estimada de CO2e (toneladas métricas de CO2e)
2274

Escopo(s) ou categoria(s) do Escopo 3 em que ocorrem as reduções nas emissões
Escopo 2 (com base na localização)

Voluntário/obrigatório
Voluntária

Economia monetária anual (unidade monetária – conforme especificada em C0.4)
517930

Investimento necessário (unidade monetária – conforme especificado em C0.4)
5600000

Período de retorno
11-15 anos

Vida útil estimada da iniciativa
Em andamento

Explique
n.a.

Categoria de iniciativa e Tipo de iniciativa

Eficiência energética em construções	Iluminação

Economia anual estimada de CO2e (toneladas métricas de CO2e)
1238

Escopo(s) ou categoria(s) do Escopo 3 em que ocorrem as reduções nas emissões
Escopo 2 (com base na localização)

Voluntário/obrigatório
Voluntária

Economia monetária anual (unidade monetária – conforme especificada em C0.4)
239769

Investimento necessário (unidade monetária – conforme especificado em C0.4)
239769

Período de retorno
1-3 anos

Vida útil estimada da iniciativa
Em andamento

Explique
n.a.

Categoria de iniciativa e Tipo de iniciativa

Política da empresa ou mudança comportamental	Eficiência de recursos

Economia anual estimada de CO2e (toneladas métricas de CO2e)
51

Escopo(s) ou categoria(s) do Escopo 3 em que ocorrem as reduções nas emissões
Escopo 1

Voluntário/obrigatório
Voluntária

Economia monetária anual (unidade monetária – conforme especificada em C0.4)
117000

Investimento necessário (unidade monetária – conforme especificado em C0.4)
0

Período de retorno
Nenhum retorno

Vida útil estimada da iniciativa
Em andamento

Explique
n.a.

C4.3c

(C4.3c) Que métodos são utilizados para estimular os investimentos em atividades de redução de emissões?

Método	Explique
Conformidade com requisitos/normas regulamentares	Vale is aware of the targets and established its own target in order to comply with Brazilian policy as well as other regulations worldwide. Vale also follows national discussions on the implementation of the NDC. Since 2019, Vale is committed to the new pact with society to positively impact society, going beyond taxes, social projects and reparation of Brumadinho, by becoming a development enabler in the areas where Vale operates and fostering a safer and more sustainable Brazilian mining industry. Also, in 2019, the company published a group of sustainability goals (linked to the governance part - goals), including new commitments to reduce greenhouse gas (GHG) emissions, bolder than goals established previously in 2018, aiming to become a net zero mining company. To reduce 33% of the absolute emission of scopes 1 and 2 in 2030, aligned with the Paris Agreement to become net zero (scope 1 and 2) by 2050. In adherence to Vale's Global Climate Change Policy and the climate-related risks and opportunities analysis, Vale created the Carbon Program in the Value Chain. Initially, the program involved the training of suppliers to prepare an inventory of GHG emissions. Nowadays, it provides for the annual reporting commitment of GHG emissions from critical suppliers to Vale, as well as other information on emission management. This commitment is formalized through the insertion of a voluntary clause in contracts signed in Brazil. The program is aimed at companies from any region, provided they have active contracts with Vale. Vale suppliers considered key in terms of emissions in the supply chain are annually invited to participate in the CDP Supply Chain program.
Orçamento dedicado ao P&D de produtos de baixo carbono	Through the adoption of existing technologies into new forms or developing new technologies and processes in R&D initiatives, Vale seeks to transform its businesses. At Vale, the use of technology seeks to redesign the way the company works, helping to eliminate certain risk scenarios, positioning us as a leader in safety and risk management, and promoting sustainability and adaptation to climate change. Vale enrolls in partnerships with academies and scientific institutions, and with local governments aiming at the development of Brazilian scientific capacity to study physical impacts and to propose adaptation measures. Investment in R&D represents a crucial risk mitigation strategy for a long-term horizon (10 years or more) and a substantial opportunity, generating the development of new technologies capable of increasing productivity and decreasing GHG emissions. Case: Vale created the Center for Advanced Climate Studies in partnership with the Espírito Santo Government and the University of Espírito Santo. The center has the objective of conducting climate-related research that will assist the state, the country and Vale itself to better understand the climate change issues and how to deal with them. The center had an initial financial contribution of US$175,000 from Vale and already has 21 projects under development. Another example is the Vale Technological Institute (ITV), founded in 2010, which is developing low-carbon and clean/renewable energy R&D and products. This institute has a dedicated group of researchers focused on climate change that seeks to understand the science of climate change and to develop new technologies in order for Vale to better adapt to the new low-carbon economy. So far, 85 masters have graduated, 45% of whom are Vale professionals. In 2019, ITV created the Resident Master's Student Program with the purpose of boosting and influencing local professionals' training on topics related to the 17 SDGs, offering 10 scholarships. ITV already invested (between 2011 to 2022) USD 151.20 million in research projects and published 1,674 scientific articles in collaboration with universities, research centers, and other companies, and supported 179 R&D projects. In order to prioritize the most cost-efficient low-carbon technologies and R&D projects, Vale uses a Marginal Abatement Cost Curve (MACC).
Engajamento dos funcionários	Vale Climate Change team developed an online course on GHG Inventory and Climate Change, available to any employee, and provides training sessions about these issues in order to mobilize its employees around the necessity of reducing emissions in the company's operations and projects. Vale also has focal points in the business areas engaged in identifying opportunities to reduce energy and GHG emissions. Aligned with the Paris Agreement's goal of limiting global warming to below 2ºC, Vale linked the target of reduction of 33% absolute scope 1 and 2 emissions with the variable remuneration of all Vale's employees.
Programas de incentivos/reconhecimento internos	The Sustainability KPI goals program encourages the continuous improvement of the company's performance on material socio-environmental issues. Environmental and social indicators work as metrics to assess the sustainability of the different business areas, reflecting on the teams' variable remuneration. All of these goals, once defined, are registered and monitored in the Career, Succession and Performance (CSP) system. The Sustainability KPIs integrate the variable remuneration of all Vale employees and impact all hierarchical levels, up to the CEO. As of 2021, goals related to the climate agenda represent 5% of short-term (out of 10% related to Sustainability) and 6% of long-term compensation (out of 20% ESG-related) including our CEO and executive vice presidents. In 2022, the long-term ESG-related compensation has risen to 25%, placing more focus on these issues. A goal composed of indicators of greenhouse gas emissions, forest recovery and protection, and renewable energy was also linked to leadership's long-term remuneration.
Curva de custo marginal de abatimento	In order to prioritize the most cost-efficient initiatives to be implemented, the company has an annually updated marginal abatement cost curve (MACC). In its 2021 update, we have increased the number of initiatives mapped from 30 to 40+, while increasing their technology maturity through the implementation of pilots. Currently, our portfolio of initiatives comprises more than 40 projects, prioritizing the most cost-competitive ones in an effort to achieve our 2030 target. We are committed to developing and implementing innovative lower carbon technologies, and ~50% of commercial initiatives mapped in our MACC are already entering FEL stage. Also, ~80% of initiatives mapped are NPV positive[2] at the shadow price of USD 50/tCO_2e. Furthermore, according to the initiatives accounted for in the 2022 MAC curve, the potential GHG emission reductions by project type in 2030 are as follows: Biodiesel and efficiency 6%; Scope 2 18%; Bioenergy 56%; Electrification 7%; Natural Gas and others 13%.
Orçamento dedicado à eficiência energética	A large part of GHG emissions is directly linked to Vale's operations' energy consumption, so Vale knows that energy efficiency is a key factor in reducing GHG emissions and optimizing costs. Vale's Energy-Efficiency Program aims to include the topic of energy efficiency in a structured way into operational routines, making employees think systematically about initiatives that promote energy efficiency in their processes. This work is being developed globally through multidisciplinary groups in each operation and supported by Smart Energy, the platform responsible for managing electricity consumption throughout the company, providing automated energy-efficiency indicators. In addition to making a significant contribution to reducing GHG emissions, the Energy Efficiency Program also addresses ESG issues by creating indicators of energy intensity consumed by products, as well as by setting targets for increasing energy efficiency, which will occur throughout 2021. The search for efficient and sustainable energy management continues to be a priority for the Energy Efficiency Program, whose principles are based on the ISO 50001 standard. As a result, PTVI, our nickel operation in Indonesia, obtained ISO 50001 certification in 2022.
Orçamento dedicado a outras atividades de redução de emissões	In 2021, Vale announced investments of USD 4 to 6 billion by 2030 to reduce its Scope 1 and 2 emissions. Reduction initiatives are prioritized by the company according to its emission abatement curve for 2030, which is public and can be accessed in the Climate Change Report. About 75% of the abatement curve initiatives, consolidated in reduction potential by type of project graph showed positive NPV1, at a shadow price of USD 50/tCO_2e. Since 2020, our expenditures on climate change have totaled USD 810 million, of which USD 543 million in this last year. • In the short term, we are prioritizing energy efficiency and a switch to renewable energy. • We will also increase the role of bioenergy as a transition fuel for our operations. • For the longer term, we will count on both electrification and innovative processes.
Preço interno do carbono	At the end of 2019, Vale adopted an internal carbon price of 50 dollars per ton of CO2 equivalent (US$50/tCO2eq). This price is aligned to the temperature targets of the Paris Agreement, according to the recommendations of the Carbon Pricing Leadership Coalition (CPLC) and all investment decisions are submitted to an analysis considering that price, which is a practice that not only encourages investments in greenhouse gas ("GHG") emission reduction, but also prepares us for a scenario of more restrictive regulations. In June 2020, the use of the internal carbon price in the economic-financial analysis of new investments started. The carbon price starts supporting the risk and opportunity assessment, selection and prioritization of projects, contributing to Vale's decarbonization trajectory.

C4.5

(C4.5) A organização classifica algum dos seus bens e/ou serviços existentes como produto de baixo carbono?

Sim

C4.5a

(C4.5a) Dê detalhes dos produtos e/ou serviços da organização classificados como produtos de baixo carbono.

Nível de agregação

Produto ou serviço

Taxonomia utilizada para classificar o(s) produto(s) ou serviço(s) como de baixo carbono

Nenhuma taxonomia utilizada para classificar o(s) produto(s) ou serviço(s) como de baixo carbono

Tipo do(s) produto(s) ou serviço(s)

Ferro e aço	Outro, especifique (Nickel rounds)

Descrição do(s) produto(s) ou serviço(s)

The nickel rounds from our Long Harbour processing plant, a leading-edge hydrometallurgical facility on Canada's East Coast, are one of the least carbon-intensive nickel products on the market. The product has a carbon footprint of 6.2 tCO2e per ton, which is about half the global average intensity reported by the Nickel Institute for Class I nickel. Therefore, these Class I nickel products position us well for supplying to the electric vehicle industry. Nickel Rounds are a high-purity form of nickel suitable for melting applications, and the Long Harbour Nickel Rounds are manufactured by electrolytic refining at Vale's Long Harbour Processing Plant in Newfoundland, Canada, making it one of the lowest carbon-intensive nickel products on the market.

A organização fez uma estimativa das emissões evitadas por este(s) produto(s) ou serviço(s) de baixo carbono?
Sim

Metodologia utilizada para calcular as emissões evitadas
Estimating and Reporting the Comparative Emissions Impacts of Products (WRI)

Estágio(s) do ciclo de vida abrangido(s) para o(s) produto(s) ou serviço(s) de baixo carbono
Cradle-to-gate ("do berço ao portão")

Unidade funcional utilizada
Tonnes of CO2e per tonnes of Nickel

Produto/serviço de referência ou cenário de base utilizado
Average nickel from Nickel Institute reference: 13 tonnes CO2e

Fase(s) do ciclo de vida útil abrangida(s) do produto/serviço de referência ou cenário de base
Cradle-to-gate ("do berço ao portão")

Estimativa das emissões evitadas (toneladas métricas de CO2e por unidade funcional) com relação ao produto/serviço de referência ou ao cenário de base
238000

Explique os cálculos de emissões evitadas, incluindo eventuais suposições
Calculation = ('Nickel Institute Reference' – 'Nickel Rounds Carbon Footprint from Long Harbour') x 'Nickel Round Sales from Long Habour (13 t CO2e/t Ni – 6.2 t CO2e/t Ni) x 35,000 t Ni) = 238,000 tCO2e

It is worth pointing out that In 2022, we progressed in measuring the carbon footprints of Vale's products. The quantification and reporting of products' carbon footprints are based on the ISO 14067 Carbon Footprint of Products and Product Lifecycle Accounting and Reporting Standard of the GHG Protocol. The cradle-to-gate approach was used, covering emissions generated from mineral extraction, processing and internal transport, pelletizing (where applicable), as well as emissions from the production of inputs (Scope 3 Upstream). Carbon footprints have been calculated and verified by third parties for 100% of our Class 1 nickel products.

Receita gerada com produto(s) ou serviço(s) de baixo carbono como porcentagem do total de receita no ano do reporte
2

Nível de agregação
Produto ou serviço

Taxonomia utilizada para classificar o(s) produto(s) ou serviço(s) como de baixo carbono
Nenhuma taxonomia utilizada para classificar o(s) produto(s) ou serviço(s) como de baixo carbono

Tipo do(s) produto(s) ou serviço(s)

Ferro e aço	Outro, especifique (Low Carbon nickel CCNR)

Descrição do(s) produto(s) ou serviço(s)
Vale's Canadian operations produce some of the lowest-carbon nickel globally. Powder from the Copper Cliff Nickel Refinery in Ontario had a verified footprint of 7.1 tonnes equivalent. This includes Scope 1 and 2 emissions from mining, milling and refining as well as upstream Scope 3 emissions from inputs.

A organização fez uma estimativa das emissões evitadas por este(s) produto(s) ou serviço(s) de baixo carbono?
Sim

Metodologia utilizada para calcular as emissões evitadas
Estimating and Reporting the Comparative Emissions Impacts of Products (WRI)

Estágio(s) do ciclo de vida abrangido(s) para o(s) produto(s) ou serviço(s) de baixo carbono
Cradle-to-gate ("do berço ao portão")

Unidade funcional utilizada
Tonnes of CO2e per tonnes of Nickel

Produto/serviço de referência ou cenário de base utilizado
Average nickel from Nickel Institute reference: 13 tonnes CO2e

Fase(s) do ciclo de vida útil abrangida(s) do produto/serviço de referência ou cenário de base
Cradle-to-gate ("do berço ao portão")

Estimativa das emissões evitadas (toneladas métricas de CO2e por unidade funcional) com relação ao produto/serviço de referência ou ao cenário de base
310000

Explique os cálculos de emissões evitadas, incluindo eventuais suposições
Calculation = ('Nickel Institute Reference' – 'Copper Cliff Nickel Refinery Carbon Footprint from Ontario') x 'CCNR Nickel Sales from Ontario

Receita gerada com produto(s) ou serviço(s) de baixo carbono como porcentagem do total de receita no ano do reporte
3

C5. Metodologia sobre as emissões

C5.1

(C5.1) Este é o primeiro ano de reporte de dados de emissões da organização ao CDP?

Não

C5.1a

(C5.1a) A organização passou por alguma mudança estrutural no ano de reporte, ou há alguma mudança estrutural prévia sendo representada neste reporte de dados de emissões?

Linha 1

Houve alguma mudança estrutural?

Sim, um desinvestimento

Nome da(s) organização(ões) adquirida(s), desinvestida(s) ou fundida(s)

Responsible divestment of non-core assets, totaling 9 businesses in 5 countries as of 2019, eliminating expenses by up to US$2.0 billion per year. By 2022, Vale:

- Completed the sale of a) the 50% stake in California Steel Industries; b) Moatize coal mine and the Nacala Logistics Corridor; c) the iron ore, manganese and logistics assets of the Midwest System; d) its shares or VNDC in China.
- Signed a binding agreement for the sale of Companhia Siderúrgica do Pecém - CSP to ArcelorMittal.

Detalhes da(s) mudança(s) estrutural(is), incluindo as datas de conclusão

Ferroalloys and Manganese operations of Vale Manganês: In January 2022, Vale sold its ferroalloys operations in Barbacena and Ouro Preto and its manganese mining operations at Morro da Mina, in the state of Minas Gerais, to VDL Group (“VDL”). As a result, the company no longer has manganese ferroalloys operations.

Midwestern System: In April 2022, Vale entered into a binding agreement with J&F Mineração Ltda. (“J&F”) for the sale of all the shares issued by Mineração Corumbaense Reunida S.A., Mineração Mato Grosso S.A., International Iron Company, Inc. and Transbarge Navegación Sociedad Anónima, which held the company’s iron ore, manganese ore, and logistics assets in the Midwestern System. The sale included the full assumption by the buyer of the take-or-pay logistics contracts, subject to the consent of the applicable counterparties. The buyer also assumed operations with all employees of the assets.

Moatize coal mine and the Nacala Logistics Corridor: This transaction reinforces Vale's commitment to reshape and decarbonize its portfolio in a responsible manner portfolio while maintaining a disciplined capital allocation process. The sale of these assets was concluded on April 25, 2022.

California Steel Industries: On February 1, 2022, subsidiary Vale Canada Limited ("VCL") completed the sale and transfer of its 50% interest in California Steel Industries ("CSI") to Nucor Corporation ("Nucor"). Under the terms disclosed, VCL received $436.7 million in cash, of which $400 million related to 50% of the deal value and the remainder related to adjusted net debt and working capital at the completion of the transaction.

Vale Nickel Dalian (VNDC): In August 2022, Vale sold all of its shares in Vale Nickel Dalian Co., Ltd. to Dalian Xingbo Mechanical Co., Ltd. for US$28 million plus certain VAT offset amounts.

Companhia Siderúrgica do Pecém – CSP: This transaction reinforces Vale's strategy of portfolio simplification, with a focus on core businesses and growth and growth opportunities, guided by disciplined capital allocation. Under the agreed terms, the enterprise value of the transaction is approximately US$ 2.2 billion. A completion is expected in 1Q23.

C5.1b

(C5.1b) A metodologia de contabilização das emissões, os limites e/ou a definição do ano de reporte foram alterados no ano de reporte?

	Alteração(ões) na metodologia, nos limites e/ou na definição do ano de reporte?	Detalhes da(s) alteração(ões) na metodologia, nos limites e/ou na definição do ano de reporte
Linha 1	Sim, uma alteração nos limites	We disregard all the disinvestment emissions, such as Coal Business in Mozambique, VNDC in China, Midwestern System in Ferrous and Ferroalloys and Manganese operations. Removing these emissions not only from the reporting year, also in the previous years, including the base line year.

C5.1c

(C5.1c) As emissões do ano-base da organização e as emissões dos anos passados foram recalculadas, como resultado de eventuais alterações ou erros reportados em C5.1a e/ou C5.1b?

	Recálculo do ano-base	Escopo(s) recalculado(s)	Política de recálculo das emissões do ano-base, incluindo o limite de significância	Recálculo dos anos passados
Linha 1	Sim	Escopo 1 Escopo 2, com base na localização Escopo 2, com base no mercado Escopo 3	Vale considers as a significant threshold a cumulative change of 5% in the total emission (Scope 1 +2) of the base year. We have adopted Brazil's GHG Protocol Programme policy. However, as we concluded disinvestments in 2022, such as Coal Business in Mozambique, VNDC in China, Midwestern System in Ferrous and Ferroalloys and Manganese operations, we removed these emissions not only from the reporting year, also in the previous years, including the base line year. Therefore, base year 2017 Scope 1 and 2 emissions reduced from 13.5 million tons of CO2e to 12.2 million CO2e and base year 2018 Scope 3 emissions reduced from 585 million tons of CO2e to 553 million CO2e.	Sim

C5.2

(C5.2) Informe o ano-base e as emissões do ano-base.

Escopo 1

Início do ano-base
janeiro 1 2017

Fim do ano-base
dezembro 31 2017

Emissões do ano-base (toneladas métricas de CO2e)
10918638.89

Explique
The 2017 emissions result is certified by a third party and may be impacted by recalculations due to significant changes in boundaries, methodologies, and data input errors, according to the GHG Protocol standard.

Escopo 2 (com base na localização)

Início do ano-base
janeiro 1 2017

Fim do ano-base
dezembro 31 2017

Emissões do ano-base (toneladas métricas de CO2e)
1294622.29

Explique
The 2017 emissions result is certified by a third party and may be impacted by recalculations due to significant changes in boundaries, methodologies, and data input errors, according to the GHG Protocol standard.

Escopo 2 (com base no mercado)

Início do ano-base
janeiro 1 2017

Fim do ano-base
dezembro 31 2017

Emissões do ano-base (toneladas métricas de CO2e)
1294622.29

Explique
The 2017 emissions result is certified by a third party and may be impacted by recalculations due to significant changes in boundaries, methodologies, and data input errors, according to the GHG Protocol standard.

Escopo 3, categoria 1: Bens e serviços adquiridos

Início do ano-base
janeiro 1 2018

Fim do ano-base
dezembro 31 2018

Emissões do ano-base (toneladas métricas de CO2e)
1740953.8

Explique
The 2018 emissions result is certified by a third party and may be impacted by recalculations due to significant changes in boundaries, methodologies, and data input errors, according to the GHG Protocol standard.

Escopo 3, categoria 2: Bens de capital

Início do ano-base
janeiro 1 2018

Fim do ano-base
dezembro 31 2018

Emissões do ano-base (toneladas métricas de CO2e)
26918.2

Explique
The 2018 emissions result is certified by a third party and may be impacted by recalculations due to significant changes in boundaries, methodologies, and data input errors, according to the GHG Protocol standard.

Escopo 3, categoria 3: Atividades relacionadas a combustível e energia (não incluídas no Escopo 1 ou 2)

Início do ano-base
janeiro 1 2018

Fim do ano-base
dezembro 31 2018

Emissões do ano-base (toneladas métricas de CO2e)
1565294.4

Explique
The 2018 emissions result is certified by a third party and may be impacted by recalculations due to significant changes in boundaries, methodologies, and data input errors, according to the GHG Protocol standard.

Escopo 3, categoria 4: Transporte e distribuição upstream

Início do ano-base
janeiro 1 2018

Fim do ano-base
dezembro 31 2018

Emissões do ano-base (toneladas métricas de CO2e)
13903675.1

Explique
The 2018 emissions result is certified by a third party and may be impacted by recalculations due to significant changes in boundaries, methodologies, and data input errors, according to the GHG Protocol standard.

Escopo 3, categoria 5: Resíduos gerados nas operações

Início do ano-base

Fim do ano-base

Emissões do ano-base (toneladas métricas de CO2e)

Explique

Escopo 3, categoria 6: Viagens de negócios

Início do ano-base
janeiro 1 2018

Fim do ano-base
dezembro 31 2018

Emissões do ano-base (toneladas métricas de CO2e)
6573.3

Explique
The 2018 emissions result is certified by a third party and may be impacted by recalculations due to significant changes in boundaries, methodologies, and data input errors, according to the GHG Protocol standard.

Escopo 3, categoria 7: Deslocamentos diários dos funcionários para/do trabalho

Início do ano-base
janeiro 1 2018

Fim do ano-base
dezembro 31 2018

Emissões do ano-base (toneladas métricas de CO2e)
41482.1

Explique
The 2018 emissions result is certified by a third party and may be impacted by recalculations due to significant changes in boundaries, methodologies, and data input errors, according to the GHG Protocol standard.

Escopo 3, categoria 8: Ativos arrendados upstream

Início do ano-base

Fim do ano-base

Emissões do ano-base (toneladas métricas de CO2e)

Explique

Escopo 3, categoria 9: Transporte e distribuição downstream

Início do ano-base
janeiro 1 2018

Fim do ano-base
dezembro 31 2018

Emissões do ano-base (toneladas métricas de CO2e)
5054628.8

Explique
The 2018 emissions result is certified by a third party and may be impacted by recalculations due to significant changes in boundaries, methodologies, and data input errors, according to the GHG Protocol standard.

Escopo 3, categoria 10: Processamento de produtos vendidos

Início do ano-base
janeiro 1 2018

Fim do ano-base
dezembro 31 2018

Emissões do ano-base (toneladas métricas de CO2e)
506625441.6

Explique
The 2018 emissions result is certified by a third party and may be impacted by recalculations due to significant changes in boundaries, methodologies, and data input errors, according to the GHG Protocol standard.

Escopo 3, categoria 11: Uso de produtos vendidos

Início do ano-base

Fim do ano-base

Emissões do ano-base (toneladas métricas de CO2e)

Explique

Escopo 3, categoria 12: Tratamento de produtos vendidos ao final de sua vida útil

Início do ano-base

Fim do ano-base

Emissões do ano-base (toneladas métricas de CO2e)

Explique

Escopo 3, categoria 13: Ativos arrendados downstream

Início do ano-base

Fim do ano-base

Emissões do ano-base (toneladas métricas de CO2e)

Explique

Escopo 3, categoria 14: Franquias

Início do ano-base

Fim do ano-base

Emissões do ano-base (toneladas métricas de CO2e)

Explique

Escopo 3, categoria 15: Investimentos

Início do ano-base
janeiro 1 2018

Fim do ano-base
dezembro 31 2018

Emissões do ano-base (toneladas métricas de CO2e)
24143521.3

Explique
In 2022, Vale estimated the emissions (scopes 1 + 2 +3) associated with its investments, considering Vale's share (equity share). These emissions represented around 6% of Scope 3 in 2022.

Escopo 3: Outros (upstream)

Início do ano-base

Fim do ano-base

Emissões do ano-base (toneladas métricas de CO2e)

Explique

Escopo 3: Outros (downstream)

Início do ano-base

Fim do ano-base

Emissões do ano-base (toneladas métricas de CO2e)

Explique

C5.3

(C5.3) Selecione o nome da norma, do protocolo ou da metodologia usado/a para coletar os dados das atividades e calcular as emissões.
Programa do GHG Protocol Brasil
Defra Environmental Reporting Guidelines: Including streamlined energy and carbon reporting guidance, 2019
Environment Canada, Base Metals Smelting/Refining, Guidance Manual for Estimating Greenhouse Gas Emissions
IPCC Guidelines for National Greenhouse Gas Inventories, 2006
ISO 14064-1
The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition)
The Greenhouse Gas Protocol Agricultural Guidance: Interpreting the Corporate Accounting and Reporting Standard for the Agricultural Sector
The Greenhouse Gas Protocol: Scope 2 Guidance
Outro, especifique (NIR (National Inventory Report) GHG Sources & Sinks Canada)

C6. Dados das emissões

C6.1

(C6.1) Qual foi o total de emissões brutas de Escopo 1 da organização, em toneladas métricas de CO2e?

Ano de reporte

Emissões brutas de Escopo 1 (toneladas métricas de CO2e)
8552734.84

Data de início
janeiro 1 2022

Data de fim
dezembro 31 2022

Explique
Vale's Scope 1 emissions are calculated using the methodology recommended by:
- 2006 and 2019 Refinement IPCC Guidelines for National Greenhouse Gas Inventories
- The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition)
- Brazil GHG Protocol Programme
- ISO 14064-1
- Environment Canada, Base Metals Smelting/Refining, Guidance Manual for Estimating Greenhouse Gas Emissions
- NIR GHG Sources & Sinks Canada
- Defra Voluntary Reporting Guidelines

Ano passado 1

Emissões brutas de Escopo 1 (toneladas métricas de CO2e)
8665333.4

Data de início
janeiro 1 2021

Data de fim
dezembro 31 2021

Explique
Vale's Scope 1 emissions are calculated using the methodology recommended by:
- 2006 and 2019 Refinement IPCC Guidelines for National Greenhouse Gas Inventories
- The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition)
- Brazil GHG Protocol Programme
- ISO 14064-1
- Environment Canada, Base Metals Smelting/Refining, Guidance Manual for Estimating Greenhouse Gas Emissions
- NIR GHG Sources & Sinks Canada
- Defra Voluntary Reporting Guidelines

C6.2

(C6.2) Descreva o método usado para reportar as emissões de Escopo 2 de sua organização.

Linha 1

Escopo 2, com base na localização
Estamos divulgando um valor de Escopo 2 com base na localização

Escopo 2, com base no mercado
Estamos divulgando um valor de Escopo 2 com base no mercado

Explique
Scope 2 emissions in 2022, accounted by the Market Based methodology, totalled 0.34 million tCO2e. These emissions, unlike the accounting by the Location methodology, presented above, consider Vale's energy acquisition contracts as well as concession contracts for its own assets, attesting their renewable origin through certificates or declarations from generators. In 2022, from the total energy contracted and consumed via GRID, by Vale's operations in Brazil, Vale deducted a total of 6.6 TWh, from renewable sources.

C6.3

(C6.3) Qual foi o total de emissões brutas de Escopo 2 de sua organização, em toneladas métricas de CO2e?

Ano de reporte

Escopo 2, com base na localização
622516.13

Escopo 2, com base no mercado (se aplicável)
342228.31

Data de início
janeiro 1 2022

Data de fim
dezembro 31 2022

Explique
Vale Scope 2 emissions are calculated using the methodology recommended by:
- The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition)
- Brazil GHG Protocol Programme
- ISO 14064-1
- NIR GHG Sources & Sinks Canada
- Defra Voluntary Reporting Guidelines

Ano passado 1

Escopo 2, com base na localização
1151206.05

Escopo 2, com base no mercado (se aplicável)
318260.95

Data de início
janeiro 1 2021

Data de fim
dezembro 31 2021

Explique
Vale Scope 2 emissions are recalculated due to disinvestments, using the methodology recommended by:
- The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition)
- Brazil GHG Protocol Programme
- ISO 14064-1
- NIR GHG Sources & Sinks Canada
- Defra Voluntary Reporting Guidelines

C6.4

(C6.4) Existem fontes (por ex., instalações, GEEs específicos, atividades, regiões etc.) de emissões de Escopo 1, Escopo 2 ou Escopo 3 que estejam dentro dos limites de reporte selecionados, mas que não estão incluídas na divulgação?
Sim

C6.4a

(C6.4a) Dê detalhes sobre as fontes de emissões de Escopo 1, Escopo 2 e Escopo 3 dentro dos limites de reporte selecionados, mas não incluídas no reporte.

Fonte de emissões excluída
Solid Waste and Wastewater treatment

Escopo(s) ou categoria(s) do Escopo 3
Escopo 1
Escopo 2 (com base na localização)
Escopo 2 (com base no mercado)
Escopo 3: Resíduos gerados nas operações

Relevância das emissões de Escopo 1 desta fonte
As emissões não são relevantes

Relevância das emissões de Escopo 2 desta fonte, com base na localização
As emissões não são relevantes

Relevância das emissões de Escopo 2 desta fonte, com base no mercado
As emissões não são relevantes

Relevância das emissões de Escopo 3 desta fonte
As emissões não são relevantes

Data de conclusão da aquisição ou da fusão
<Not Applicable>

Porcentagem estimada do total de emissões de Escopo 1+2 representada por esta fonte excluída
0.3

Porcentagem estimada do total de emissões de Escopo 3 representada por esta fonte excluída

0

Explique por que essa fonte foi excluída
Vale has assessed the materiality of these emission sources in 2009 and again in 2022, regarding 2021 calendar year, and the calculations demonstrated that the emissions from Solid Waste and Wastewater treatment remains not material, representing 0.29% of Scope 1 and 2 emissions in 2022 and 0.04% of Vale's total emissions (Scope 1, 2 and 3). Then, we will not include these emission sources as they are irrelevant to Vale's inventory and to the mining sector.

Explique como foi estimada a porcentagem de emissões representada por esta fonte excluída
Calculation: "Estimated emissions from Waste and Wastewater treatment" / ("Scope 1 and 2 emissions" + "Estimated emissions from excludes sources") = 25,619 / (8,894,963.2 +26,781) = 0.29 %

Fonte de emissões excluída
Fire Extinguisher Fugitive Emissions

Escopo(s) ou categoria(s) do Escopo 3
Escopo 1

Relevância das emissões de Escopo 1 desta fonte
As emissões não são relevantes

Relevância das emissões de Escopo 2 desta fonte, com base na localização
<Not Applicable>

Relevância das emissões de Escopo 2 desta fonte, com base no mercado
<Not Applicable>

Relevância das emissões de Escopo 3 desta fonte
<Not Applicable>

Data de conclusão da aquisição ou da fusão
<Not Applicable>

Porcentagem estimada do total de emissões de Escopo 1+2 representada por esta fonte excluída
0

Porcentagem estimada do total de emissões de Escopo 3 representada por esta fonte excluída
<Not Applicable>

Explique por que essa fonte foi excluída
Fugitive GHG emissions from fire extinguishers were estimated in 2017 and again in 2022 and excluded from Vale's GHG Inventory as they are irrelevant to Vale's mining sector and activities.

Explique como foi estimada a porcentagem de emissões representada por esta fonte excluída
Calculation: "Estimated emissions from fire extinguishers" / ("Scope 1 and 2 emissions" + "Estimated emissions from fire extinguishers") = 909/ (8,894,963.2 + 26,781) = 0.0102 %

Fonte de emissões excluída
Emissions from combustion of acetylene

Escopo(s) ou categoria(s) do Escopo 3
Escopo 1

Relevância das emissões de Escopo 1 desta fonte
As emissões não são relevantes

Relevância das emissões de Escopo 2 desta fonte, com base na localização
<Not Applicable>

Relevância das emissões de Escopo 2 desta fonte, com base no mercado
<Not Applicable>

Relevância das emissões de Escopo 3 desta fonte
<Not Applicable>

Data de conclusão da aquisição ou da fusão
<Not Applicable>

Porcentagem estimada do total de emissões de Escopo 1+2 representada por esta fonte excluída
0

Porcentagem estimada do total de emissões de Escopo 3 representada por esta fonte excluída
<Not Applicable>

Explique por que essa fonte foi excluída
GHG combustion emissions from the use of acetylene were estimated in 2017 and again in 2022 and excluded from Vale's GHG Inventory as they are irrelevant to Vale's mining sector and activities.

Explique como foi estimada a porcentagem de emissões representada por esta fonte excluída
Calculation: "Estimated emissions from acetylene use" / ("Scope 1 and 2 emissions" + "Estimated emissions from acetylene use") = 253.68 / (8,894,963.2 + 26,781 = 0.003 %

Fonte de emissões excluída
Upstream leased assets

Escopo(s) ou categoria(s) do Escopo 3
Escopo 3: Ativos arrendados upstream

Relevância das emissões de Escopo 1 desta fonte
<Not Applicable>

Relevância das emissões de Escopo 2 desta fonte, com base na localização
<Not Applicable>

Relevância das emissões de Escopo 2 desta fonte, com base no mercado
<Not Applicable>

Relevância das emissões de Escopo 3 desta fonte
As emissões não são relevantes

Data de conclusão da aquisição ou da fusão
<Not Applicable>

Porcentagem estimada do total de emissões de Escopo 1+2 representada por esta fonte excluída
<Not Applicable>

Porcentagem estimada do total de emissões de Escopo 3 representada por esta fonte excluída
0

Explique por que essa fonte foi excluída
This category may cause double counting at Vale's scope 1 emission due to the type of contract Vale has with the leased assets, because where Vale has operational control all the GHG emissions are accounted.

Explique como foi estimada a porcentagem de emissões representada por esta fonte excluída
Not applicable.

Fonte de emissões excluída
End-of-life treatment of sold products

Escopo(s) ou categoria(s) do Escopo 3
Escopo 3: Tratamento dos produtos vendidos ao final de sua vida útil

Relevância das emissões de Escopo 1 desta fonte
<Not Applicable>

Relevância das emissões de Escopo 2 desta fonte, com base na localização
<Not Applicable>

Relevância das emissões de Escopo 2 desta fonte, com base no mercado
<Not Applicable>

Relevância das emissões de Escopo 3 desta fonte
As emissões não são relevantes

Data de conclusão da aquisição ou da fusão
<Not Applicable>

Porcentagem estimada do total de emissões de Escopo 1+2 representada por esta fonte excluída
<Not Applicable>

Porcentagem estimada do total de emissões de Escopo 3 representada por esta fonte excluída
0

Explique por que essa fonte foi excluída
Not applicable. Vale's products can have numerous different uses and also be recycled. It is not possible to estimate or assume a hypothetical destination for Vale's products to estimate the end life GHG emissions.

Explique como foi estimada a porcentagem de emissões representada por esta fonte excluída
Not applicable.

Fonte de emissões excluída
Downstream leased assets

Escopo(s) ou categoria(s) do Escopo 3
Escopo 3: Ativos arrendados upstream

Relevância das emissões de Escopo 1 desta fonte
<Not Applicable>

Relevância das emissões de Escopo 2 desta fonte, com base na localização
<Not Applicable>

Relevância das emissões de Escopo 2 desta fonte, com base no mercado
<Not Applicable>

Relevância das emissões de Escopo 3 desta fonte
As emissões não são relevantes

Data de conclusão da aquisição ou da fusão
<Not Applicable>

Porcentagem estimada do total de emissões de Escopo 1+2 representada por esta fonte excluída
<Not Applicable>

Porcentagem estimada do total de emissões de Escopo 3 representada por esta fonte excluída
0

Explique por que essa fonte foi excluída
Not applicable. Vale does not have any leased assets to account for. Therefore this category is not relevant.

Explique como foi estimada a porcentagem de emissões representada por esta fonte excluída

Not applicable.

Fonte de emissões excluída
Franchises

Escopo(s) ou categoria(s) do Escopo 3
Escopo 3: Franquias

Relevância das emissões de Escopo 1 desta fonte
<Not Applicable>

Relevância das emissões de Escopo 2 desta fonte, com base na localização
<Not Applicable>

Relevância das emissões de Escopo 2 desta fonte, com base no mercado
<Not Applicable>

Relevância das emissões de Escopo 3 desta fonte
As emissões não são relevantes

Data de conclusão da aquisição ou da fusão
<Not Applicable>

Porcentagem estimada do total de emissões de Escopo 1+2 representada por esta fonte excluída
<Not Applicable>

Porcentagem estimada do total de emissões de Escopo 3 representada por esta fonte excluída
0

Explique por que essa fonte foi excluída
Not applicable. Vale does not operate any franchises. Therefore this category is not relevant.

Explique como foi estimada a porcentagem de emissões representada por esta fonte excluída
Not applicable.

C6.5

(C6.5) Explique as emissões globais brutas de Escopo 3 da organização, divulgando e explicando eventuais exclusões.

Bens e serviços adquiridos

Status da avaliação
Relevante, calculadas

Emissões no ano de reporte (toneladas métricas de CO2e)
1526668.33

Metodologia de cálculo das emissões
Método da média de dados

Porcentagem de emissões calculada utilizando-se dados obtidos de fornecedores ou parceiros da cadeia de valor
0

Explique
n.a

Bens de capital

Status da avaliação
Não relevante, calculadas

Emissões no ano de reporte (toneladas métricas de CO2e)
10627.02

Metodologia de cálculo das emissões
Método da média de dados

Porcentagem de emissões calculada utilizando-se dados obtidos de fornecedores ou parceiros da cadeia de valor
0

Explique
This emissions category is considered not relevant or not material due to its representativeness in relation to the total of Scope 3 emissions. It represented 0.002% of Vale's Scope 3 in 2022. As a mining and metallurgical company, downstream emissions are more relevant for Vale than upstream emissions categories, as the products sold are processed or used by other companies in the manufacture of final products. And also due to the high volumes of commodities (products sold), the categories associated with transport and distribution, especially maritime transport, are also relevant.

Atividades relacionadas a combustível e energia (não incluídas no Escopo 1 ou 2)

Status da avaliação
Relevante, calculadas

Emissões no ano de reporte (toneladas métricas de CO2e)
1299068.74

Metodologia de cálculo das emissões
Método da média de dados

Porcentagem de emissões calculada utilizando-se dados obtidos de fornecedores ou parceiros da cadeia de valor
0

Explique
n.a

Transporte e distribuição upstream

Status da avaliação
Relevante, calculadas

Emissões no ano de reporte (toneladas métricas de CO2e)
11275249.32

Metodologia de cálculo das emissões
Método baseado no combustível
Método baseado na distância

Porcentagem de emissões calculada utilizando-se dados obtidos de fornecedores ou parceiros da cadeia de valor
100

Explique
n.a

Resíduos gerados nas operações

Status da avaliação
Não relevante, explicação fornecida

Emissões no ano de reporte (toneladas métricas de CO2e)
<Not Applicable>

Metodologia de cálculo das emissões
<Not Applicable>

Porcentagem de emissões calculada utilizando-se dados obtidos de fornecedores ou parceiros da cadeia de valor
<Not Applicable>

Explique
Vale has assessed the materiality of these emission sources in 2009 and again in 2022, regarding 2021 calendar year, and the calculations demonstrated that the emissions from Solid Waste and Wastewater treatment remains not material, representing 0.03% of Vale's Scope 3 emissions in 2021. Then, we will not include these emission sources as they are irrelevant to Vale's inventory and to the mining sector.

Viagens de negócios

Status da avaliação
Não relevante, calculadas

Emissões no ano de reporte (toneladas métricas de CO2e)
15365.98

Metodologia de cálculo das emissões
Método baseado na distância

Porcentagem de emissões calculada utilizando-se dados obtidos de fornecedores ou parceiros da cadeia de valor
0

Explique
This emissions category is considered not relevant or not material due to its representativeness in relation to the total of Scope 3 emissions. It represented 0.003% of Vale' Scope 3 in 2022. As a mining and metallurgical company, downstream emissions are more relevant for Vale than upstream emissions categories, as the products sold are processed or used by other companies in the manufacture of final products. And also due to the high volumes of commodities (products sold), the categories associated with transport and distribution, especially maritime transport, are also relevant.

Deslocamentos diários dos funcionários para/do trabalho

Status da avaliação
Não relevante, calculadas

Emissões no ano de reporte (toneladas métricas de CO2e)
48591.05

Metodologia de cálculo das emissões
Método baseado no combustível
Método baseado na distância

Porcentagem de emissões calculada utilizando-se dados obtidos de fornecedores ou parceiros da cadeia de valor
0

Explique
This emissions category is considered not relevant or not material due to its representativeness in relation to the total of Scope 3 emissions. It represented 0.01% of Vale' Scope 3 in 2022. As a mining and metallurgical company, downstream emissions are more relevant for Vale than upstream emissions categories, as the products sold are processed or used by other companies in the manufacture of final products. And also due to the high volumes of commodities (products sold), the categories associated with transport and distribution, especially maritime transport, are also relevant.

Ativos arrendados upstream

Status da avaliação
Não relevante, explicação fornecida

Emissões no ano de reporte (toneladas métricas de CO2e)
<Not Applicable>

Metodologia de cálculo das emissões
<Not Applicable>

Porcentagem de emissões calculada utilizando-se dados obtidos de fornecedores ou parceiros da cadeia de valor
<Not Applicable>

Explique
This category may cause double counting at Vale's scope 1 emission due to the type of contract Vale has with the leased assets, because where Vale has operational control all the GHG emissions are accounted.

Transporte e distribuição downstream

Status da avaliação
Relevante, calculadas

Emissões no ano de reporte (toneladas métricas de CO2e)
2347955.37

Metodologia de cálculo das emissões
Método baseado no combustível
Método baseado na distância

Porcentagem de emissões calculada utilizando-se dados obtidos de fornecedores ou parceiros da cadeia de valor
100

Explique
n.a

Processamento de produtos vendidos

Status da avaliação
Relevante, calculadas

Emissões no ano de reporte (toneladas métricas de CO2e)
434868587.83

Metodologia de cálculo das emissões
Método da média de dados

Porcentagem de emissões calculada utilizando-se dados obtidos de fornecedores ou parceiros da cadeia de valor
0

Explique
n.a

Uso de produtos vendidos

Status da avaliação
Não relevante, explicação fornecida

Emissões no ano de reporte (toneladas métricas de CO2e)
<Not Applicable>

Metodologia de cálculo das emissões
<Not Applicable>

Porcentagem de emissões calculada utilizando-se dados obtidos de fornecedores ou parceiros da cadeia de valor
<Not Applicable>

Explique
Category 11 is now zero once it was related to the Coal Business that was disinvested.

Tratamento de produtos vendidos ao final de sua vida útil

Status da avaliação
Não relevante, explicação fornecida

Emissões no ano de reporte (toneladas métricas de CO2e)
<Not Applicable>

Metodologia de cálculo das emissões
<Not Applicable>

Porcentagem de emissões calculada utilizando-se dados obtidos de fornecedores ou parceiros da cadeia de valor
<Not Applicable>

Explique
Not applicable. Due to the numerous potential uses of Vale's products, as well as the possibility for recycling, it is not possible to estimate or assume a hypothetical destination for these products in order to estimate end-of-life greenhouse gas emissions.

Ativos arrendados downstream

Status da avaliação
Não relevante, explicação fornecida

Emissões no ano de reporte (toneladas métricas de CO2e)
<Not Applicable>

Metodologia de cálculo das emissões
<Not Applicable>

Porcentagem de emissões calculada utilizando-se dados obtidos de fornecedores ou parceiros da cadeia de valor
<Not Applicable>

Explique
Not applicable. Vale does not have any leased assets to account for. Therefore this category is not relevant.

Franquias

Status da avaliação
Não relevante, explicação fornecida

Emissões no ano de reporte (toneladas métricas de CO2e)
<Not Applicable>

Metodologia de cálculo das emissões
<Not Applicable>

Porcentagem de emissões calculada utilizando-se dados obtidos de fornecedores ou parceiros da cadeia de valor
<Not Applicable>

Explique
Not applicable. Vale does not operate any franchises. Therefore this category is not relevant.

Investimentos

Status da avaliação
Relevante, calculadas

Emissões no ano de reporte (toneladas métricas de CO2e)
26419326.48

Metodologia de cálculo das emissões
Método específico do investimento

Porcentagem de emissões calculada utilizando-se dados obtidos de fornecedores ou parceiros da cadeia de valor
0

Explique
In 2022, Vale estimated the emissions (scopes 1 + 2 +3) associated with its investments, considering Vale's share (equity share). These emissions represented around 6% of Scope 3 in 2022.

Outros (upstream)

Status da avaliação

Emissões no ano de reporte (toneladas métricas de CO2e)
<Not Applicable>

Metodologia de cálculo das emissões
<Not Applicable>

Porcentagem de emissões calculada utilizando-se dados obtidos de fornecedores ou parceiros da cadeia de valor
<Not Applicable>

Explique

Outros (downstream)

Status da avaliação

Emissões no ano de reporte (toneladas métricas de CO2e)
<Not Applicable>

Metodologia de cálculo das emissões
<Not Applicable>

Porcentagem de emissões calculada utilizando-se dados obtidos de fornecedores ou parceiros da cadeia de valor
<Not Applicable>

Explique

C6.5a

(C6.5a) Divulgue ou reitere os dados de emissões de Escopo 3 para os anos anteriores.

Ano passado 1

Data de início
janeiro 1 2021

Data de fim
dezembro 31 2021

Escopo 3: Bens e serviços adquiridos (toneladas métricas de CO2e)
1457921.5

Escopo 3: Bens de capital (toneladas métricas de CO2e)
14745.1

Escopo 3: Atividades relacionadas a combustíveis e energia (não incluídas nos Escopos 1 ou 2) (toneladas métricas de CO2e)
1473931

Escopo 3: Transporte e distribuição upstream (toneladas métricas de CO2e)
11720648

Escopo 3: Resíduos gerados nas operações (toneladas métricas de CO2e)

Escopo 3: Viagens de negócios (toneladas métricas de CO2e)
6709.6

Escopo 3: Deslocamento de funcionários (ida e volta do trabalho) (toneladas métricas de CO2e)
69289.6

Escopo 3: Ativos arrendados upstream (toneladas métricas de CO2e)

Escopo 3: Transporte e distribuição downstream (toneladas métricas de CO2e)
2399766.2

Escopo 3: Processamento de produtos vendidos (toneladas métricas de CO2e)
447661724.2

Escopo 3: Uso de produtos vendidos (toneladas métricas de CO2e)

Escopo 3: Tratamento dos produtos vendidos ao final da vida útil (toneladas métricas de CO2e)

Escopo 3: Ativos arrendados downstream (toneladas métricas de CO2e)

Escopo 3: Franquias (toneladas métricas de CO2e)

Escopo 3: Investimentos (toneladas métricas de CO2e)
26797231.4

Escopo 3: Outros (upstream) (toneladas métricas de CO2e)

Escopo 3: Outros (downstream) (toneladas métricas de CO2e)

Explique
All the previous Years including the base line were recalculed due to the desinvestments

C6.7

(C6.7) As emissões de dióxido de carbono provenientes do carbono biogênico são relevantes para a organização?
Sim

C6.7a

(C6.7a) Forneça as emissões provenientes de carbono biogênico relevantes para a organização, em toneladas métricas de CO2.

	Emissões de CO2 provenientes de carbono biogênico (toneladas métricas de CO2)	Explique
Linha 1	286369.45	The biogenic emissions in 2022 were ~35% lower than in 2021 due to due to the reduction in the total area of vegetation cover removed (land-use change)

C6.10

(C6.10) Descreva as emissões combinadas globais brutas de Escopos 1 e 2 para o ano de reporte, em toneladas métricas de CO2e, por receita total em moeda unitária, e forneça eventuais métricas de intensidade adicionais adequadas para as operações de negócios.

Valor da intensidade
0.000203

Numerador da métrica (Emissões combinadas globais brutas de Escopos 1 e 2, em toneladas métricas de CO2e)
8894963

Denominador da métrica
receita total unitária

Denominador da métrica: Total da unidade
43839000000

Valor do Escopo 2 usado
Com base no mercado

Porcentagem de variação em relação ao ano anterior
23.1

Direção da variação
Aumentou

Motivo(s) da variação
Variação na receita

Explique
The indicator has risen by around 23% from the previous year. This increase is primarily due to a significant drop in Vale's net operating revenue (denominator) in 2022 compared to 2021. In 2021 the company's total net operating revenues from continuing operations was US$ 54,502 million, while in 2022 it was US$ 43,839 million, which represents a drop of 19.6%.
On the other hand, the numerator, represented for the gross global combined scope 1 and 2 emissions, was similar in both years, reaching 8,894,963 metric tons of CO2e in 2022 versus 8,983,594 metric tons of CO2e in 2021. Therefore, if we consider only the numerator, it's possible to observe that the company's emissions decreased by 1% from 2021 to 2022.

C7. Decomposição das emissões

C7.1

(C7.1) A organização decompõe suas emissões de Escopo 1 por tipo de gás de efeito estufa?
Sim

C7.1a

(C7.1a) Decomponha o total de emissões brutas globais de Escopo 1 por tipo de gás de efeito estufa e forneça a fonte de cada potencial de aquecimento global de efeito estufa (GWP) utilizado.

Gás de efeito estufa	Emissões de Escopo 1 (toneladas métricas de CO2e)	Referência de GWP
CO2	8228665.99	Quinto Relatório de Avaliação do IPCC (AR5 – 100 anos)
CH4	8278.44	Quinto Relatório de Avaliação do IPCC (AR5 – 100 anos)
N2O	288.966	Quinto Relatório de Avaliação do IPCC (AR5 – 100 anos)
HFCs	26600.58	Quinto Relatório de Avaliação do IPCC (AR5 – 100 anos)
SF6	223.25	Quinto Relatório de Avaliação do IPCC (AR5 – 100 anos)

C7.2

(C7.2) Decomponha as emissões totais brutas de Escopo 1 por país/área/região.

País/área/região	Emissões de Escopo 1 (toneladas métricas de CO2e)
Brasil	5453410.81
Canadá	491427.38
Indonésia	1745817.09
Japan	7156.44
Malásia	7483.38
Omã	806634.7
Reino Unido da Grã-Bretanha e Irlanda do Norte	38792.92
Outro, especifique (International (Air space and waters))	2012.12

C7.3

(C7.3) Indique quais desagregações de emissões brutas de Escopo 1 a empresa pode fornecer.

Por divisão de negócios

Por instalação

C7.3a

(C7.3a) Decomponha as emissões brutas globais totais de Escopo 1 por divisão de negócios.

Divisão de negócios	Emissões de Escopo 1 (toneladas métricas de CO2e)
Ferrous minerals: Iron ore and iron ore pellets	4263632.62
Base Metals: Nickel, Copper and other products	3118530.54
Logistics Infrastructure: Railways and Ports	1118343.37
Others (Aviation, Corporate, Mineral Research and "Reparação Brumadinho")	52228.31

C7.3b

(C7.3b) Decomponha as emissões brutas globais totais de Escopo 1 por instalação comercial.

Instalação	Emissões de Escopo 1 (toneladas métricas de CO2e)	Latitude	Longitude
Corporative Brazil	117202.51	-22.910169	-43.173635
Itabira Complex	312033.82	-19.593315	-43.221606
Mariana Complex	106068.15	-20.20212	-43.445293
Vargem Grande Complex	533614.82	-20.236804	-43.864175
Paraopeba Complex	82374.24	-20.41899	-43.876104
Ferrosos Norte	521947.14	-6.059807	-50.167448
Serra Sul - S11D	172320.5	-6.411224	-50.341333
Ponta da Madeira Complex	374618.72	-2.574198	-44.342135
Tubarão Complex	1266595.68	-20.262567	-40.244273
Oman Operations	806634.7	24.511622	56.598384
Onça Puma	519180.93	-6.542229	-51.114634
PT Vale Indonesia	1745817.09	-2.568121	121.389641
Port Colborne Refinery	17434.7	42.879598	-79.237737
Sudbury Complex	284777.57	46.480663	-81.045879
Thompson Complex	20257.89	55.71292	-97.836879
Long Harbour Operations	31505.26	47.418623	-53.792404
Voisey's Bay Complex	91520.9	56.334705	-62.072704
Clydach Refinery	38792.92	51.693711	-3.889591
Matsuzaka Refinery	7156.44	34.604467	136.549806
Salobo	223343.91	-5.794425	-50.531521
Sossego	92523.62	-6.433417	-50.069884
Carajás Railway (EFC)	796825.2	-2.56835	-44.346151
Vitória to Minas Railway (EFVM)	296969.18	-20.27682	-40.246181
Simões Filho's Ferroalloy Plant	998.46	-12.787931	-38.412447
Malaysia Distribution Center (Teluk Rubiah)	7483.38	4.170708	100.619682
Ilha de Guaíba's Terminal (TIG)	5513.65	-23.004488	-44.032523
Itaguaí's Terminal (CPBS)	630.84	-22.910695	-43.819408
New Steel	24.1	-22.615068	-43.309027
Água Limpa e Brucutu Complex	78568.54	-19.86914	-43.39307

C-CE7.4/C-CH7.4/C-CO7.4/C-EU7.4/C-MM7.4/C-OG7.4/C-ST7.4/C-TO7.4/C-TS7.4

(C-CE7.4/C-CH7.4/C-CO7.4/C-EU7.4/C-MM7.4/C-OG7.4/C-ST7.4/C-TO7.4/C-TS7.4) Decomponha o total das emissões brutas de Escopo 1 da organização por atividade de produção do setor, em toneladas métricas de CO2e.

	Emissões brutas de Escopo 1, toneladas métricas de CO2e	Emissões líquidas de Escopo 1, toneladas métricas de CO2e	Explique
Atividades de produção de cimento	<Not Applicable>	<Not Applicable>	<Not Applicable>
Atividades de produção de produtos químicos	<Not Applicable>	<Not Applicable>	<Not Applicable>
Atividades de produção de carvão	<Not Applicable>	<Not Applicable>	<Not Applicable>
Atividades de fornecimento de eletricidade	<Not Applicable>	<Not Applicable>	<Not Applicable>
Atividades de produção de metais e mineração	7316900.72	<Not Applicable>	Emissions not included: Logistic services, Corporate (offices and Mineral Research activities, Projects and Brumadinho Reparation).
Atividades de produção de petróleo e gás (a montante)	<Not Applicable>	<Not Applicable>	<Not Applicable>
Atividades de produção de petróleo e gás (midstream)	<Not Applicable>	<Not Applicable>	<Not Applicable>
Atividades de produção de petróleo e gás (a jusante)	<Not Applicable>	<Not Applicable>	<Not Applicable>
Atividades de produção de aço	<Not Applicable>	<Not Applicable>	<Not Applicable>
Atividades de fabricantes de equipamentos originais (OEM) de transporte	<Not Applicable>	<Not Applicable>	<Not Applicable>
Atividades de serviços de transporte	<Not Applicable>	<Not Applicable>	<Not Applicable>

C7.5

(C7.5) Decomponha as emissões totais brutas de Escopo 2 por país/área/região.

País/área/região	Escopo 2, com base na localização (toneladas métricas de CO2e)	Escopo 2, com base no mercado (toneladas métricas de CO2e)
Brasil	280433.18	145.36
Canadá	39120.49	39120.49
Indonésia	2734.6	2734.6
Japan	6000.61	6000.61
Malásia	44225.47	44225.47
Omã	242708.83	242708.83
Reino Unido da Grã-Bretanha e Irlanda do Norte	7292.96	7292.96

C7.6

(C7.6) Indique quais desagregações de emissões brutas de Escopo 2 a empresa pode fornecer.

Por divisão de negócios
Por instalação

C7.6a

(C7.6a) Decomponha as emissões brutas globais totais de Escopo 2 por divisão de negócios.

Divisão de negócios	Escopo 2, com base na localização (toneladas métricas de CO2e)	Escopo 2, com base no mercado (toneladas métricas de CO2e)
Ferrous minerals: Iron ore and iron ore pellets	424748.21	242854.19
Base Metals: Nickel, Copper and other products	129660.95	55148.65
Logistics Infrastructure: Railways and Ports	67685.467	44225.47
Others (Aviation, Corporate, Energy - Biopalma, Mineral Research and "Reparação Brumadinho")	421.5	0

C7.6b

(C7.6b) Decomponha as emissões brutas globais totais de Escopo 2 por instalação comercial.

Instalação	Escopo 2, com base na localização (toneladas métricas de CO2e)	Escopo 2, com base no mercado (toneladas métricas de CO2e)
Corporative Brazil	421.5	0
Itabira Complex	49561.56	0
Mariana Complex	7373.49	0
Vargem Grande Complex	30289.74	0
Paraopeba Complex	8472.1	0
Ferrosos Norte	21480.69	0
Serra Sul - S11D	12047.77	0
Ponta da Madeira Complex	19654.69	0
Tubarão Complex	41870.36	0
Oman Operations	242708.83	242708.83
Onça Puma	31400.03	0
PT Vale Indonesia	2734.6	2734.6
Port Colborne Refinery	656.1	656.1
Sudbury Complex	30743.74	30743.74
Thompson Complex	317.43	317.43
Long Harbour Operations	7403.22	7403.22
Voisey's Bay Complex	0	0
Clydach Refinery	7292.96	7292.96
Matsuzaka Refinery	6000.61	6000.61
Salobo	34055.37	0
Sossego	8871.58	0
Carajás Railway (EFC)	402.69	0
Vitória to Minas Railway (EFVM)	916.27	0
Simões Filho's Ferroalloy Plant	145.36	145.36
Malaysia Distribution Center (Teluk Rubiah)	44225.47	44225.47
Ilha de Guaíba's Terminal (TIG)	1362.89	0
Itaguaí's Terminal (CPBS)	901.35	0
New Steel	5.26	0
Água Limpa e Brucutu Complex	11200.48	0

C7.7

(C7.7) A organização é capaz de decompor seus dados de emissões para alguma das subsidiárias incluídas na resposta ao CDP?
Sim

C7.7a

(C7.7a) Decomponha as emissões brutas de Escopos 1 e 2 da organização por subsidiária.

Nome da subsidiária
VALE S.A.

Atividade principal
Serviços de suporte à mineração e metais

Selecione o(s) identificador(es) único(s) que é possível indicar para esta subsidiária
Outro identificador único, especifique (Corporate Taxpayer Identification Number)

Código ISIN – título
<Not Applicable>

Código ISIN – ações
<Not Applicable>

Número CUSIP
<Not Applicable>

Símbolo no Ticker
<Not Applicable>

Código SEDOL
<Not Applicable>

Número LEI
<Not Applicable>

Outro identificador único
CNPJ: 33.592.510/0001-54

Emissões de Escopo 1 (toneladas métricas de CO2e)
8552734.84

Emissões de Escopo 2, com base na localização (toneladas métricas de CO2e)
622516.13

Emissões de Escopo 2, com base no mercado (toneladas métricas de CO2e)
342228.31

Explique
Total emissions reported for VALE.

Nome da subsidiária
Companhia Portuaria Baia de Sepetiba

Atividade principal
Serviços de suporte ao transporte

Selecione o(s) identificador(es) único(s) que é possível indicar para esta subsidiária
Outro identificador único, especifique (Corporate Taxpayer Identification Number)

Código ISIN – título
<Not Applicable>

Código ISIN – ações
<Not Applicable>

Número CUSIP
<Not Applicable>

Símbolo no Ticker
<Not Applicable>

Código SEDOL
<Not Applicable>

Número LEI
<Not Applicable>

Outro identificador único
CNPJ: 72.372.998/0001-66

Emissões de Escopo 1 (toneladas métricas de CO2e)
630.84

Emissões de Escopo 2, com base na localização (toneladas métricas de CO2e)
901.35

Emissões de Escopo 2, com base no mercado (toneladas métricas de CO2e)
0

Explique
Emissions from CPBS.

Nome da subsidiária
PT Vale Indonesia Tbk

Atividade principal
Serviços de suporte à mineração e metais

Selecione o(s) identificador(es) único(s) que é possível indicar para esta subsidiária
Outro identificador único, especifique (Corporate Registration Number)

Código ISIN – título
<Not Applicable>

Código ISIN – ações
<Not Applicable>

Número CUSIP
<Not Applicable>

Símbolo no Ticker
<Not Applicable>

Código SEDOL
<Not Applicable>

Número LEI
<Not Applicable>

Outro identificador único
Corporate Registration number: 8120005782069

Emissões de Escopo 1 (toneladas métricas de CO2e)
1745817.09

Emissões de Escopo 2, com base na localização (toneladas métricas de CO2e)
2734.6

Emissões de Escopo 2, com base no mercado (toneladas métricas de CO2e)
2734.6

Explique

Emissions from PTVI

Nome da subsidiária
Salobo Metais S.A

Atividade principal
Serviços de suporte à mineração e metais

Selecione o(s) identificador(es) único(s) que é possível indicar para esta subsidiária
Outro identificador único, especifique (Corporate Taxpayer Identification Number)

Código ISIN – título
<Not Applicable>

Código ISIN – ações
<Not Applicable>

Número CUSIP
<Not Applicable>

Símbolo no Ticker
<Not Applicable>

Código SEDOL
<Not Applicable>

Número LEI
<Not Applicable>

Outro identificador único
CNPJ: 33.931.478/0001-94

Emissões de Escopo 1 (toneladas métricas de CO2e)
223343.91

Emissões de Escopo 2, com base na localização (toneladas métricas de CO2e)
34055.37

Emissões de Escopo 2, com base no mercado (toneladas métricas de CO2e)
0

Explique
Emissions from Salobo

Nome da subsidiária
Vale Canada Ltd

Atividade principal
Serviços de suporte à mineração e metais

Selecione o(s) identificador(es) único(s) que é possível indicar para esta subsidiária
Outro identificador único, especifique (Corporate Number)

Código ISIN – título
<Not Applicable>

Código ISIN – ações
<Not Applicable>

Número CUSIP
<Not Applicable>

Símbolo no Ticker
<Not Applicable>

Código SEDOL
<Not Applicable>

Número LEI
<Not Applicable>

Outro identificador único
Corporate No.: 956267-2

Emissões de Escopo 1 (toneladas métricas de CO2e)
322470.16

Emissões de Escopo 2, com base na localização (toneladas métricas de CO2e)
31717.26

Emissões de Escopo 2, com base no mercado (toneladas métricas de CO2e)
31717.26

Explique
Emissions from Ontario and Manitoba Operations combined.

Nome da subsidiária
Vale Japan Ltd.

Atividade principal

Serviços de suporte à mineração e metais

Selecione o(s) identificador(es) único(s) que é possível indicar para esta subsidiária
Outro identificador único, especifique (Commercial Number)

Código ISIN – título
<Not Applicable>

Código ISIN – ações
<Not Applicable>

Número CUSIP
<Not Applicable>

Símbolo no Ticker
<Not Applicable>

Código SEDOL
<Not Applicable>

Número LEI
<Not Applicable>

Outro identificador único
Commercial No.: 0104-01-074848

Emissões de Escopo 1 (toneladas métricas de CO2e)
7156.44

Emissões de Escopo 2, com base na localização (toneladas métricas de CO2e)
6000.61

Emissões de Escopo 2, com base no mercado (toneladas métricas de CO2e)
6000.61

Explique
Emissions from Vale Japan

Nome da subsidiária
Vale Malaysia Minerals Sdn. Bhd.

Atividade principal
Serviços de suporte ao transporte

Selecione o(s) identificador(es) único(s) que é possível indicar para esta subsidiária
Outro identificador único, especifique (Corporate Number)

Código ISIN – título
<Not Applicable>

Código ISIN – ações
<Not Applicable>

Número CUSIP
<Not Applicable>

Símbolo no Ticker
<Not Applicable>

Código SEDOL
<Not Applicable>

Número LEI
<Not Applicable>

Outro identificador único
Corporate No.:20091020331 (863428-M)

Emissões de Escopo 1 (toneladas métricas de CO2e)
7483.38

Emissões de Escopo 2, com base na localização (toneladas métricas de CO2e)
44225.47

Emissões de Escopo 2, com base no mercado (toneladas métricas de CO2e)
44225.47

Explique
Emissions from Malasya Port

Nome da subsidiária
Vale Manganês S.A

Atividade principal
Serviços de suporte à mineração e metais

Selecione o(s) identificador(es) único(s) que é possível indicar para esta subsidiária
Outro identificador único, especifique (Corporate Taxpayer Identification Number)

Código ISIN – título
<Not Applicable>

Código ISIN – ações
<Not Applicable>

Número CUSIP
<Not Applicable>

Símbolo no Ticker
<Not Applicable>

Código SEDOL
<Not Applicable>

Número LEI
<Not Applicable>

Outro identificador único
CNPJ: 15.144.306/0001-99

Emissões de Escopo 1 (toneladas métricas de CO2e)
998.46

Emissões de Escopo 2, com base na localização (toneladas métricas de CO2e)
145.36

Emissões de Escopo 2, com base no mercado (toneladas métricas de CO2e)
145.36

Explique
Remaining emissions from Simões Filho operation

Nome da subsidiária
Vale Newfoundland & Labrador Ltd.

Atividade principal
Serviços de suporte à mineração e metais

Selecione o(s) identificador(es) único(s) que é possível indicar para esta subsidiária
Outro identificador único, especifique (Corporate Number)

Código ISIN – título
<Not Applicable>

Código ISIN – ações
<Not Applicable>

Número CUSIP
<Not Applicable>

Símbolo no Ticker
<Not Applicable>

Código SEDOL
<Not Applicable>

Número LEI
<Not Applicable>

Outro identificador único
Corporate No.: 35013-95

Emissões de Escopo 1 (toneladas métricas de CO2e)
123026.16

Emissões de Escopo 2, com base na localização (toneladas métricas de CO2e)
7403.22

Emissões de Escopo 2, com base no mercado (toneladas métricas de CO2e)
7403.22

Explique
Emissions from Long Harbour and Voiseys Bay

Nome da subsidiária
Vale Oman Pelletizing Company LLC

Atividade principal
Serviços de suporte à mineração e metais

Selecione o(s) identificador(es) único(s) que é possível indicar para esta subsidiária
Outro identificador único, especifique (Commercial Number)

Código ISIN – título
<Not Applicable>

Código ISIN – ações
<Not Applicable>

Número CUSIP
<Not Applicable>

Símbolo no Ticker

<Not Applicable>

Código SEDOL
<Not Applicable>

Número LEI
<Not Applicable>

Outro identificador único
Commercial No.: 1066208

Emissões de Escopo 1 (toneladas métricas de CO2e)
806634.7

Emissões de Escopo 2, com base na localização (toneladas métricas de CO2e)
242708.83

Emissões de Escopo 2, com base no mercado (toneladas métricas de CO2e)
242708.83

Explique
Emissions from Oman

Nome da subsidiária
Mineração Onça Puma S.A

Atividade principal
Serviços de suporte à mineração e metais

Selecione o(s) identificador(es) único(s) que é possível indicar para esta subsidiária
Outro identificador único, especifique (Corporate Taxpayer Identification Number)

Código ISIN – título
<Not Applicable>

Código ISIN – ações
<Not Applicable>

Número CUSIP
<Not Applicable>

Símbolo no Ticker
<Not Applicable>

Código SEDOL
<Not Applicable>

Número LEI
<Not Applicable>

Outro identificador único
CNPJ: 48.256.824/0001-53

Emissões de Escopo 1 (toneladas métricas de CO2e)
519180.93

Emissões de Escopo 2, com base na localização (toneladas métricas de CO2e)
31400.03

Emissões de Escopo 2, com base no mercado (toneladas métricas de CO2e)
0

Explique
Emissions from Onça Puma Complex.

C-CE7.7/C-CH7.7/C-CO7.7/C-MM7.7/C-OG7.7/C-ST7.7/C-TO7.7/C-TS7.7

(C-CE7.7/C-CH7.7/C-CO7.7/C-MM7.7/C-OG7.7/C-ST7.7/C-TO7.7/C-TS7.7) Decomponha o total de emissões brutas de Escopo 2 da organização por atividade de produção do setor em toneladas métricas de CO2e.

	Escopo 2, com base na localização, toneladas métricas de CO2e	Escopo 2, com base no mercado (se aplicável), toneladas métricas de CO2e	Explique
Atividades de produção de cimento	<Not Applicable>	<Not Applicable>	<Not Applicable>
Atividades de produção de produtos químicos	<Not Applicable>	<Not Applicable>	<Not Applicable>
Atividades de produção de carvão	<Not Applicable>	<Not Applicable>	<Not Applicable>
Atividades de produção de metais e mineração	554223.85	298002.84	Emissions not included: Logistic services, Corporate (offices and Mineral Research activities, Projects and Brumadinho Reparation.
Atividades de produção de petróleo e gás (a montante)	<Not Applicable>	<Not Applicable>	<Not Applicable>
Atividades de produção de petróleo e gás (midstream)	<Not Applicable>	<Not Applicable>	<Not Applicable>
Atividades de produção de petróleo e gás (a jusante)	<Not Applicable>	<Not Applicable>	<Not Applicable>
Atividades de produção de aço	<Not Applicable>	<Not Applicable>	<Not Applicable>
Atividades de fabricantes de equipamentos originais (OEM) de transporte	<Not Applicable>	<Not Applicable>	<Not Applicable>
Atividades de serviços de transporte	<Not Applicable>	<Not Applicable>	<Not Applicable>

C7.9

(C7.9) Como o total de emissões brutas (Escopos 1 e 2 combinados) do ano de reporte variou em comparação com o do ano de reporte anterior?

Diminuiu

C7.9a

(C7.9a) Identifique os motivos para eventuais variações nas emissões brutas globais (Escopos 1 e 2 combinados) e, para cada uma delas, especifique como as emissões se comparam ao ano anterior.

	Mudança nas emissões (toneladas métricas de CO2e)	Direção da variação nas emissões	Valor das emissões (porcentagem)	Explique os cálculos
Variação no consumo de energia renovável	22.5	Diminuiu	0	There was a very small reduction. GHG Emissions were basically maintained with the strategy of purchasing certificates in Brazil.
Outras atividades de redução de emissões	74888	Diminuiu	0.83	Other emission reductions initiatives as reported in question C4.3b contributed to -0,83% of the change. Calculation: (-74.888,1/8983594,35)*100 = -0.83%
Desinvestimentos		<Not Applicable>		
Aquisições		<Not Applicable>		
Fusões		<Not Applicable>		
Variação na produção	128282	Diminuiu	1.43	A decrease in emissions due to a decrease in output (production volumes) contributed to -1.43% of the change in emissions from FY2021 to FY2022. Calculation: (-128,281.65/ 8,983,594.35)*100 = 3.04%. Where the emissions decrease -128,282 tCO2e, are calculated based on the emissions intensity for FY2022. (22.2 kgCO2eq / tMFe-eq) and the difference in production volumes between FY2022 and FY2021 (399.85 - 405.62 = -5.76 Million tons MFe-eq). the asset. Note: The Iron Ore indicator (MFe-eq) represents the sum of production volumes of Vale's main products, such as Pellets, Nickel and Copper, which are converted into tons of Iron Ore equivalent by using an equivalence based on the commodities average price over the years.
Mudança de metodologia		<Not Applicable>		
Mudança de limite		<Not Applicable>		
Mudança nas condições físicas de operação		<Not Applicable>		
Não identificado		<Not Applicable>		
Outros	114561	Aumentou	1.28	The increase in GHG emissions is related to emissions intensity (39,086.75) and others such as changes emissions factors and reporting methodologies that are contributing to an increase (75,474.23).

C7.9b

(C7.9b) Os cálculos de desempenho de emissões de C7.9 e C7.9a se baseiam no valor das emissões de Escopo 2 com base na localização ou no valor das emissões de Escopo 2 com base no mercado?

Com base no mercado

C8. Energia

C8.1

(C8.1) Durante o ano de reporte, qual porcentagem do total de gastos operacionais corresponde aos gastos com energia?

Superior a 5%, mas inferior ou igual a 10%

C8.2

(C8.2) Selecione quais atividades relacionadas à energia foram realizadas pela organização.

	Indique se a organização realizou esta atividade relacionada à energia no ano de reporte
Consumo de combustível (exceto matérias-primas)	Sim
Consumo de eletricidade comprada ou adquirida	Sim
Consumo de aquecimento comprado ou adquirido	Não
Consumo de vapor comprado ou adquirido	Não
Consumo de resfriamento comprado ou adquirido	Não
Geração de eletricidade, aquecimento, vapor ou refrigeração	Sim

C8.2a

(C8.2a) Divulgue os consumos totais de energia (exceto matérias-primas) da organização em MWh.

	Valor de aquecimento	MWh de fontes renováveis	MWh de fontes não renováveis	Total (renováveis e não renováveis) em MWh
Consumo de combustível (exceto matérias-primas)	LHV (menor poder calorífico)	1120746.72	24721952.17	25842698.9
Consumo de eletricidade comprada ou adquirida	<Not Applicable>	7640300.17	1514153.91	9154454.08
Consumo de aquecimento comprado ou adquirido	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>
Consumo de vapor comprado ou adquirido	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>
Consumo de resfriamento comprado ou adquirido	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>
Consumo de energia renovável não combustível autogerada	<Not Applicable>	2254579.04	<Not Applicable>	2254579.04
Consumo total de energia	<Not Applicable>	11015625.93	26236106.08	37251732.01

C-MM8.2a

(C-MM8.2a) Divulgue os totais de consumo de energia (exceto matérias-primas) pela organização para as atividades de produção de metais e mineração em MWh.

	Valor de aquecimento	MWh totais
Consumo de combustível (exceto matérias-primas)	LHV (menor poder calorífico)	21258612.97
Consumo de eletricidade comprada ou adquirida	<Not Applicable>	8521704.02
Consumo de aquecimento comprado ou adquirido	<Not Applicable>	<Not Applicable>
Consumo de vapor comprado ou adquirido	<Not Applicable>	<Not Applicable>
Consumo de resfriamento comprado ou adquirido	<Not Applicable>	<Not Applicable>
Consumo de energia renovável não combustível autogerada	<Not Applicable>	2254579.04
Consumo total de energia	<Not Applicable>	32034896.03

C8.2b

(C8.2b) Selecione as aplicações de consumo de combustível da organização.

	Indique se a organização adota esta aplicação de combustível
Consumo de combustível para a geração de eletricidade	Sim
Consumo de combustível para a geração de aquecimento	Sim
Consumo de combustível para geração de vapor	Sim
Consumo de combustível para a geração de refrigeração	Não
Consumo de combustível para cogeração ou trigeração	Não

C8.2c

(C8.2c) Informe a quantidade de combustível em MWh que a organização consumiu (exceto matérias-primas) por tipo de combustível.

Biomassa sustentável

Valor de aquecimento
LHV

Total de combustível em MWh consumido pela organização
0

Combustível consumido, em MWh, para a autogeração de eletricidade
0

Combustível MWh consumido para a autogeração de calor
0

Combustível consumido, em MWh, para a autogeração de vapor
0

Combustível em MWh consumido para a autogeração de refrigeração
<Not Applicable>

MWh de combustível consumidos para a autocogeração ou autotrigeração
<Not Applicable>

Explique
n.a.

Outro tipo de biomassa

Valor de aquecimento
LHV

Total de combustível em MWh consumido pela organização
11.53

Combustível consumido, em MWh, para a autogeração de eletricidade
0

Combustível MWh consumido para a autogeração de calor
11.53

Combustível consumido, em MWh, para a autogeração de vapor
0

Combustível em MWh consumido para a autogeração de refrigeração
<Not Applicable>

MWh de combustível consumidos para a autocogeração ou autotrigeração
<Not Applicable>

Explique
Biomass: Charcoal

Outros combustíveis renováveis (por ex., hidrogênio renovável)

Valor de aquecimento
LHV

Total de combustível em MWh consumido pela organização
1120735.2

Combustível consumido, em MWh, para a autogeração de eletricidade
5657.64

Combustível MWh consumido para a autogeração de calor
1111695.53

Combustível consumido, em MWh, para a autogeração de vapor
3382.93

Combustível em MWh consumido para a autogeração de refrigeração
<Not Applicable>

MWh de combustível consumidos para a autocogeração ou autotrigeração
<Not Applicable>

Explique
Renewable fuels: Biodiesel and Biogasoline

Carvão

Valor de aquecimento
LHV

Total de combustível em MWh consumido pela organização
5222605.83

Combustível consumido, em MWh, para a autogeração de eletricidade
0

Combustível MWh consumido para a autogeração de calor
5222605.83

Combustível consumido, em MWh, para a autogeração de vapor
0

Combustível em MWh consumido para a autogeração de refrigeração
<Not Applicable>

MWh de combustível consumidos para a autocogeração ou autotrigeração
<Not Applicable>

Explique
Types of coal: Anthracite Coal, Bituminous Coal, Coal, Lignite Coal and Subbituminous Coal

Petróleo

Valor de aquecimento
LHV

Total de combustível em MWh consumido pela organização
3121400.38

Combustível consumido, em MWh, para a autogeração de eletricidade
0

Combustível MWh consumido para a autogeração de calor
3118199.51

Combustível consumido, em MWh, para a autogeração de vapor
3200.87

Combustível em MWh consumido para a autogeração de refrigeração
<Not Applicable>

MWh de combustível consumidos para a autocogeração ou autotrigeração
<Not Applicable>

Explique
Types of oil: Light Distillate, Residual Fuel Oil - Óleo Combustível Brasil and Residual Fuel Oil

Gás

Valor de aquecimento
LHV

Total de combustível em MWh consumido pela organização
6083195.23

Combustível consumido, em MWh, para a autogeração de eletricidade
0

Combustível MWh consumido para a autogeração de calor
6042326.07

Combustível consumido, em MWh, para a autogeração de vapor
40869.16

Combustível em MWh consumido para a autogeração de refrigeração
<Not Applicable>

MWh de combustível consumidos para a autocogeração ou autotrigeração
<Not Applicable>

Explique
Gases: Liquefied Petroleum Gas (LPG), Natural Gas and Propane Gas.

Outros combustíveis não renováveis (por ex., hidrogênio não renovável)

Valor de aquecimento
LHV

Total de combustível em MWh consumido pela organização
10262394.52

Combustível consumido, em MWh, para a autogeração de eletricidade
320314.63

Combustível MWh consumido para a autogeração de calor
9800749.88

Combustível consumido, em MWh, para a autogeração de vapor
141330.01

Combustível em MWh consumido para a autogeração de refrigeração
<Not Applicable>

MWh de combustível consumidos para a autocogeração ou autotrigeração
<Not Applicable>

Explique
Fuels: Diesel, Jet Kerosene, Kerosene Motor Gasoline, Coke, Petroleum Coke and Marine Fuel.

Total de combustíveis

Valor de aquecimento
LHV

Total de combustível em MWh consumido pela organização
25842698.9

Combustível consumido, em MWh, para a autogeração de eletricidade
325972.26

Combustível MWh consumido para a autogeração de calor
25327944.56

Combustível consumido, em MWh, para a autogeração de vapor
188782.07

Combustível em MWh consumido para a autogeração de refrigeração
<Not Applicable>

MWh de combustível consumidos para a autocogeração ou autotrigeração
<Not Applicable>

Explique
n.a.

C8.2d

(C-C8.2d) Dê detalhes sobre a eletricidade, o aquecimento, o vapor e a refrigeração que a organização gerou e consumiu no ano de reporte.

	Geração bruta total (MWh)	Geração consumida pela organização (MWh)	Geração bruta proveniente de fontes renováveis (MWh)	Geração proveniente de fontes renováveis consumida pela organização (MWh)
Eletricidade	2580551.3	2580551.3	2254579.04	2254579.04
Aquecimento	25327944.56	25327944.56	1111707.05	1111707.05
Vapor	188782.07	188782.07	3382.03	3382.03
Refrigeração	0	0	0	0

C-MM8.2d

(C-MM8.2d) Dê detalhes sobre a eletricidade, o aquecimento, o vapor e a refrigeração que a organização gerou e consumiu para atividades de produção de metais e mineração.

	Geração bruta total (MWh) dentro do limite do setor de metais e mineração	Geração consumida (MWh) dentro do limite do setor de metais e mineração
Eletricidade	305601.95	305601.95
Aquecimento	20764228.95	20764228.95
Vapor	188782.07	188782.07
Refrigeração	0	0

C8.2e

(C8.2e) Dê detalhes sobre as quantidades de eletricidade, aquecimento, vapor e/ou refrigeração contabilizadas a um fator de emissão zero ou próximo de zero no valor de Escopo 2 com base no mercado reportado em C6.3.

País/área de consumo de energia de baixo carbono
Brasil

Método de aquisição
Contrato de compra de energia físico (PPA físico) com um gerador conectado à rede

Portador de energia
Eletricidade

Tipo de tecnologia de baixo carbono
Hidrelétrica de grande porte (> 25 MW)

Energia de baixo carbono consumida por meio de métodos de obtenção selecionados no ano de reporte (MWh)
4229110

Instrumento de monitoramento utilizado
I-REC

País/área de origem (geração) da energia de baixo carbono ou do atributo energético
Brasil

É possível reportar o ano de comissionamento ou de realimentação da unidade de geração de energia?
Não

Ano de comissionamento da instalação de geração de energia (por ex., data da primeira operação comercial ou da repotenciação)
<Not Applicable>

Explique
Consumption from Hydro Power Plants (>25MW) totalizing 8 assets).

País/área de consumo de energia de baixo carbono
Brasil

Método de aquisição
Contrato de compra de energia físico (PPA físico) com um gerador conectado à rede

Portador de energia
Eletricidade

Tipo de tecnologia de baixo carbono
Hidrelétrica de pequeno porte (< 25 MW)

Energia de baixo carbono consumida por meio de métodos de obtenção selecionados no ano de reporte (MWh)
62255

Instrumento de monitoramento utilizado
I-REC

País/área de origem (geração) da energia de baixo carbono ou do atributo energético
Brasil

É possível reportar o ano de comissionamento ou de realimentação da unidade de geração de energia?
Não

Ano de comissionamento da instalação de geração de energia (por ex., data da primeira operação comercial ou da repotenciação)
<Not Applicable>

Explique
Two Small Hydro powerplants (Gloria and Nova Maurício) owned 100% by Vale.

País/área de consumo de energia de baixo carbono
Brasil

Método de aquisição
Contrato de compra de energia físico (PPA físico) com um gerador conectado à rede

Portador de energia
Eletricidade

Tipo de tecnologia de baixo carbono
Eólica

Energia de baixo carbono consumida por meio de métodos de obtenção selecionados no ano de reporte (MWh)
187344

Instrumento de monitoramento utilizado
I-REC

País/área de origem (geração) da energia de baixo carbono ou do atributo energético
Brasil

É possível reportar o ano de comissionamento ou de realimentação da unidade de geração de energia?
Não

Ano de comissionamento da instalação de geração de energia (por ex., data da primeira operação comercial ou da repotenciação)
<Not Applicable>

Explique
Three Wind Power Plants (São Raimundo, Garrote, Santo Inácio III).

País/área de consumo de energia de baixo carbono
Brasil

Método de aquisição
Aquisição dissociada de certificados de atributos de energia (CAEs)

Portador de energia
Eletricidade

Tipo de tecnologia de baixo carbono
Hidrelétrica de grande porte (> 25 MW)

Energia de baixo carbono consumida por meio de métodos de obtenção selecionados no ano de reporte (MWh)
2400000

Instrumento de monitoramento utilizado
I-REC

País/área de origem (geração) da energia de baixo carbono ou do atributo energético
Brasil

É possível reportar o ano de comissionamento ou de realimentação da unidade de geração de energia?
Não

Ano de comissionamento da instalação de geração de energia (por ex., data da primeira operação comercial ou da repotenciação)
<Not Applicable>

Explique
Consumption from Hydro Power Plant RIO PARANAPANEMA (>25MW).

C8.2g

(C8.2g) Apresente uma decomposição do consumo de energia da organização não proveniente de combustíveis por país/área no ano de reporte.

País/área
Brasil

Consumo de eletricidade comprada (MWh)
6595836.6

Consumo de eletricidade autogerada (MWh)
0

Este consumo de eletricidade está excluído do compromisso com a RE100?
<Not Applicable>

Consumo de calor, vapor e refrigeração comprados (MWh)
0

Consumo de calor, vapor e refrigeração autogerados (MWh)
0

Consumo total de energia não proveniente de combustíveis (MWh) [calculado automaticamente]
6595836.6

País/área
Canadá

Consumo de eletricidade comprada (MWh)
2023391.69

Consumo de eletricidade autogerada (MWh)
192583

Este consumo de eletricidade está excluído do compromisso com a RE100?
<Not Applicable>

Consumo de calor, vapor e refrigeração comprados (MWh)
0

Consumo de calor, vapor e refrigeração autogerados (MWh)
0

Consumo total de energia não proveniente de combustíveis (MWh) [calculado automaticamente]
2215974.69

País/área
Japan

Consumo de eletricidade comprada (MWh)
12552

Consumo de eletricidade autogerada (MWh)
0

Este consumo de eletricidade está excluído do compromisso com a RE100?

<Not Applicable>

Consumo de calor, vapor e refrigeração comprados (MWh)
0

Consumo de calor, vapor e refrigeração autogerados (MWh)
0

Consumo total de energia não proveniente de combustíveis (MWh) [calculado automaticamente]
12552

País/área
Reino Unido da Grã-Bretanha e Irlanda do Norte

Consumo de eletricidade comprada (MWh)
37305.24

Consumo de eletricidade autogerada (MWh)
0

Este consumo de eletricidade está excluído do compromisso com a RE100?
<Not Applicable>

Consumo de calor, vapor e refrigeração comprados (MWh)
0

Consumo de calor, vapor e refrigeração autogerados (MWh)
0

Consumo total de energia não proveniente de combustíveis (MWh) [calculado automaticamente]
37305.24

País/área
Omã

Consumo de eletricidade comprada (MWh)
619643.98

Consumo de eletricidade autogerada (MWh)
0

Este consumo de eletricidade está excluído do compromisso com a RE100?
<Not Applicable>

Consumo de calor, vapor e refrigeração comprados (MWh)
0

Consumo de calor, vapor e refrigeração autogerados (MWh)
0

Consumo total de energia não proveniente de combustíveis (MWh) [calculado automaticamente]
619643.98

País/área
Indonésia

Consumo de eletricidade comprada (MWh)
2052625.74

Consumo de eletricidade autogerada (MWh)
2049097.92

Este consumo de eletricidade está excluído do compromisso com a RE100?
<Not Applicable>

Consumo de calor, vapor e refrigeração comprados (MWh)
0

Consumo de calor, vapor e refrigeração autogerados (MWh)
0

Consumo total de energia não proveniente de combustíveis (MWh) [calculado automaticamente]
4101723.66

País/área
Malásia

Consumo de eletricidade comprada (MWh)
67677.87

Consumo de eletricidade autogerada (MWh)
0

Este consumo de eletricidade está excluído do compromisso com a RE100?
<Not Applicable>

Consumo de calor, vapor e refrigeração comprados (MWh)
0

Consumo de calor, vapor e refrigeração autogerados (MWh)
0

Consumo total de energia não proveniente de combustíveis (MWh) [calculado automaticamente]
67677.87

C9. Métricas adicionais

C9.1

(C9.1) Forneça as métricas climáticas adicionais relevantes para os negócios da organização.

Descrição
Uso de energia

Valor métrico
0.29

Numerador da métrica
11,015,625.93

Denominador da métrica (apenas para métrica de intensidade)
37,251,732.01

Porcentagem de variação em relação ao ano anterior
5.6

Direção da variação
Diminuiu

Explique
The indicator is related to the renewable energy usage at Vale. Formula = RE/(RE + NR), where RE: renewable energy and NR: non-renewable energy consumed. Explanation: This change in the indicator is justified by the fact that the percentage of renewable electricity varies from year to year depending on consumption, the volume of certificates obtained, and the electricity generation matrix of each country.

C-MM9.3a

(C-MM9.3a) Forneça detalhes sobre as commodities relevantes para as atividades de produção de mineração da organização.

Produto de saída
Cobre

Capacidade, toneladas métricas
51000000

Produção, toneladas métricas
48755000

Produção, unidades de cobre-equivalentes (toneladas métricas)
302281

Emissões de Escopo 1
315867.53

Emissões de Escopo 2
0

Abordagem das emissões de Escopo 2
Com base no mercado

Metodologia de precificação para o valor de cobre-equivalente
Copper conversion factor for the calculation of the copper-equivalent figure: Copper average price divided by copper average price for the period of 2019 to 2021 = 1.0

Explique
It includes the GHG emissions from from Brazilian copper operations (Salobo and Sossego), comprising mine and processing plants to produce copper concentrate.

Produto de saída
Minério de ferro

Capacidade, toneladas métricas
393878585

Produção, toneladas métricas
307900000

Produção, unidades de cobre-equivalentes (toneladas métricas)
3279000

Emissões de Escopo 1
4262634.16

Emissões de Escopo 2
242708.83

Abordagem das emissões de Escopo 2
Com base no mercado

Metodologia de precificação para o valor de cobre-equivalente
Iron ore conversion factor for the calculation of the copper-equivalent figure: Iron ore and pellets average price divided by copper average price for the period of 2019 to 2022 = 0.0181

Explique
It includes the GHG emissions from iron ore mines in Brazil, which we refer to as the Northern, Southeastern, Southern. Northern System comprises Serra Norte, Serra Leste and Serra Sul mines. The Southeastern System comprises three mining complexes: Itabira, Mariana and Minas Centrais. The Southern System comprises two major mining complexes: Vargem Grande and Paraopeba.

C-MM9.3b

(C-MM9.3b) Forneça detalhes sobre as commodities relevantes para as atividades de produção de metais da organização.

Produto de saída
Níquel

Capacidade (toneladas métricas)
412000

Produção (toneladas métricas)
179090

Produção anual em unidades de cobre-equivalentes (milhares de toneladas)
416930.75

Emissões de Escopo 1 (toneladas métricas de CO2e)
2802374.76

Emissões de Escopo 2 (toneladas métricas de CO2e)
55148.65

Abordagem das emissões de Escopo 2
Com base no mercado

Metodologia de precificação para o valor do equivalente de cobre
Nickel conversion factor for the calculation of the copper-equivalent figure: Nickel average price divided by copper average price for the period of 2019 to 2022 = 2.3281
The value of 412,000 has not been updated in 2022.

Explique
includes the GHG emissions from Nickel operations and its coproducts (metallic copper, cobalt, PGM).

C-CE9.6/C-CG9.6/C-CH9.6/C-CN9.6/C-CO9.6/C-EU9.6/C-MM9.6/C-OG9.6/C-RE9.6/C-ST9.6/C-TO9.6/C-TS9.6

(C-CE9.6/C-CG9.6/C-CH9.6/C-CN9.6/C-CO9.6/C-EU9.6/C-MM9.6/C-OG9.6/C-RE9.6/C-ST9.6/C-TO9.6/C-TS9.6) A organização investe em pesquisa e desenvolvimento (P&D) de produtos e serviços de baixo carbono relacionados às atividades do seu setor?

	Investimentos em P&D de baixo carbono	Explique
Linha 1	Sim	The investment in research and development represents a crucial risk mitigation strategy and a substantial opportunity, generating the development of new technologies and products aligned to low carbon economy. It is worth mentioning the founding in 2009 of the Vale Technological Institute (ITV). This institute has a dedicated group of researchers focused on climate change that seeks to understand the science of it and to develop new technologies. Develops solutions used in the mining chain that prioritize energy efficiency, safety and the reduction of CO2 emissions. Highlights include the development of more controlled methods of ore extraction - which not only give better protection to the communities surrounding our operations, but also ensure greater energy and economic efficiency; and ships equipped with rotating sails and air lubrication technologies (reducing the resistance between a ship's hull and seawater using air bubbles), increasing efficiency and reducing fuel consumption and emissions. In 2021, Vale announced investments of USD 4 to 6 bn by 2030 to reduce its Scope 1 and 2 emissions. Our current portfolio of initiatives comprises more than 40 projects, prioritizing the most cost-competitive ones in an effort to meet the 2030 target, based on a Marginal Abatement Cost (MAC) curve. These projects are related to the increase of energy efficiency in processes and develop solutions based on the replacement of fossil energy sources by renewable alternatives. These may include the use of electricity and alternative fuels in trucks and locomotives, as well as the replacement of coal and other fossil fuels by renewable or low-carbon fuels in pelletizing and in our metallurgical processing.

C-MM9.6a

(C-MM9.6a) Forneça detalhes sobre os investimentos da organização em P&D sobre baixo carbono para atividades de produção de metais e mineração nos últimos três anos.

Área tecnológica
Combustíveis alternativos

Estágio de desenvolvimento no ano de reporte
Pesquisa e desenvolvimento aplicados

Porcentagem média dos investimentos totais em P&D nos últimos 3 anos
0.5

Valor do investimento em P&D no ano de reporte (unidade monetária selecionada em C0.4) (opcional)

Porcentagem média dos investimentos totais em P&D planejados para os próximos cinco anos
5

Explique como os investimentos em P&D da organização nesta área tecnológica estão alinhados com seus compromissos climáticos e/ou seu plano de transição climática
R&D focused on decarbonization.
Studies and development of solutions based on alternative fuels for mining equipment, railway equipment, and furnaces.
Alternative fuels include biofuels (biodiesel, ethanol, and others), biocarbon and other biomass products (e.g. black pellet, and others), ammonia, and others.

Área tecnológica
Aquecimento a alta temperatura

Estágio de desenvolvimento no ano de reporte
Demonstração piloto

Porcentagem média dos investimentos totais em P&D nos últimos 3 anos
0.2

Valor do investimento em P&D no ano de reporte (unidade monetária selecionada em C0.4) (opcional)

Porcentagem média dos investimentos totais em P&D planejados para os próximos cinco anos
0.3

Explique como os investimentos em P&D da organização nesta área tecnológica estão alinhados com seus compromissos climáticos e/ou seu plano de transição climática
R&D focused on decarbonization.
Solutions being piloted based on alternative energy source for furnaces.
It includes biofuels (bio-oil, biomethane, and others), biocarbon and other biomass products (e.g. black pellet, and others), hydrogen, plasma, and others.

Área tecnológica
Outro, especifique (Equipment electrification)

Estágio de desenvolvimento no ano de reporte
Demonstração piloto

Porcentagem média dos investimentos totais em P&D nos últimos 3 anos
0.5

Valor do investimento em P&D no ano de reporte (unidade monetária selecionada em C0.4) (opcional)

Porcentagem média dos investimentos totais em P&D planejados para os próximos cinco anos
1.5

Explique como os investimentos em P&D da organização nesta área tecnológica estão alinhados com seus compromissos climáticos e/ou seu plano de transição climática
R&D focused on decarbonization.
Studies and development of solutions based on equipment electrification for mining, railway, and furnaces.
Electrification include battery hybrid equipment, battery electric equipment, electric heating for stationary processes (e.g. boiler), plasma technologies for furnaces, and others.

Área tecnológica
Combustíveis alternativos

Estágio de desenvolvimento no ano de reporte
Implementação comercial em pequena escala

Porcentagem média dos investimentos totais em P&D nos últimos 3 anos
0.1

Valor do investimento em P&D no ano de reporte (unidade monetária selecionada em C0.4) (opcional)

Porcentagem média dos investimentos totais em P&D planejados para os próximos cinco anos
0.1

Explique como os investimentos em P&D da organização nesta área tecnológica estão alinhados com seus compromissos climáticos e/ou seu plano de transição climática
R&D focused on decarbonization.
Development of replacement of anthracite by biocarbon in the pelletizing process.

Área tecnológica
Não é possível desagregar por área tecnológica

Estágio de desenvolvimento no ano de reporte
<Not Applicable>

Porcentagem média dos investimentos totais em P&D nos últimos 3 anos
3.2

Valor do investimento em P&D no ano de reporte (unidade monetária selecionada em C0.4) (opcional)
12300000

Porcentagem média dos investimentos totais em P&D planejados para os próximos cinco anos
2.6

Explique como os investimentos em P&D da organização nesta área tecnológica estão alinhados com seus compromissos climáticos e/ou seu plano de transição climática
Vale is consistently focused on improving its processes throughout research and development (R&D) projects. Vale Technological Institute (ITV), founded in 2010, is a non-profit institution, maintained by Vale that operates through ITV Sustainable Development (SD), located in Belém (PA), and ITV Mining (MI), located in Ouro Preto and Santa Luzia (MG) and from 2022 in Pará, to develop low carbon and clean/renewable energy R&D and products. This institute has a dedicated research group focused on climate change that seeks to understand the science of climate change and to develop new technologies in order for Vale to better adapt to the new low-carbon economy. It currently has a group of 178 researchers, 140 of whom are fellows. The ITV SD is active in training young researchers through the Professional Masters in Sustainable Use of Natural Resources in Tropical Regions. More than 147 professionals from all over the country had been trained by 2022. On this front, we highlight the research scholarship and project subsidies program for young residents in Pará whose dissertations are in line with one of the United Nations Sustainable Development Goals (SDGs). In 110 years (2011 – 20221) ITV already invested in research (between 2011 to 2022) USD 151.20 million in research projects and published 1,674 scientific articles in collaboration with universities, research centers, and other companies, and supported 179 R&D projects that contribute to biodiversity knowledge and conservation. An example of a project that benefitted from the cooperation of ITV is Ecoshipping, created by Vale to meet the challenge of reducing its carbon emissions, in line with what has been discussed within the scope of the International Maritime Organization (IMO). In addition, ITV SD invests in projects that contribute to Vale's goal of becoming net zero by 2050. Through the project "Microorganism diversity and soil carbon fixation in protected and anthropized areas in the Vale Natural Reserve and region" soil carbon studies are being carried out. In this study, it's being determined whether preserved areas or areas with agroforestry systems fix soil carbon more efficiently than degraded areas or areas with intensive soil management. We also highlight the "Vale Forest Carbon Emissions and Removals Inventory" project, which estimates the annual forest carbon balance resulting from changes in above and below-ground vegetal biomass.

C10. Verificação

C10.1

(C10.1) Indique o status da verificação/garantia que se aplica às emissões relatadas.

	Status da verificação/garantia
Escopo 1	Processo de verificação ou garantia de terceiros em andamento
Escopo 2 (com base na localização ou com base no mercado)	Processo de verificação ou garantia de terceiros em andamento
Escopo 3	Processo de verificação ou garantia de terceiros em andamento

C10.1a

(C10.1a) Forneça mais detalhes sobre a verificação/garantia realizada para as emissões de Escopo 1 e anexe as declarações relevantes.

Ciclo de verificação ou garantia em vigor
Processo anual

Status do ano de reporte atual
Completo

Tipo de verificação ou garantia
Garantia limitada

Anexe a declaração
IGEE_Vale_Inglês_Cartas_Asseguração_CDP_assinados.pdf

Referência de página/seção
Pages 5 to 7

Norma relevante
ISAE3000

Proporção das emissões divulgadas verificadas (%)
100

C10.1b

(C10.1b) Dê mais detalhes sobre a verificação/garantia realizada para as emissões de Escopo 2 e anexe as declarações relevantes.

Abordagem do Escopo 2
Escopo 2 com base na localização

Ciclo de verificação ou garantia em vigor
Processo anual

Status do ano de reporte atual
Completo

Tipo de verificação ou garantia
Garantia limitada

Anexe a declaração
IGEE_Vale_Inglês_Cartas_Asseguração_CDP_assinados.pdf

Referência de página/seção
Pages 5 to 7

Norma relevante
ISAE3000

Proporção das emissões divulgadas verificadas (%)
100

Abordagem do Escopo 2
Escopo 2 com base no mercado

Ciclo de verificação ou garantia em vigor
Processo anual

Status do ano de reporte atual
Completo

Tipo de verificação ou garantia
Garantia limitada

Anexe a declaração
IGEE_Vale_Inglês_Cartas_Asseguração_CDP_assinados.pdf

Referência de página/seção
Pages 5 to 7

Norma relevante
ISAE3000

Proporção das emissões divulgadas verificadas (%)
100

C10.1c

(C10.1c) Dê mais detalhes sobre a verificação/garantia realizada para as emissões de Escopo 3 e anexe as declarações relevantes.

Categoria de Escopo 3
Escopo 3: Bens e serviços adquiridos
Escopo 3: Bens de capital
Escopo 3: Atividades relacionadas a combustível e energia (não incluídas nos Escopos 1 ou 2)
Escopo 3: Transporte e distribuição upstream
Escopo 3: Viagens de negócios
Escopo 3: Deslocamentos diários dos funcionários para/do trabalho
Escopo 3: Transporte e distribuição downstream
Escopo 3: Uso de produtos vendidos

Ciclo de verificação ou garantia em vigor
Processo anual

Status do ano de reporte atual
Completo

Tipo de verificação ou garantia
Garantia limitada

Anexe a declaração
IGEE_Vale_Inglês_Cartas_Asseguração_CDP_assinados.pdf

Referência de página/seção
Pages 5 to 7

Norma relevante
ISAE3000

Proporção das emissões divulgadas verificadas (%)
100

C10.2

(C10.2) A organização verifica alguma informação relacionada ao clima relatada em sua divulgação para o CDP, além dos valores de emissões relatados em C6.1, C6.3 e C6.5?

Sim

C10.2a

(C10.2a) Quais dados da divulgação ao CDP foram verificados, e quais normas de verificação foram usadas?

A verificação do módulo de reporte se refere a	Dados verificados	Norma de verificação	Explique
C4. Metas e desempenho	Atividades de redução de emissões	International Standard on Assurance Engagements (ISAE) 3000	PwC “PricewaterhouseCoopers Auditores Independentes Ltda” has been engaged by Vale S.A. (Vale) to conduct and independent auditor's limited assurance report on the non-financial information included in the 2022 Integrated Report of Vale S.A. The limited assurance engagement also included the analysis of the compliance with the guidelines and criteria 1) of the Global Reporting Initiative (GRI-Standards); 2) the provisions established in the basis of preparation developed by the Company; 3) the principles for the Integrated Report, pursuant to Guidance CPC 09 – Integrated Report, related to the Basic Conceptual Framework for Integrated Report, prepared by the International Integrated Report Council (IIRC) applicable in the preparation of the information included in the 2022 Integrated Report of Vale for the year ended December 31, 2022. Please access pages 84 and 85, Vale 2022 Integrated Report for more information: https://www.vale.com/web/esg/sustainability-reports
C4. Metas e desempenho	Progresso em relação à meta de redução de emissões	International Standard on Assurance Engagements (ISAE) 3000	PwC “PricewaterhouseCoopers Auditores Independentes Ltda” has been engaged by Vale S.A. (Vale) to conduct and independent auditor's limited assurance report on the non-financial information included in the 2022 Integrated Report of Vale S.A. The limited assurance engagement also included the analysis of the compliance with the guidelines and criteria 1) of the Global Reporting Initiative (GRI-Standards); 2) the provisions established in the basis of preparation developed by the Company; 3) the principles for the Integrated Report, pursuant to Guidance CPC 09 – Integrated Report, related to the Basic Conceptual Framework for Integrated Report, prepared by the International Integrated Report Council (IIRC) applicable in the preparation of the information included in the 2022 Integrated Report of Vale for the year ended December 31, 2022. Please access pages 84 and 85, Vale 2022 Integrated Report for more information: https://www.vale.com/web/esg/sustainability-reports
C8. Energia	Consumo de energia	International Standard on Assurance Engagements (ISAE) 3000	PwC “PricewaterhouseCoopers Auditores Independentes Ltda” has been engaged by Vale S.A. (Vale) to conduct and independent auditor's limited assurance report on the non-financial information included in the 2022 Integrated Report of Vale S.A. The limited assurance engagement also included the analysis of the compliance with the guidelines and criteria 1) of the Global Reporting Initiative (GRI-Standards); 2) the provisions established in the basis of preparation developed by the Company; 3) the principles for the Integrated Report, pursuant to Guidance CPC 09 – Integrated Report, related to the Basic Conceptual Framework for Integrated Report, prepared by the International Integrated Report Council (IIRC) applicable in the preparation of the information included in the 2022 Integrated Report of Vale for the year ended December 31, 2022. Please access pages 84 and 85, Vale 2022 Integrated Report for more information: https://www.vale.com/web/esg/sustainability-reports
SC. Módulo do programa Supply Chain	Verificação do impacto dos produtos	Vale’s Scope 1, 2, and 3 emissions data for 2021 have been used to calculate the carbon intensity of Vale’s products. The standards against which the assurance was conducted were: 1. Greenhouse Gas Protocol – Product Life Cycle Accounting and Reporting Standard 2. ISO 14067: 2018 Greenhouse gases – Carbon Footprint of Products Requirements and Guidelines for Quantification	Intertek Health Sciences Inc. (‘Intertek’) was commissioned by Vale Canada Limited to provide independent third-party limited assurance on the product carbon footprint (greenhouse gas emissions per mass of product) for: 1. Nickel Melt and Plating Rounds at Long Harbour Refinery, Newfoundland, Canada. 2. Nickel Pellets and Powders at Clydach Refinery, Wales, UK. 3. Nickel Pellets, Powders, Discs & Chips at Copper Cliff Nickel Refinery (Sudbury), Ontario, Canada. 4. Ferronickel at Onça Puma, Pará, Brazil. 5. Copper Concentrate at Sudbury Clarabelle Mill, Ontario, Canada. 6. Copper Concentrate at Salobo, Pará, Brazil 7. Cobalt Rounds at Long Harbour Refinery, Newfoundland, Canada. 8. Cobalt Rounds at Port Colborne Refinery, Ontario, Canada. Vale’s Scope 1, 2, and 3 emissions data for 2021 have been used to calculate the carbon intensity of Vale’s products. The standards against which the assurance was conducted were: 1. Greenhouse Gas Protocol – Product Life Cycle Accounting and Reporting Standard 2. ISO 14067: 2018 Greenhouse gases – Carbon Footprint of Products Requirements and Guidelines for Quantification

C11. Precificação do carbono

C11.1

(C11.1) Alguma(s) das operações ou atividades da organização é regulamentada por um sistema de precificação do carbono (por ex., ETS, Cap & Trade ou Carbon Tax)?

Sim

C11.1a

(C11.1a) Selecione a(s) regulamentação(ões) de precificação do carbono que causam impactos nas operações da organização.

Encargos federais sobre o combustível do Canadá

Taxação de carbono do Japão

Taxação de carbono de Newfoundland e Labrador

C11.1c

(C11.1c) Preencha a tabela a seguir para cada um dos sistemas de taxação que regulamentam a empresa.

Encargos federais sobre o combustível do Canadá

Data de início do período
janeiro 1 2022

Data de fim do período
dezembro 31 2022

Porcentagem do total de emissões de Escopo 1 abrangidas pela taxação
0.26

Custo total da taxa paga
372115.12

Explique
In 2022, the Federal Government of Canada is charging USD$50/tCO2e. Vale pays straight tax on Fuel - totaling CAD $503,695.03 in 2022, which was equivalent to USD 372,115.12.

Taxação de carbono do Japão

Data de início do período
janeiro 1 2022

Data de fim do período
dezembro 31 2022

Porcentagem do total de emissões de Escopo 1 abrangidas pela taxação
0

Custo total da taxa paga
0

Explique
Taxation in Japan is paid indirectly on the purchase of energy and gas. So, the value is included in the energy cost.

Taxação de carbono de Newfoundland e Labrador

Data de início do período
janeiro 1 2022

Data de fim do período
dezembro 31 2022

Porcentagem do total de emissões de Escopo 1 abrangidas pela taxação
0.01

Custo total da taxa paga
130910.17

Explique
Vale pays tax - totaling CAD $177,200 in 2022, which was equivalent to USD 130,910.17

C11.1d

(C11.1d) Qual é a estratégia da organização para cumprir com os sistemas que a regulamentam ou que ela prevê que a regulamentarão?

Vale recognizes the risks and opportunities imposed by carbon pricing schemes, and to minimize the risks and maximize opportunities, Vale has a Policy Global Mitigation and Adaptation to Climate Change that describes the guidelines on the subject, encompassing commitments to manage and reduce the company's GHG emissions. Some compliance options include strategies for establishing an internal carbon price, which starts from renewable sources, energy efficiency and biofuels and ends with electrification technology and innovation. One of the internal tools adopted to operationalize the Vale Net-Zero Strategy is carbon pricing. Vale adopted an internal carbon price (shadow price) of USD 50 per ton of CO2 equivalent, applicable for economic-financial analysis of current and capital investments, utilized in the Marginal Abatement Cost Curve (MACC) and projects prioritization. Vale's methodology for carbon pricing is applicable for all projects and investments (Current and Capital) that have GHG emissions associated with its operation and/or will be responsible for the deforestation of native forests during its implantation encompassing Vale's units globally. The methodology started to be used in June 2020 and aims to help prioritize the most competitive project alternative to achieve the 2030 carbon emission target. This price is aligned to the temperature targets of the Paris Agreement (PA), according to the recommendations of the Carbon Pricing Leadership Coalition. In 2019, the company reviewed its climate goals, including new commitments to reduce GHG emissions, aiming to become a net zero mining company in scopes 1 and 2 by 2050. The 33% absolute scope 1 and 2 emissions reduction target by 2030, with 2017 as a baseline, is aligned with the PA's objective of limiting global warming to below 2ºC. This target is linked to the variable remuneration of all Vale's employees. Vale aims to reduce 15% of its scope 3 net emissions by 2035, to encourage clients and suppliers in the same direction and aligned with its net zero commitment. Through active engagement with clients from the steel and metallurgy industries, Vale will work to reduce emissions in its value chain and will guide its operations based on win-win relationships, less intensive products, and new technologies. The Low Carbon Forum was also created to manage the implementation of the Vale Net Zero strategy. The Forum is coordinated by the Sustainability Executive Committee with the support of other Executive Committees and with the participation of Vale's CEO. The meetings are held monthly with the broad leadership and technical teams that deal with the topic on a daily basis. Vale's goal is to develop a portfolio of low carbon projects made possible by the internal carbon price, in addition to a better understanding of regulatory risks and their impacts; better understanding and communication of material risks and opportunities for climate change in business; change Vale's energy consumption matrix through higher consumption of renewable energy sources; and reduce the carbon footprint of their products. Vale also created an internal program called PowerShift to support its sustainability goals, focusing on the transition to a low-carbon economy, that aims to make the Company's energy matrix cleaner by focusing on the use of renewable energy and alternative fuels, greater efficiency of operations using new technologies, and forest promotion. PowerShift-linked initiatives are expected to contribute approximately 40% of Vale's planned reductions to help us reach the United Nations 2030 Agenda target. Thus, considering that pelletizing emissions from the use of anthracite account for about 14% of our total Scopes 1 and 2 emissions and emissions from off-highway diesel trucks currently account for about 9%, Vale carried out a test at the Vargem Grande pelletizing plant to replace up to 50% of anthracite consumption with biochar, and already scheduled more tests for the total replacement of coal for 2023; and in 2022, Vale started the pilot tests of two 72-ton battery-powered off-highway trucks that emit no CO2 during operation. In addition to the company's global strategy for promoting and adopting the internal price of carbon, a strategy to reduce the impacts of carbon taxation in Canada is the "Green Energy Vehicle Program". Throughout 2019 and 2020 Vale accepted delivery of numerous battery electric vehicles within North Atlantic's underground operations that are being trialed across operations to provide learnings and diversified feedback to the business. Vale currently has 30 battery-powered vehicles operating and by the end of 2021 there will be more than 40. Vale expects to see a decrease in diesel fuel consumption as its fleet transitions to alternative energy sources as a part of this program, for example, Creighton mine, that is home to the largest fleet of Vale's battery electric vehicles as it is recognized as the GEV pilot project.

C11.2

(C11.2) A organização cancelou créditos de carbono com base em projetos no ano de reporte?
Não

C11.3

(C11.3) A organização usa um preço interno do carbono?
Sim

C11.3a

(C11.3a) Forneça detalhes de como a organização usa um preço interno do carbono.

Tipo de preço interno do carbono
Preço-sombra

Como o preço é determinado
Custos das medidas necessárias para se cumprirem as metas de redução das emissões

Objetivo(s) ao implementar este preço interno do carbono
Mudar o comportamento interno
Motivar a eficiência energética
Gerar investimentos de baixo carbono
Navegar pelas regulamentações de GEEs
Expectativas das partes interessadas
Outro, especifique (Understand the exposure to risk and the impact on the cost of the Company)

Escopo(s) abrangido(s)
Escopo 1
Escopo 2

Abordagem de precificação utilizada – variação espacial
Uniforme

Abordagem de precificação utilizada – variação temporal
Estático

Indique como a organização espera que o preço varie ao longo do tempo
<Not Applicable>

Preço(s) real(is) usado(s) – mínimo (moeda especificada em C0.4 por tonelada métrica de CO2e)
50

Preço(s) real(is) usado(s) – máximo (moeda especificada em C0.4 por tonelada métrica de CO2e)
50

Processos de tomada de decisões de negócios a que este preço interno do carbono se aplica
Gastos de capital
Gestão de riscos
Gestão de oportunidades

Aplicação obrigatória deste preço interno do carbono nesses processos de tomada de decisões de negócios
Sim, para todos os processos de tomada de decisões

Explique como este preço interno do carbono contribuiu para a implementação dos compromissos climáticos e/ou do plano de transição climática da organização
Vale developed a proprietary carbon pricing methodology throughout 2019 to assess risks linked to climate change by projecting possible impacts on the operating costs of each business unit. This methodology was implemented on June 1, 2020, and it's applicable to projects and investments (current and capital). Besides, Vale's Carbon pricing methodology is composed of three main steps beginning with Quantification of GHG emissions. With carbon accounting finished, carbon is monetized using the shadow price, generating the emission cost. The emission cost is then included in the project's financial indicators and results. In this context Vale developed a carbon pricing manual and did an internal training to support the project leaders and developers to apply carbon pricing in projects evaluations.
The association of cost to the greenhouse gas emissions in the feasibility analysis enables explaining the impact of the emissions on the project valuation at the time of decision, making the projects from the Carbon Target portfolio feasible. Thus, the internal carbon price is used as a tool to support Vale's efforts to reduce its carbon footprint and promote sustainability, and it is integrated into Vale's financial planning and investment analysis processes, as well as its project evaluation and capital allocation processes. Besides, Vale also elaborated its marginal discount curve by means of which it prioritizes the most cost-effective emission reduction initiatives, having the internal carbon price of 50 dollars as a reference.
Overall, Vale's internal carbon price has contributed to the implementation of its climate commitments and climate transition plan in several ways such as by incentivizing emissions reductions, guiding investment decisions, facilitating the integration of climate considerations into decision-making, and providing a transparent and consistent approach to emissions management. Case: The first business case implemented in 2020 was the New Steel Project, a dry iron ore concentration unit, located in Vargem Grande Complex in the city of Nova Lima, in the state of Minas Gerais. The project is expected to be the world's first industrial-scale dry magnetic fines concentration, with total expected multi-year investments of US$125 million. A synergy between New steel concentrating plant and briquetting aims to reduce fuel consumption, The plant was approved to produce 1.5 Mtpy with the start-up expected for 2024.

C12. Engajamento

C12.1

(C12.1) Há engajamento da organização com a cadeia de valor nas questões relacionadas ao clima?
Sim, com nossos fornecedores
Sim, com nossos clientes/compradores
Sim, com outros parceiros da cadeia de valor

C12.1a

(C12.1a) Forneça detalhes da estratégia de engajamento com os fornecedores para as questões climáticas.

Tipo de engajamento
Coleta de informações (compreensão do comportamento dos fornecedores)

Detalhes do engajamento
Coletar outras informações climáticas pelo menos anualmente junto dos fornecedores

Porcentagem de fornecedores por número
84

Porcentagem do total de gastos com aquisição (diretos e indiretos)
88

Porcentagem das emissões de Escopo 3 relacionadas aos fornecedores, conforme divulgado em C6.5

Justificativa para a abrangência do engajamento
Vale is committed to making its suppliers aware of the issue of climate change and engaging them in improving the management of their emissions. Besides, Vale considers the engagement of our suppliers in managing their emissions and the commitment to reducing environmental impacts as essential. Reducing GHG emissions in line with the Paris Agreement is part of Vale's goal of reducing indirect emissions (scope 3) by 33%. Therefore, annually, Vale invites strategic suppliers, that are selected according to its criticality in terms of emissions in the supply chain, to participate in the CDP Supply Chain Program. In 2022, 412 suppliers answered the CDP questionnaire over 492 that were invited in total, resulting in 84% of suppliers by number as disclosed in column '% of suppliers by number'. Through CDP Supply Chain we had webinars in 2020, 2021 and 2022 focused on the program and climate change.
It should be noted that this engagement is applicable to suppliers from different sectors and at a global level.

Impacto do engajamento, incluindo medições de sucesso
As a Mining company, Vale recognizes that from the operations, mines, and railroad tracks to outsourcing, supply management permeates the company's entire production chain and, therefore, it's considered strategic to our business.
Thus, aiming to build a responsible business model that involves Vale's entire supply chain, it's necessary to monitor the supplier's journey, from the registration stage to the end of the contract and demobilization.
Thereby, in the contract management phase, Vale carries out the risk management of suppliers with current contracts. Additionally, the performance of suppliers is measured throughout the entire provision of the suppliers' services, and periodic monitoring of suppliers is carried out regarding social, environmental, humanitarian, performance and government relations aspects. An example of that, is the carbon emissions management program in the value chain that monitors and engages key suppliers in managing their emissions through the CDP Supply Chain Program.
Vale 's measure of success for this engagement in the CDP Supply Chain Program is the percentage of respondents. Vale considers a measure of success reaching or exceeding the annual target. In 2021, the goal was 55% of responding suppliers. In 2022, the goal was 75% of responding suppliers and from the 492 invited suppliers, a total of 412 answered the questionnaire on the CDP platform, which is equivalent to 84% of adherence, therefore, the engagement was considered successful in 2022. This result represents an increase of approximately 10% compared to the previous year and 51% compared to the 1st cycle. Besides, the recurrence rate among the responding suppliers in the previous year was 90% in the 2022 cycle, which makes it possible to assess their evolution and coordinate actions focused on the low-carbon economy.
Through our engagement with suppliers, one of the main impacts is the alignment of the business portfolio to the transition to a low carbon economy, leveraging new business opportunities and raising the awareness of suppliers regarding climate change and engaging them to improve their emission management.
Besides, as one of Vale's engagement methodologies, we also organize specific forums focused on carbon emission reductions with the exclusive participation of suppliers. For example, in 2022 was held the Greenhouse Inventory Webinar.

Explique
n.a

C12.1b

(C12.1b) Forneça detalhes da estratégia de engajamento climática com os clientes.

Tipo de engajamento e Detalhes do engajamento

Colaboração e inovação	Realizar uma campanha de incentivo à inovação para reduzir os impactos das mudanças climáticas

Porcentagem de clientes por número
15

Porcentagem das emissões de Escopo 3 relacionadas aos clientes, conforme reportado em C6.5
33

Explique a justificativa para selecionar este grupo de clientes e o escopo do engajamento
To provide low carbon solutions to the steel industry, we have signed MoUs with over 30 companies representing around 33% of customer-related scope 3 emissions (as reported in C6.5), i.e., in which the companies agreed to pursue opportunities to develop steelmaking solutions focused on reducing CO2 emissions. Therefore, Vale has chosen strategic customers to be engaged based on their representativeness of Vale's scope 3 emission. This representativeness comes from the customer's appetite to implement new technologies and the customer's need to implement decarbonization initiatives.
Our goal of a 15% reduction in Scope 3 net emissions will be achieved through two main pillars: (i) our own initiatives; (ii) Partnership with customers and suppliers. Our own initiatives may respond to 15-25% of the emission reduction by 2035 and rely mostly on our world-class portfolio that will lead to reduced emissions in steelmaking. For the remaining 85-75% of scope 3 emissions reductions, we will lead through partnership.
Thus, Vale ran campaigns to encourage innovation to reduce climate change impacts by signing MoUs with key customers distributed globally as Baowu Group, Shagang and Hebei in China, Nippon Steel Corporation in Japan, Posco and Hyundai Steel in Korea and Ternium S.A. pursuing opportunities to develop steelmaking solutions focused on reducing CO2 emissions. In Ternium SA MoU, both companies intend to develop economic feasibility studies of potential investment in (i) an iron ore briquetting plant (briquette) located at Ternium Brasil facility; and (ii) plants to produce metallic products with low carbon footprint, using Tecnored, HYL and other technologies for iron reduction. In 2022, we signed MoU with: a) Stahl Holding-Saar GmbH & Co. KGaA (SHS), to explore initiatives focused on the carbon-neutral steel production process, such as the use of our iron ore briquette and direct reduction pellets in the steel mill, a briquette plant close to SHS's facilities, and Tecnored's technology; b) Nippon Steel Corporation, to explore solutions for the use of metallics such as direct reduction of iron ore (DRI) and pig iron produced by Tecnored technology, and the use of our briquettes in the manufacturing process of iron and other lower carbon footprint products.

Impacto do engajamento, incluindo medições de sucesso
Vale's scope 3 emissions, indirect GHG emissions calculated along the value chain, include upstream emissions and downstream emissions. In 2022, scope 3 emissions

decreased 3% compared to 2021, and 14% compared to the 2018 base year.
We provide to our customers solutions to adapt to potential market demands, in 2021, Vale announced the launch of iron ore briquette, which can allow a reduction of over 10% of greenhouse gases emissions in the steel production by our steelmaking customers. The briquette is a result of cold agglomeration of iron ore. The low temperature of cold agglomeration (200ºc) allows for an 80% reduction of CO2 emission when compared to pelletizing process (approximately 1300ºc). The product also reduces emissions of particulates and gases such as sulphur dioxide (SOx) and nitrogen oxide (NOx), as well as eliminates the use of water in its production. The briquette had its performance proven by several industrial trials conducted since 2019 in different customers, delivering excellent results. In December 2020, we approved the conversion of pellet plants 1 and 2 at the Tubarão complex into iron ore briquetting plants to produce the briquette. This project aligns with our strategy to Maximize Fly-to-Quality in Iron Ore and reducing Scope 3 net emissions by 15% by 2035, with 2018 as a baseline. We also approved the construction of a new briquetting plant in the Vargem Grande complex. The initial production capacity of these three plants will be approximately 6 Mtpy and the operation start-up of the three plants is expected for the second half of 2023 and the total investment is US$182 million.
We continue to work on the development of low CO2 iron making technologies and services to support our customers as they transition to low CO2 steelmaking. Another engagement that we highlight in 2021 was the participation in the following events: ABM week, Singapore Iron Ore Forum, and LESA (Leadership for Enterprise Sustainability Asia) – Asia School of Business, where we presented our Net-zero strategy and work related to low-carbon products, engaging customers and potential customers.
Vale considered as a measure of success reaching or exceeding the representativeness of 30% of 'customer-related scope 3 emissions (as reported in C6.5)', thus reaching the value of 33% the engagement was successful.

Tipo de engajamento e Detalhes do engajamento

Aprendizado/compartilhamento de informações	Compartilhar informações sobre os produtos e esquemas de certificação relevantes da organização (por ex., Energy STAR)

Porcentagem de clientes por número
75.4

Porcentagem das emissões de Escopo 3 relacionadas aos clientes, conforme reportado em C6.5

Explique a justificativa para selecionar este grupo de clientes e o escopo do engajamento
Vale aims to reduce 15% of its scope net emissions by 2035, to encourage customers and suppliers in the same direction and aligned with its Net Zero goal. A key part of our efforts to reduce GHG emissions are our customers and, therefore, Vale works through active engagement with customers from the steel and metallurgy industries, globally, to reduce emissions in its value chain.
As part of Vale's efforts, we provide support to customers because of their strategic importance to the core business. Thus, we engage with them in a variety of ways, such as: staying in touch via commercial and technical meetings, visits, e-mails and phone calls; maintaining our Customer Portal; deploying a satisfaction survey; attending forums, seminars, and conventions.
Besides, acting with transparency and considering the expectations of its stakeholders is one of the company's pillars. Therefore, Vale shares information with all customers and stakeholders regarding the organization's strategy, risks and opportunities, emissions figures and targets, and energy metrics and targets, through public documents such as the annual Integrated Report, our ESG Databook, and ESG Portal. There are also some specific customers to which Vale reports information on the CDP supply chain questionnaire.
Additionally, every year, Vale conducts a satisfaction survey with its iron ore customers to assess satisfaction levels around Vale's products and services, as well as to generate improvement levers. The survey process is coordinated by the marketing department, with support from the sales and supply chain departments, and goes out to all regular iron ore customers in all markets. These customers, that in 2022 represented 75.4% of Vale's customers (survey sent to 190 costumers over a total of 252 customers in 2022), were selected based on sales volume basis.

Impacto do engajamento, incluindo medições de sucesso
Through Vale's engagements with customers, some demands and concerns have been addressed, generating positive impact such as: Eco-efficient production and distribution technologies; Technological products and solutions for Vale's Scope 3 Emission Reductions; and Carbon capture and storage systems.
Vale has measured customer satisfaction since 2020 on a scale of 0 to 10 that customers assign to the following question: "Overall, how satisfied are you with Vale in the last 12 months?". The satisfaction survey goes out to all regular iron ore customers, with a response target that represents 70% of iron ore volumes sold in the previous year. In 2022 the responses collected represented 62% of iron ore volumes sold and the average satisfaction score was 8.55 (score maximum: 10). Vale considers as a measure of success to reach or exceed the 7.0 grade of satisfaction, as it reached the value of 8.55 the engagement was successful.
These results are disclosed at internal meetings involving Marketing, Supply Chain, Sales and Technology & Inovation areas. Then, based on the guidelines discussed in these sessions, an action plan is prepared aiming to improve Vale's service and product portfolio. Thereby, some projects and initiatives are chosen and brought to the customer's attention before the next survey cycle, to improve costumers' engagement with the survey and make them more connected to Vale.

C12.1d

(C12.1d) Dê detalhes sobre a estratégia de engajamento com outros parceiros da cadeia de valor para as questões climáticas.

Combating the impacts of climate change is a strategic priority on Vale's agenda. Mining activity is highly dependent on logistical infrastructure, and sensitive to extreme climate risks. In this way, Vale considers other partners in its value chain, such as partnerships with other players in the sector (1) and also local authorities (2).

(1) Vale reviewed in 2019 its climate change goals including new commitments to reduce greenhouse gas (GHG) emissions aiming to become a net zero mining company. To achieve Climate Change Internal Goals and face this global challenge Vale, Rio Tinto and BHP came together as Founding Patrons to use the Innovation Hub to define and promote the Charge On Innovation Challenge, in order to develop effective solutions for mine electrification and decarbonization. The Charge on Innovation Challenge asks Vendors to present interoperable solutions that can safely deliver electricity to large battery-electric off-road haul trucks in a way that maintains or improves current productivity levels. Knowing that diesel-powered haul truck fleets are responsible for up to 80% of a mine's emissions, the main objective of this project is to reduce carbon emissions for the mining operations by electrifying their vast mining truck fleets. Specifically, Vale wants mechanisms capable of delivering in the order of 400kWh of electricity to each truck within a haul cycle (ie load, travel, dump, return, queue). The delivered electricity is to charge a battery and if applicable, directly propel the truck. The Charge On Innovation Challenge was launched in 2021 and invited vendors and technology innovators from around the world and across industries. It received interest from over 350 companies across 19 industries, with over 80 companies submitting expressions of interest (EOI). 21 companies were then invited to present a detailed pitch of their solution. The final 8 were chosen from these 21 companies and are collaborating with interested mining companies, OEMs and investors to accelerate the technology development to support the future roll-out of zero-emissions fleets.

(2) Vale has made a commitment to reduce 15% of Scope 3 net emissions by 2035. Therefore, as part of Vale's strategy to achieve that goal, in 2022, the company announced the signing of three agreements with local authorities and customers to jointly study the development of industrial complexes ("Mega Hubs") in the Kingdom of Saudi Arabia, the United Arab Emirates, and the Sultanate of Oman to produce low-carbon products for the steel industry. The parties aim to cooperate in the development of these Mega Hubs to produce hot briquette iron ("HBI") and steel products to supply both local and transoceanic markets, with significantly reduced CO2 emissions. In this regard, Vale is expected to build and operate the iron ore concentration and briquetting plants in the hubs, ensuring the supply of high-quality agglomerated products; local partners are expected to promote the construction of the necessary logistics infrastructure; and investors and/or customers are expected to build and operate the direct reduction plants and be the HBI buyers for export and domestic markets. HBI production using natural gas emits approximately 60% less CO2 when compared to pig iron production via the integrated BF-BOF route. Besides, it's expected that these Mega Hubs should supply different markets around the world, supporting the decarbonization of the steel industry.

C12.2

(C12.2) Os fornecedores da organização atenderam às exigências relacionadas ao clima como parte do processo de aquisição da organização?
Sim, estão incluídas exigências relacionadas ao clima nos contratos com nossos fornecedores

C12.2a

(C12.2a) Dê detalhes das exigências relacionadas ao clima que os fornecedores devem atender como parte do processo de aquisição e dos mecanismos de conformidade da organização em vigor.

Exigência relacionada ao clima
Cumprir os requisitos normativos

Descrição desta exigência relacionada ao clima
Vale's suppliers are managed according to the same compliance standards that are upheld within the Company regarding social and environmental safety and ethics and integrity aspects. At the stage of registering new suppliers, Vale's main compliance initiatives are: Supplier Code of Ethics and Conduct, Global Anti-Corruption Program, Third-Party Due-Diligence, Environmental Licenses and Legal Requirements and Health and Safety Evaluation, to manage risks and provide greater security and confidence to its shareholders in relation to our choice of suppliers. Related to Climate requirement the suppliers contracted have to comply with our Sustainability Policy which determine that they demonstrated leadership in low carbon practices.

Porcentagem de fornecedores por gastos com aquisições que devem cumprir com esta exigência relacionada ao clima
89

Porcentagem de fornecedores por gastos com aquisições em conformidade com esta exigência relacionada ao clima
72

Mecanismos para o monitoramento da conformidade com esta exigência relacionada ao clima
Certificação
Quadro de resultados ou classificação dos fornecedores

Resposta à não-conformidade do fornecedor com esta exigência relacionada ao clima
Excluir

C12.3

(C12.3) A organização se engaja com atividades que podem direta ou indiretamente influenciar uma política, uma lei ou uma regulamentação que possa exercer impactos sobre o clima?

Linha 1

Atividades de engajamento externas que possam direta ou indiretamente influenciar uma política, uma lei ou um regulamento que pode exercer impactos sobre o clima

Sim, nós nos engajamos diretamente com os formuladores de políticas públicas
Sim, nossa participação em/engajamento com associações profissionais pode influenciar uma política, uma lei ou uma regulamentação que pode exercer impacto sobre o clima
Sim, financiamos organizações ou indivíduos cujas atividades podem influenciar uma política, uma lei ou um regulamento que pode exercer impacto sobre o clima

A organização tem um compromisso público ou uma declaração de posicionamento para orientar suas atividades de engajamento em alinhamento com os objetivos do Acordo de Paris?

Sim

Anexe a(s) declaração(ões) de posição ou compromisso

POL0012GclimatechangePolicyRev2E.pdf

Descreva o(s) processo(s) que a organização adota para assegurar que suas atividades de engajamento externas sejam consistentes com seus compromissos climáticos e/ou com seu plano de transição climática

Climate change represents a scientifically proven reality and a challenge that affects not only our productive activities but the entire planet. Combating the impacts of climate change is a strategic priority on Vale's agenda. The company is committed to contributing to a more sustainable future, based on its renewable energy matrix and the differentiated quality of its product.
To reach our climate commitments, we have defined robust climate governance. To guide the implementation of our Net Zero Strategy, our Executive Board provides us with full support and strategic oversight. It is supported by a Sustainability Committee, comprised of Board members and an external independent advisor that advises the Board on sustainability-related issues, including climate change.
Vale tracks trends and studies related to climate change in global forums, which aim to inform the development of regulatory and economic strategies for mitigation and adaptation at a global level. In Brazil, Vale participated in several discussions about the theme, collaborating towards the development of policies and strategies aimed at the transition to a resilient and low carbon economy. These includes participation in the Brazilian Business Council for Sustainable Development (CEBDS) and the development of "Adaptaclima" - a governmental platform designed to increase knowledge and awareness about adaptation, which seeks to contribute for access to information and the connection of stakeholders in this topic in Brazil. Vale also participates in international discussion meetings, including technical reviews on economic instruments to encourage the global reduction of GHG emissions, and relevant initiatives on climate change such as Carbon Pricing Leadership Coalition, International Council of Mining and Metals, Task Force on Climate-Related Financial Disclosure (TCFD), CDP Worldwide, and WBCSD (World Business Council for Sustainable Development). Since committing to the voluntary adherence to the TCFD recommendations, the Company instituted an in-house project to tailor climate risk qualification and quantification to the TCFD recommendations, considering the scenarios proposed by the International Energy Agency (IEA).
Vale is committed to integrating sustainability into its business and therefore increased its engagement with socially responsible investors and key ESG stakeholders through webinars, roadshows and the development of a dedicated website, the " Vale ESG Portal".

Razão principal pela qual a organização não se envolve em atividades que possam direta ou indiretamente influenciar uma política, uma lei ou um regulamento que pode exercer impactos sobre o clima

<Not Applicable>

Explique por que a organização não se engaja em atividades que podem direta ou indiretamente influenciar uma política, uma lei ou uma regulamentação que pode exercer impactos sobre o clima

<Not Applicable>

C12.3a

(C12.3a) Sobre qual política, lei ou regulamentação que pode exercer um impacto sobre o clima a organização esteve diretamente engajada com os formuladores de políticas públicas no ano de reporte?

Especifique a política, a lei ou a regulamentação sobre a qual a organização se engaja com formuladores de políticas públicas

Brazilian Regulated Carbon Market

Categoria de política, lei ou regulamentação que pode exercer um impacto sobre o clima

Precificação, taxação e subsídios do carbono

Área de foco da política, lei ou regulamentação que pode exercer um impacto sobre o clima

Taxação do carbono
Esquemas de comércio de emissões
Compensações de carbono

Abrangência geográfica da política, lei ou regulamentação

Nacional

País/área/região a que a política, lei ou regulamentação se aplica

Brasil

A posição da organização com relação à política, à lei ou à regulamentação

Apoio sem exceções

Descrição do engajamento com formuladores de políticas públicas

In 2023, the Ministry of Development, Industry, Commerce, and Services partnered with CEBDS (Brazilian Business Council for Sustainable Development), to develop a technical proposition on carbon market regulation mechanisms. Vale sponsors projects and works with CEBDS, the government, other business organizations, and civil society to develop this regulation. The company also analyzes the different law propositions and decrees about establishing a regulated carbon market with some confederations. One important is the CNI - National Confederation of Industry, which maintains direct contact with the Ministry of Finance and the Ministry of Environment. Vale also contributed to the public consultation of documents released by the government regarding the implementation of the Brazilian NDC in 2020. Vale supports the country in establishing a regulated carbon market through the cap-and-trade system coordinated by the federal government to develop targets and trading rules. This system, already consolidated in other jurisdictions, is in line with international experience and provides even more credibility, enabling compliance with future regulations related to the subject.

Detalhes das exceções (se aplicável) e da abordagem alternativa da política, lei ou regulamentação proposta pela organização

<Not Applicable>

A organização avaliou se seu engajamento com esta política, lei ou regulamento está em alinhamento com os objetivos do Acordo de Paris?
Sim, avaliamos, e está em alinhamento

Explique se esta política, lei ou regulamento é central para a realização do plano de transição climática da organização e, se sim, como.
<Not Applicable>

Especifique a política, a lei ou a regulamentação sobre a qual a organização se engaja com formuladores de políticas públicas
IMO ambition to reduce emissions from international shipping. They include:
- Reduction of CO2 intensity, as an average across international shipping, by at least 40% by 2030, pursuing efforts towards 70% by 2050 (based on 2008);
- Reduction of the total annual GHG emissions from international shipping by at least 50% by 2050 (based on 2008).

Categoria de política, lei ou regulamentação que pode exercer um impacto sobre o clima
Mitigação das mudanças climáticas

Área de foco da política, lei ou regulamentação que pode exercer um impacto sobre o clima
Metas climáticas

Abrangência geográfica da política, lei ou regulamentação
Global

País/área/região a que a política, lei ou regulamentação se aplica
<Not Applicable>

A posição da organização com relação à política, à lei ou à regulamentação
Apoio sem exceções

Descrição do engajamento com formuladores de políticas públicas
Vale has been supporting the Brazilian Government/Navy with analysis of IMO's MEPC (Marine Environment Protection Committee) technical proposals related to GHG emissions of international shipping, which could turn into decisions and/or regulations. Vale supports proposals focused on energy efficiency and climate goals to achieve the IMO GHG emissions reduction targets.

Detalhes das exceções (se aplicável) e da abordagem alternativa da política, lei ou regulamentação proposta pela organização
<Not Applicable>

A organização avaliou se seu engajamento com esta política, lei ou regulamento está em alinhamento com os objetivos do Acordo de Paris?
Sim, avaliamos, e está em alinhamento

Explique se esta política, lei ou regulamento é central para a realização do plano de transição climática da organização e, se sim, como.
<Not Applicable>

Especifique a política, a lei ou a regulamentação sobre a qual a organização se engaja com formuladores de políticas públicas
MRV (Measurement, Reporting, and Verification) at IMO

Categoria de política, lei ou regulamentação que pode exercer um impacto sobre o clima
Mitigação das mudanças climáticas

Área de foco da política, lei ou regulamentação que pode exercer um impacto sobre o clima
Reporte climático

Abrangência geográfica da política, lei ou regulamentação
Global

País/área/região a que a política, lei ou regulamentação se aplica
<Not Applicable>

A posição da organização com relação à política, à lei ou à regulamentação
Apoio sem exceções

Descrição do engajamento com formuladores de políticas públicas
Vale has been supporting the Brazilian Government/Navy with an analysis of the IMO's MEPC (Marine Environment Protection Committee) technical proposals related to GHG emissions of international shipping, which could turn to decisions and/or regulations. For example, Vale analyzed the documents regarding the establishment of a global data collection system for either a mandatory or voluntary application of the system for collection of fuel consumptions, monitoring CO2 emissions from ships and possible verifying by the flag States. Vale supports the establishment of a mandatory report of fuel consumptions from ships.

Detalhes das exceções (se aplicável) e da abordagem alternativa da política, lei ou regulamentação proposta pela organização
<Not Applicable>

A organização avaliou se seu engajamento com esta política, lei ou regulamento está em alinhamento com os objetivos do Acordo de Paris?
Sim, avaliamos, e está em alinhamento

Explique se esta política, lei ou regulamento é central para a realização do plano de transição climática da organização e, se sim, como.
<Not Applicable>

Especifique a política, a lei ou a regulamentação sobre a qual a organização se engaja com formuladores de políticas públicas
Canada Federal Carbon Pricing - Federal Backstop Program on Carbon Pricing

Categoria de política, lei ou regulamentação que pode exercer um impacto sobre o clima
Precificação, taxação e subsídios do carbono

Área de foco da política, lei ou regulamentação que pode exercer um impacto sobre o clima
Taxação do carbono

Abrangência geográfica da política, lei ou regulamentação
Nacional

País/área/região a que a política, lei ou regulamentação se aplica
Canadá

A posição da organização com relação à política, à lei ou à regulamentação

Apoio sem exceções

Descrição do engajamento com formuladores de políticas públicas
Vale has engaged with the federal government in relation to the Federal Backstop program. In addition, on a provincial level, we have participated in the Ontario, provincial-focused discussion, providing information to the Ontario province's relevant counterparts.

Detalhes das exceções (se aplicável) e da abordagem alternativa da política, lei ou regulamentação proposta pela organização
<Not Applicable>

A organização avaliou se seu engajamento com esta política, lei ou regulamento está em alinhamento com os objetivos do Acordo de Paris?
Sim, avaliamos, e está em alinhamento

Explique se esta política, lei ou regulamento é central para a realização do plano de transição climática da organização e, se sim, como.
<Not Applicable>

Especifique a política, a lei ou a regulamentação sobre a qual a organização se engaja com formuladores de políticas públicas
Newfoundland and Labrador – GHG Act
Newfoundland and Labrador Carbon pricing – Greenhouse Gas Act

Categoria de política, lei ou regulamentação que pode exercer um impacto sobre o clima
Precificação, taxação e subsídios do carbono

Área de foco da política, lei ou regulamentação que pode exercer um impacto sobre o clima
Taxação do carbono

Abrangência geográfica da política, lei ou regulamentação
Subnacional

País/área/região a que a política, lei ou regulamentação se aplica
Outro, especifique (Newfoundland and Labrador))

A posição da organização com relação à política, à lei ou à regulamentação
Apoio sem exceções

Descrição do engajamento com formuladores de políticas públicas
A made in Newfoundland and Labrador carbon pricing framework is set to take effect in January 2023. Vale has engaged the province continuously on the matter in 2022 providing industry suggestion upon request, channeled through the Mining Industry of Canada or bilaterally.

Detalhes das exceções (se aplicável) e da abordagem alternativa da política, lei ou regulamentação proposta pela organização
<Not Applicable>

A organização avaliou se seu engajamento com esta política, lei ou regulamento está em alinhamento com os objetivos do Acordo de Paris?
Sim, avaliamos, e está em alinhamento

Explique se esta política, lei ou regulamento é central para a realização do plano de transição climática da organização e, se sim, como.
<Not Applicable>

Especifique a política, a lei ou a regulamentação sobre a qual a organização se engaja com formuladores de políticas públicas
Task Force on Climate Related Financial Disclosure

Categoria de política, lei ou regulamentação que pode exercer um impacto sobre o clima
Mitigação das mudanças climáticas

Área de foco da política, lei ou regulamentação que pode exercer um impacto sobre o clima
Reporte climático

Abrangência geográfica da política, lei ou regulamentação
Global

País/área/região a que a política, lei ou regulamentação se aplica
<Not Applicable>

A posição da organização com relação à política, à lei ou à regulamentação
Apoio sem exceções

Descrição do engajamento com formuladores de políticas públicas
Vale signed the approval of the Task Force on Climate Related Financial Disclosure as an earlier player. Vale supports the Task Force on Climate Related Financial Disclosure and is working to align internal management with its guidelines and framework.

Detalhes das exceções (se aplicável) e da abordagem alternativa da política, lei ou regulamentação proposta pela organização
<Not Applicable>

A organização avaliou se seu engajamento com esta política, lei ou regulamento está em alinhamento com os objetivos do Acordo de Paris?
Sim, avaliamos, e está em alinhamento

Explique se esta política, lei ou regulamento é central para a realização do plano de transição climática da organização e, se sim, como.
<Not Applicable>

C12.3b

(C12.3b) Dê detalhes sobre as associações profissionais de que a organização é membro ou com as quais se engaja e que tenham a probabilidade de adotar uma posição com relação a alguma política, lei ou regulamentação que possa exercer impactos sobre o clima.

Associação comercial
Outro, especifique (IBRAM)

A posição da organização em relação à política sobre as mudanças climáticas é consistente com a dessa associação?
Consistente

A organização tentou influenciar a posição dessa associação no ano de reporte?
Sim, promovemos publicamente a posição atual da associação

Descreva como a posição da organização converge ou diverge da posição da associação profissional, e eventuais medidas tomadas para influenciar a posição da associação
IBRAM analyses the impacts of national and international regulation on the extractive sector. Vale supports some technical studies developed by IBRAM and share technical information about GHG emissions of the mining industry. Vale contributes with discussions about GHG emissions management and abatement opportunities. Vale also participates in several initiatives and Special Programs promoted by the IBRAM and other partners, aiming to promote sustainable development through studies, manuals, guides, research, innovation, and the use of the most modern technologies available.
In 2021, IBRAM, with its associated companies, announced the mining positioning on climate change aiming to contribute to the Brazilian government in the COP 26 negotiations, as well as informing interested parties about the efforts of the mining sector in the search for a low carbon economy in Brazil.
In 2022, IBRAM said the mining sector can contribute a lot to the reduction and removal of global carbon emissions with the production of strategic minerals.

Valor do financiamento que a organização forneceu a esta associação profissional no ano de reporte (moeda selecionada em C0.4)

Descreva o objetivo do financiamento da organização
<Not Applicable>

A organização avaliou se seu engajamento com esta associação comercial está alinhado com os objetivos do Acordo de Paris?
Sim, avaliamos, e está em alinhamento

Associação comercial
Outro, especifique (Brazilian National Confederation of Industry (Confederação Nacional da Indústria – CNI)

A posição da organização em relação à política sobre as mudanças climáticas é consistente com a dessa associação?
Consistente

A organização tentou influenciar a posição dessa associação no ano de reporte?
Não, não tentamos influenciar a posição da associação

Descreva como a posição da organização converge ou diverge da posição da associação profissional, e eventuais medidas tomadas para influenciar a posição da associação
CNI has been following up on the Brazilian Nationally Determined Contribution (NDC) to the United Nations Framework Convention on Climate Change (UNFCCC) and interacting with the government both regarding the international commitment and how it will be implemented domestically, particularly on aspects concerning the industry sector. Vale is an active participant of CNI'S working group (Rede Clima) and as such take part in discussions and can provide inputs to the position papers and discussions.
Vale is also a co-financer of a Study Group headed by CNI, regarding the evolution of the EU proposal on a Carbon Border Adjustment Mechanism.

Valor do financiamento que a organização forneceu a esta associação profissional no ano de reporte (moeda selecionada em C0.4)

Descreva o objetivo do financiamento da organização
<Not Applicable>

A organização avaliou se seu engajamento com esta associação comercial está alinhado com os objetivos do Acordo de Paris?
Sim, avaliamos, e está em alinhamento

Associação comercial
Outro, especifique (Mining Association of Canada)

A posição da organização em relação à política sobre as mudanças climáticas é consistente com a dessa associação?
Consistente

A organização tentou influenciar a posição dessa associação no ano de reporte?
Sim, promovemos publicamente a posição atual da associação

Descreva como a posição da organização converge ou diverge da posição da associação profissional, e eventuais medidas tomadas para influenciar a posição da associação
Participate in government consultation regarding national environmental regulations. Vale has a member on the board and also provides technical assistance due to its expertise.
Vale is an active member in the Mining Association of Canada (MAC) and voluntary participant in the association's initiative called Towards Sustainable Mining (TSM). This initiative aims to improve the industry's performance by aligning its actions with the priorities and values of Canadians. TSM provides a way of finding common ground with communities of interest in order to build a better mining industry, today and in the future. In 2022, Vale keeps its participation in the Towards Sustainable Mining (TSM) program and it was validated by an external verification.

Valor do financiamento que a organização forneceu a esta associação profissional no ano de reporte (moeda selecionada em C0.4)

Descreva o objetivo do financiamento da organização
<Not Applicable>

A organização avaliou se seu engajamento com esta associação comercial está alinhado com os objetivos do Acordo de Paris?
Sim, avaliamos, e está em alinhamento

Associação comercial
Outro, especifique (Ontario Mining Association - OMA (Canada))

A posição da organização em relação à política sobre as mudanças climáticas é consistente com a dessa associação?
Consistente

A organização tentou influenciar a posição dessa associação no ano de reporte?
Não, não tentamos influenciar a posição da associação

Descreva como a posição da organização converge ou diverge da posição da associação profissional, e eventuais medidas tomadas para influenciar a posição da associação
OMA has been an active participant in the multi-sectoral consultations with the Ministry of Environment in the development of Ontario GHG reporting regulations and the

ongoing development of Ontario's Cap-and-Trade regulation to reduce GHG emissions. Vale has a member on the board and also provides technical assistance due to its expertise.

Valor do financiamento que a organização forneceu a esta associação profissional no ano de reporte (moeda selecionada em C0.4)

Descreva o objetivo do financiamento da organização
<Not Applicable>

A organização avaliou se seu engajamento com esta associação comercial está alinhado com os objetivos do Acordo de Paris?
Sim, avaliamos, e está em alinhamento

Associação comercial
Outro, especifique (Canadian Manufacturers and Exporters Association (CME))

A posição da organização em relação à política sobre as mudanças climáticas é consistente com a dessa associação?
Consistente

A organização tentou influenciar a posição dessa associação no ano de reporte?
Não, não tentamos influenciar a posição da associação

Descreva como a posição da organização converge ou diverge da posição da associação profissional, e eventuais medidas tomadas para influenciar a posição da associação
The CME is actively involved in lobbying the Canadian government and relevant bodies mainly on the development of legislation and policy. The main areas of focus are climate change and the impacts of policy and legislation on the sustainability of manufacturers and exporters. Vale provides technical assistance due to its expertise. In particular, Vale has supported the Ontario Section Environment Committee.

Valor do financiamento que a organização forneceu a esta associação profissional no ano de reporte (moeda selecionada em C0.4)

Descreva o objetivo do financiamento da organização
<Not Applicable>

A organização avaliou se seu engajamento com esta associação comercial está alinhado com os objetivos do Acordo de Paris?
Sim, avaliamos, e está em alinhamento

Associação comercial
Outro, especifique (Association of Major Power Consumers of Ontario (AMPCO))

A posição da organização em relação à política sobre as mudanças climáticas é consistente com a dessa associação?
Consistente

A organização tentou influenciar a posição dessa associação no ano de reporte?
Não, não tentamos influenciar a posição da associação

Descreva como a posição da organização converge ou diverge da posição da associação profissional, e eventuais medidas tomadas para influenciar a posição da associação
AMPCO's objective is industrial electricity rates that are competitive, fair and efficient. It provides clear communications and effective advocacy on cap-and-trade regulation. Vale has a member on the board and also provides technical assistance due to its expertise.

Valor do financiamento que a organização forneceu a esta associação profissional no ano de reporte (moeda selecionada em C0.4)

Descreva o objetivo do financiamento da organização
<Not Applicable>

A organização avaliou se seu engajamento com esta associação comercial está alinhado com os objetivos do Acordo de Paris?
Sim, avaliamos, e está em alinhamento

Associação comercial
Outro, especifique (Industrial Gas Users' Association (IGUA))

A posição da organização em relação à política sobre as mudanças climáticas é consistente com a dessa associação?
Consistente

A organização tentou influenciar a posição dessa associação no ano de reporte?
Não, não tentamos influenciar a posição da associação

Descreva como a posição da organização converge ou diverge da posição da associação profissional, e eventuais medidas tomadas para influenciar a posição da associação
The Industrial Gas Users Association, (IGUA) provides a coordinated and effective public policy and regulatory voice for its members at both the provincial and federal levels. Its focus has been on the cap-and-trade impacts to natural gas pricing relative to other jurisdictions. Vale has a member on the board and also provides technical assistance due to its expertise.

Valor do financiamento que a organização forneceu a esta associação profissional no ano de reporte (moeda selecionada em C0.4)

Descreva o objetivo do financiamento da organização
<Not Applicable>

A organização avaliou se seu engajamento com esta associação comercial está alinhado com os objetivos do Acordo de Paris?
Sim, avaliamos, e está em alinhamento

Associação comercial
Outro, especifique (International Association of Dry Cargo Shipowners (INTERCARGO))

A posição da organização em relação à política sobre as mudanças climáticas é consistente com a dessa associação?
Consistente

A organização tentou influenciar a posição dessa associação no ano de reporte?
Não, não tentamos influenciar a posição da associação

Descreva como a posição da organização converge ou diverge da posição da associação profissional, e eventuais medidas tomadas para influenciar a posição da associação
INTERCARGO is involved in IMO discussions concerning the IMO strategy for reducing greenhouse gas emissions from international shipping. INTERCARGO is working to avoid measures that may increase the owner's costs. INTERCARGO has also involved IMO discussions regarding the establishment of an MRV (Monitoring, Reporting and Verify) for emissions reduction from ships. INTERCARGO is fully concern regarding the confidentiality of the data to be informed/ monitored and the accuracy of the methodology to be used for monitoring the fuel consumption/emissions. Vale is participating of the INTERCARGO meetings to discuss the matter and follow up on the impacts on its maritime transport.
Regarding of reducing greenhouse gas emissions from international shipping in 2021, Vale received an international award (Wind Propulsion Innovation Awards) for its innovative use of rotor sails on its large ships. The award was in the category for companies promoting the adoption of this type of technology through prototypes or commercial use. In the same year Vale tested the world's first VLOC (Very Large Ore Carrier) equipped with a system that produces air bubbles in its hull to make it more fuel efficient and reduce GHG emissions.

Valor do financiamento que a organização forneceu a esta associação profissional no ano de reporte (moeda selecionada em C0.4)

Descreva o objetivo do financiamento da organização
<Not Applicable>

A organização avaliou se seu engajamento com esta associação comercial está alinhado com os objetivos do Acordo de Paris?
Sim, avaliamos, e está em alinhamento

Associação comercial
Outro, especifique (Non-Ferrous Alliance (NFA))

A posição da organização em relação à política sobre as mudanças climáticas é consistente com a dessa associação?
Consistente

A organização tentou influenciar a posição dessa associação no ano de reporte?
Sim, promovemos publicamente a posição atual da associação

Descreva como a posição da organização converge ou diverge da posição da associação profissional, e eventuais medidas tomadas para influenciar a posição da associação
The Alliance is actively involved in lobbying the UK government and relevant bodies mainly on the development of legislation and policy. The main areas of focus are climate change, carbon taxation, carbon leakage and the impacts of policy and legislation on the sustainability of existing, established businesses. The position is focused on the carbon leakage potential for globally traded commodity materials. Vale chairs on the board of NFA and provides £6k (USD 6.4 k) per annum funding. Through the Alliance, the company participates in the Manufacturers Climate Change Group (MCCG), made of senior board members of trade groups. Through these, Vale actively engages in climate change-related topics, including legislation. NFA also makes direct representation to the UK government.

Valor do financiamento que a organização forneceu a esta associação profissional no ano de reporte (moeda selecionada em C0.4)
6400

Descreva o objetivo do financiamento da organização
Annuity. Therefore, it would not have specific application to issues of climate positioning etc., being an annual payment.

A organização avaliou se seu engajamento com esta associação comercial está alinhado com os objetivos do Acordo de Paris?
Sim, avaliamos, e está em alinhamento

Associação comercial
Confederação das Indústrias Britânicas (CBI)

A posição da organização em relação à política sobre as mudanças climáticas é consistente com a dessa associação?
Consistente

A organização tentou influenciar a posição dessa associação no ano de reporte?
Não, não tentamos influenciar a posição da associação

Descreva como a posição da organização converge ou diverge da posição da associação profissional, e eventuais medidas tomadas para influenciar a posição da associação
The Confederation is actively involved in lobbying the UK government and relevant bodies mainly on the development of legislation and policy. The main areas of focus are climate change, carbon taxation, carbon leakage and the impacts of policy and legislation on the sustainability of existing, established businesses. Vale takes part on CBI's Energy Intensive Users Group, in which relevant topics related to climate change, including legislation, are discussed. The CBI is used as a 'sounding board' for UK Government Policy development. Vale also provides funding to CBI Wales but no longer have a position on the board.

Valor do financiamento que a organização forneceu a esta associação profissional no ano de reporte (moeda selecionada em C0.4)

Descreva o objetivo do financiamento da organização
<Not Applicable>

A organização avaliou se seu engajamento com esta associação comercial está alinhado com os objetivos do Acordo de Paris?
Sim, avaliamos, e está em alinhamento

Associação comercial
Eurometaux

A posição da organização em relação à política sobre as mudanças climáticas é consistente com a dessa associação?
Consistente

A organização tentou influenciar a posição dessa associação no ano de reporte?
Sim, promovemos publicamente a posição atual da associação

Descreva como a posição da organização converge ou diverge da posição da associação profissional, e eventuais medidas tomadas para influenciar a posição da associação
Eurometaux is actively involved in lobbying the UK and Europe government and relevant bodies mainly on the development of legislation and policy. The main areas of focus are climate change, carbon taxation, carbon leakage and the impacts of policy and legislation on the sustainability of existing, established businesses. Vale is an executive member of Eurometaux and sits on the body's Energy and Climate Change Committee, where relevant climate change related topics are discussed. The Eurometaux position has been directly advocated into the Cabinet of the European President, with particular concerns of carbon pricing via allowance manipulation ("backloading") and ETS revision. Vale is on the Executive Committee and also the Management Committee (delegated working committee that sets the direction of the group). Vale also provides funding.

Valor do financiamento que a organização forneceu a esta associação profissional no ano de reporte (moeda selecionada em C0.4)

Descreva o objetivo do financiamento da organização
<Not Applicable>

A organização avaliou se seu engajamento com esta associação comercial está alinhado com os objetivos do Acordo de Paris?
Sim, avaliamos, e está em alinhamento

Associação comercial
Conselho Internacional de Mineração e Metais (ICMM)

A posição da organização em relação à política sobre as mudanças climáticas é consistente com a dessa associação?
Consistente

A organização tentou influenciar a posição dessa associação no ano de reporte?
Sim, promovemos publicamente a posição atual da associação

Descreva como a posição da organização converge ou diverge da posição da associação profissional, e eventuais medidas tomadas para influenciar a posição da associação
As a member of the ICMM, Vale is expected to implement the ICMM's Mining Principles and Performance Expectations as a condition of membership. The company support and endorse these, and the ICMM's efforts at the international level to enhance the transparency of mineral revenues, including through the Extractive Industries Transparency Initiative (EITI), and engaging constructively in appropriate forums to improve the transparency of mineral revenues and operations. In the climate change area through ICMM, the company is committed to achieve the goal of net zero greenhouse gas (GHG) emissions from Scope 1 and 2 by 2050 or earlier, aligned with the ambitions of the Paris Agreement. The goal of becoming Net Zero by 2050 is already part of Vale's agenda, which has as its strategic priority to combat the impacts of climate change. To reduce emissions from Scope 1 and 2 by 33%, the company will make investments, prioritizing innovative technologies and world-class, high-quality iron ore, nickel, and copper portfolios critical to the low-carbon transition. Vale´s CEO Eduardo Bartolomeo is active member of the ICMM Climate Change Advisory Group demonstrating engagement and commitment to the cause of climate change for a sustainable mining industry on a global scale.
The goal of reducing Vale's net emissions of scope 3 by 2035 is a pioneer in the sector, with initiatives already in implementation. One example is the briquette, a disruptive technology developed internally and patented by the company, which has the potential to reduce emissions from steel customers by up to 10%. Vale has supported the decarbonization of the steel industry through joint initiatives with its customers, which include MoU with Ternium Brasil for the use of solutions such as briquet and biomass-based products with a lower carbon footprint (Tecnored). The company also signed a partnership with Boston Metals, a startup that aims to produce steel with zero CO2 emissions.
In Shipping, which is also part of Vale's Scope 3 since the company does not own ships, Vale has tested, in partnership with shipowners, disruptive technologies on large vessels. The technologies are the Rotor Sails and the Air Lubrication (compressors that produce air bubbles at the bottom ship, reducing water friction with the hull). Both reduce fuel consumption and CO2 emissions.

Valor do financiamento que a organização forneceu a esta associação profissional no ano de reporte (moeda selecionada em C0.4)

Descreva o objetivo do financiamento da organização
<Not Applicable>

A organização avaliou se seu engajamento com esta associação comercial está alinhado com os objetivos do Acordo de Paris?
Sim, avaliamos, e está em alinhamento

Associação comercial
Outro, especifique (Nickel Institute)

A posição da organização em relação à política sobre as mudanças climáticas é consistente com a dessa associação?
Consistente

A organização tentou influenciar a posição dessa associação no ano de reporte?
Sim, promovemos publicamente a posição atual da associação

Descreva como a posição da organização converge ou diverge da posição da associação profissional, e eventuais medidas tomadas para influenciar a posição da associação
The Nickel Institute is the global association of leading primary nickel producers, aimed at promoting and supporting the proper use of nickel in appropriate applications. Vale is an active member of the Nickel Institute.

Valor do financiamento que a organização forneceu a esta associação profissional no ano de reporte (moeda selecionada em C0.4)

Descreva o objetivo do financiamento da organização
<Not Applicable>

A organização avaliou se seu engajamento com esta associação comercial está alinhado com os objetivos do Acordo de Paris?
Sim, avaliamos, e está em alinhamento

C12.3c

(C12.3c) Dê detalhes sobre o financiamento que a organização forneceu no ano de reporte a outras organizações ou indivíduos cujas atividades podem influenciar uma política, uma lei ou uma regulamentação que possa exercer um impacto sobre o clima.

Tipo de organização ou indivíduo
Outro, especifique (Non-profit civil association)

Declare a organização ou o indivíduo à qual o financiamento foi fornecido
Brazilian Business Council for Sustainable Development (CEBDS)

Valor do financiamento que a organização forneceu a esta organização ou indivíduo no ano de reporte (moeda selecionada em C0.4)
40000

Descreva o objetivo deste financiamento e como ele pode influenciar uma política, uma lei ou uma regulamentação que possa exercer impacto sobre o clima
Vale joined the unprecedented CEBDS (Brazilian Business Council for Sustainable Development) program that supports the inclusion of climate actions in companies, reinforcing its commitment to sustainability. The Net Zero Platform, which has a partnership with the WBCSD (World Business Council for Sustainable Development), aims to transform business goals of climate neutrality into reality, through practical support for the implementation of decarbonization processes. The annual amount paid to CEBDS for Vale to sponsor projects including the Net Zero Platform is BRL 200,000 (USD 40,000).

The Net Zero platform will help accelerate climate action across all spheres that influence companies' ability to reduce greenhouse gas (GHG) emissions – within companies themselves, across value chains, national public policies and net zero standards international.

One of the program's next actions will be to bring to Brazil a decarbonization guide tool called Climate Drive, which brings together all the guidelines necessary for companies to implement the best solutions available globally to reduce their own emissions. Thus, the platform becomes an important part of the private sector's strategy to combat global warming.

A organização avaliou se este financiamento está alinhado com os objetivos do Acordo de Paris?
Sim, avaliamos, e está em alinhamento

C12.4

(C12.4) Além da resposta ao CDP, a organização publicou alguma informação sobre sua resposta às mudanças climáticas e seu desempenho em emissões de GEEs no ano de reporte? Em caso afirmativo, anexe as publicações.

Publicação
Nos relatórios tradicionais

Status
Completo

Anexar o documento
Form 20-F - 2022.pdf

Referência de página/seção
Our Environmental, Social and Governance (“ESG”) Framework (pages 11 to 15); Health, Safety, Environmental And Social Risks (pages 28 to 30); Environmental Regulations (pages 114 to 116)

Elementos do conteúdo
Estratégia
Riscos e oportunidades
Metas de emissões

Explique
n.a.

Publicação
Nos relatórios convencionais, incorporando as recomendações da TCFD

Status
Completo

Anexar o documento
Integrated_Report_2022_Vale.pdf

Referência de página/seção
Governance (pages 69 to 71); Risk Management (pages 31); Ethics and compliance (pages 72 to 75); Climate (pages 55 to 59)

Elementos do conteúdo
Governança
Estratégia
Riscos e oportunidades
Valores de emissões
Metas de emissões
Outro, especifique (Energy metrics and targets)

Explique
n.a.

Publicação
Em comunicações voluntárias

Status
Completo

Anexar o documento
Climate Change - ESG - Vale.pdf

Referência de página/seção
Climate Change; KPIs Report; Performance Evolution; Goals and Deadlines; Risks; Carbon pricing; Internal carbon price at Vale; External Engagement; Policies and Procedures; Business Case; Perspectives.

Elementos do conteúdo
Estratégia
Riscos e oportunidades
Valores de emissões
Metas de emissões

Explique
Vale ESG Portal - Climate Change: https://www.vale.com/web/esg/climate-change

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C12.5

(C12.5) Indique os quadros, iniciativas e/ou compromissos colaborativos relacionados a questões climáticas dos quais a organização é signatária/membro.

	Quadro, iniciativa e/ou compromisso ambiental colaborativo	Descreva o papel da organização dentro de cada quadro, iniciativa e/ou compromisso
Linha 1	Climate Action 100+ Membro da Comunidade da Global Reporting Initiative (GRI) Task Force on Climate-related Financial Disclosures (TCFD) Task Force on Nature-related Financial Disclosures (TNFD) World Business Council for Sustainable Development (WBCSD) Outro, especifique (ICMM, SASB, WEF, EITI, GISTM and CEBDS)	Vale aims to proactively participate in the formulation of public policies, and to understand our points of view, for the establishment or maintenance of a favorable environment for the mining industry and, therefore, the company is partners with international and regional organizations and participates in discussions on environmental, commercial, energy and sustainable development policies, among others. The list of entities and associations in which Vale participates includes institutions such as the World Business Council for Sustainable Development (WBCSD), Task Force on Climate-related Financial Disclosures (TCFD), Task Force on Nature-related Financial Disclosures (TNFD), Global Reporting Initiative (GRI), International Council on Mining and Metals (ICMM). Vale is committed to the UN Global Compact and has worked diligently to implement the Ten Principles of the UN Global Compact, even though the company withdrew in 2019 out of respect for the institution and its members following the Brumadinho tragedy. According to Vale's CEO, following the Ten Principles of the UN Global Compact is a strategic step in strengthening the company's sustainability performance. Additionally, Vale's ESG public commitments are connected to the UN's 2030 Agenda and in line with global trends and the company reports its advances on its ESG Portal. In 2017, Vale signed a new positioning letter from the Brazilian business sector in favor of global carbon pricing (letter from CEBDS, which is the Brazilian extension of the WBCSD). In the same year, Vale has also endorsed the TCFD framework as one of the first signatory companies. The company adopted the TCFD guidelines to manage the impacts of its transition to a low-carbon economy, and the physical impacts of climate change on our operations and maintains a program to manage risks and opportunities related to climate change, aligned with its guidelines. In addition, Vale's annual performance is assessed by specialized institutions such as Climate Action 100+. Vale is a GRI Community Member, meaning that Vale's contributions directly support GRI's mission and the work to develop and update the GRI Standards, influencing the global debate on corporate transparency. Vale's Integrated Reports are prepared in accordance with the Global Reporting Initiative. Also, in 2022, Vale took part in public consultations by the TNFD, joined its discussion forum, committed us to piloting the applicability of the TNFD's guidelines, with sectorial alignment coordinated by the ICMM, and joined the Brazilian consultative group coordinated by CEBDS. Results so far indicate that we have partially met the guidelines, and that more work will be needed in 2023 for Vale to develop further in this regard. Vale reports on its adoption of the Mining Principles of the International Council on Mining and Metals (ICMM) including meeting the ICMM Performance Expectations, as an active and committed ICMM member. As a member of the ICMM, Vale is expected to implement the ICMM's Mining Principles and Performance Expectations as a condition of membership. We support and endorse these, and the ICMM's efforts at the international level to enhance the transparency of mineral revenues, including through the Extractive Industries Transparency Initiative (EITI), and engaging constructively in appropriate forums to improve the transparency of mineral revenues. We support and are committed to the implementation of the Global Industry Standard on Tailings Management (GISTM), an effort to improve safety in all phases of the tailings storage facilities' lifecycle. Also on its reports, Vale includes indicators from the Sustainability Accounting Standards Board (SASB), now part of the International Financial Reporting Standards Foundation, the Task Force on Climate-related Financial Disclosures (TCFD), the World Economic Forum (WEF) key metrics, and the United Nations (UN) Sustainable Development Goals (SDGs). Vale's 2022 Integrated Report lists (on page 80) the entities and associations in which the company participates. https://vale.com/documents/d/guest/vale_relatointegrado2022-en-final-1

C15. Biodiversidade

C15.1

(C15.1) Existe supervisão por parte do conselho e/ou responsabilidade por parte da gerência executiva de temas relacionados à biodiversidade na organização?

	Supervisão por parte do conselho e/ou responsabilidade por parte da gerência executiva por questões relacionadas à biodiversidade	Descrição da supervisão e dos objetivos relacionados à biodiversidade	Escopo da supervisão no nível do conselho
Linha 1	Sim, tanto supervisão por parte do conselho quanto responsabilidade por parte da gerência executiva	At Vale, The Executive Vice President of Sustainability (EVPS), a position equivalent to the CSO, is responsible for daily operations and implementation of the general policies and guidelines set by the Board of Directors (BD). The EVPS that is below the BD, being intermediated by the CEO, deals with and connects all topics related to the company's business, including critical issues that result in risks or business impact, defining sustainability goals (including biodiversity), monitoring and implementing policies, strategies, and specific initiatives, and evaluating proposals for investments in sustainability. The Board Committees advise the BD, including proposing improvements related to their areas of expertise. To give greater efficiency and quality to the decisions, the Board ensures the Company's activities are conducted in accordance with laws, ethics and internal controls. The Board deliberates on strategic guidelines and plans, monitors and evaluates Vale's economic and financial performance, analyses its corporate and financial risk policies, elects and evaluates the Executive Officers. The Sustainability Committee evaluates the sustainability strategy in the social, environmental, climate, and economic dimensions, ensuring the alignment with the overall strategy of the Company. The Sustainability Committee recommend subjects related to sustainability in the company's strategic planning, evaluating, and proposing changes in the company's socio-environmental strategies, monitoring their respective implementation; analyse matters related to Environmental and Social Sustainability, through specific sessions on climate change, biodiversity, water resource management, environmental licensing, reducing the risk level of dams, new technologies for the energy matrix, human rights, and the relationship with the various stakeholders, including traditional communities and indigenous people evaluate Vale's performance and monitored indicators related to sustainability aspects (including DJSI), and also assess and advise on policies within its competence. In addition, it is the role of the Sustainability Committee to represent the Board by proposing guidance to the Integrated Report. The Committee also assess and recommend the guidelines for reparation actions related to Mariana (Renova Foundation) and Brumadinho's dam failure, monitoring its respective implementation.	<Not Applicable>

C15.2

(C15.2) A organização assumiu algum compromisso público e/ou endossou alguma iniciativa relacionada à biodiversidade?

	Indique se a organização assumiu algum compromisso público ou endossou alguma iniciativa relacionada à biodiversidade	Compromissos públicos relacionados à biodiversidade	Iniciativas endossadas
Linha 1	Sim, assumimos compromissos públicos e endossamos publicamente iniciativas relacionadas à biodiversidade	Compromisso com Perda Líquida Zero Adoção da abordagem de hierarquia de mitigação Compromisso de respeitar áreas protegidas legalmente designadas Compromisso de garantir o Consentimento Livre, Prévio e Informado (CLPI) dos Povos Indígenas	CBD – Global Biodiversity Framework ODS Outro, especifique (ICMM Mining Principles and PE7, Brazilian Business Commitment for Biodiversity, Business Sector Positioning on Amazon, focused on combating illegal deforestation and promoting an inclusive and regenerative economy)

C15.3

(C15.3) A organização avalia os impactos e as dependências da sua cadeia de valor para a biodiversidade?

Impactos na biodiversidade

Indique se a organização adota este tipo de avaliação
Sim

Etapa(s) da cadeia de valor abrangida(s)
Operações diretas
Upstream

Atividade do portfólio
<Not Applicable>

Ferramentas e métodos para avaliar impactos e/ou dependências em biodiversidade
Outro, especifique (Impact Mitigation Hierarchy, Biodiversity Risk Analisys, Supply Chain Criticality Matrix)

Explique como as ferramentas e os métodos são implementados e dê uma indicação do(s) resultado(s) associado(s)
Vale developed, in 2019, a normative standard that provides guidelines and processes for biodiversity management focused on all stages of the life cycle, from project planning to post-closure, published in early 2020. This document brings the Hierarchy Impact Mitigation, risk management, metrics, and the necessary processes so that new projects and even operations can assess and manage biodiversity risks and establish goals and actions related to No Net Loss. These guidelines are based on legal requirements and international best practices that govern performance standards for investments, by the Sustainability Policy and Vale's long-term strategic objective of achieving a neutral impact on biodiversity.
Operations that generate significant impacts in areas of high value for biodiversity require Biodiversity Management Plans, whether based on legal obligations or voluntary commitments. Of all our operational units assessed in 2022, 47 (88.7%) required the preparation of biodiversity management plans Of these, 80.9% already have Management Plans in place, and the rest have plans under implementation or planned.

Besides, Vale understands the challenge of integrating biodiversity management into the value chain and, therefore, has addressed initiatives to help support the supply chain and commercial areas to adopt environmental requirements, which include biodiversity, in engaging with customers and suppliers. We believe our value chain has a direct influence on the impacts we have on nature, on communities, and on the economy. Before starting a business relationship with Vale, all our suppliers undergo a Due Diligence process, where a reputational assessment is undertaken based on public information, an established risk matrix, and the scope of work to be performed. Our suppliers are periodically monitored on their social, environmental and human rights performance, as well as relationships with government. In 2022, we developed a Supply Chain Criticality Matrix, prepared in alignment with the ISO 20400 Sustainable Procurement guidelines and based on the segmentation of our active supplier base in Brazil, considered analysis of ESG impacts and risks for each macro-group considering 22 hotspots including risks related to the intensity of GHG emissions, business ethics, biodiversity and exposure to slave labor.

Dependências para a biodiversidade

Indique se a organização adota este tipo de avaliação
Sim

Etapa(s) da cadeia de valor abrangida(s)
Operações diretas

Atividade do portfólio
<Not Applicable>

Ferramentas e métodos para avaliar impactos e/ou dependências em biodiversidade
Ferramenta ENCORE
WBCSD Corporate Ecosystem Services Review

Explique como as ferramentas e os métodos são implementados e dê uma indicação do(s) resultado(s) associado(s)
Our business depends on essential ecosystem services provided by nature. Our greatest dependencies relate to water provision and climate regulation, which are essential for our production and product flows. In 2015 we implemented a pilot dependence assessment at some sites using the WBCSD Corporate Ecosystem Services Review tool. We are working on applying the TNFD LEAP methodology to our direct operations and are testing different tools for impact and dependency analysis, such as ENCORE.

C15.4

(C15.4) A organização tem atividades localizadas em áreas sensíveis para a biodiversidade ou nas suas proximidades no ano de reporte?
Sim

C15.4a

(C15.4a) Dê detalhes das atividades da organização em áreas sensíveis para a biodiversidade ou nas suas proximidades no ano de reporte.

Classificação de área sensível para a biodiversidade
Área(s)-chave para a biodiversidade (KBAs)

País/área
Brasil

Nome da área sensível para a biodiversidade
Ouro Preto/Mariana

Proximidade
Sobreposição

Descreva brevemente as atividades da organização localizadas na área selecionada ou nas suas proximidades no ano de reporte
Mariana Complex is formed by the Alegria, Fábrica Nova, Fazendão and Timbopeba mines and it's located in the cities of Ouro Preto, Mariana and Catas Altas, places rich in historical, cultural and natural assets. Part of the mines in the Complex are overlapping this KBA, which was confirmed from IBAT and GIS tools.
This KBA encompasses an expressive set of extensive forest remnants, largely still contiguous, that cover the mountains around the cities of Mariana and Ouro Preto, at the southern limit of the Espinhaço Range. It is considered an area of extreme importance mainly because of the large remnants of the Atlantic Forest in these locals.
The forests of the region, of a semideciduous character, comprise montane and riparian formations, being locally replaced by clean or dirty fields. In sectors of higher altitude, such as the Pico do Itacolomi area, there are typical rupestrian fields. Industrial-scale mining is a common activity in several sectors of the region, being an important threat to the preserved environments in the area.
Our operations bring impacts but also contribute to the conservation of an area approximately three times larger than the area occupied by the mines and associated structures.

Indique se alguma das atividades da organização localizadas na área selecionada ou nas suas proximidades pode afetar negativamente a biodiversidade
Sim, mas foram implementadas medidas de mitigação

Medidas de mitigação implementadas na área selecionada
Criação do projeto
Controles operacionais
Controles da redução
Restauração
Compensações de biodiversidade
Outro, especifique (Reducing the impact of vegetal suppression and reducing the impact to flora and fauna species)

Explique como as atividades da organização localizadas na área selecionada ou em suas proximidades podem afetar negativamente a biodiversidade, como isso foi avaliado e descreva eventuais medidas de mitigação implementadas
The mines in the Mariana Complex are brownfield projects and the entire complex follows Brazilian environmental legislation, with its environmental impacts and environmental management studies.
For the analysis of risks and impacts related to biodiversity, Vale hires a company that has the necessary experience to carry out a detailed study about the region and the environmental impact study. In addition, a bibliographic survey is carried out regarding local biodiversity to understand records and descriptions of fauna and flora.
Moreover, field expeditions are scheduled before and during the implementation and operation of the project to ascertain abiotic and mainly biotic aspects. Finally, data on the main stakeholders are collected with the community relations teams in the territories, and for some studies, interviews are included with those considered a priority, within the socioeconomic studies.
Vale's operation in this Complex cause direct and indirect impacts on biodiversity, such as conversion and/or degradation of natural habitats (other than forests); fragmentation of ecosystems; fauna scaring; and loss of rare and threatened species.
To minimize those impacts, the locational alternatives with the smallest suppression area are selected and for the implementation of the project, the suppression areas were demarcated to avoid additional impacts. Before the suppression action, the rescue of flora (seeds, plantlets, and specimens) is conducted, aiming at the production of seedlings and germplasm conservation. In this project, the rescue of species that are threatened with extinction will be prioritized.
The Vegetation Suppression Program, since the elimination of vegetation cover, is an unavoidable activity for the operation of some project's structures, such as the pit, which has locational rigidity. This program aims to accompany all suppression actions and guarantee that they extend only to the area strictly necessary, minimizing as much as possible the impact on the vegetation.
In response to the impact of vegetation suppression, there are mitigation actions and environmental compensation programs related to habitat restoration and investment in protected areas. The flora restoration project is a compensatory measure, which aims to reintroduce the species rescued during the implementation of the enterprise and others produced in the seedling nursery, aiming to contribute to the improvement of the environmental conditions of areas close to the enterprise that is altered.
In addition, investment in existing protected areas or the creation of new protected areas as compensatory measures is planned with the objective of maintaining and protecting habitat and species, besides creating ecological corridors.
Besides, the Complex has been conducting integrated fauna monitoring for more than 10 years.

Classificação de área sensível para a biodiversidade
Área(s)-chave para a biodiversidade (KBAs)

País/área
Brasil

Nome da área sensível para a biodiversidade
Serra do Caraça

Proximidade
Até 5 km

Descreva brevemente as atividades da organização localizadas na área selecionada ou nas suas proximidades no ano de reporte
The Serra do Caraça is located about 120 km from Belo Horizonte and stands out in the regional landscape. This massif encloses a significant altitudinal gradient, along which different floristic formations succeed each other: montane Atlantic Forest, mostly secondary, high montane forest, full of bromeliads and other epiphytes, and rupestrian fields, which are replaced by high altitude fields or blend with these on the mountain tops. In addition to the RPPN Santuário Caraça, the area includes the unprotected portions of the massif until near Brumal (Santa Bárbara), at the base of the mountain.
Mining constitutes a threat to the natural environments in the region and has caused changes in some unprotected parts of the Serra do Caraça and its immediate surroundings. Burning in the rupestrian and high-altitude fields represents an additional important threat because it eliminates the native vegetation cover and opens the way for the invasion of alien plants to these peculiar environments.
Vale helps to protect areas contiguous to this RPPN and supports fire prevention and fighting actions in the region.
The area is in the surroundings of the Alegria mines, about 4-5 km away.

Indique se alguma das atividades da organização localizadas na área selecionada ou nas suas proximidades pode afetar negativamente a biodiversidade
Sim, mas foram implementadas medidas de mitigação

Medidas de mitigação implementadas na área selecionada
Criação do projeto
Controles operacionais
Controles da redução
Outro, especifique (Reducing the impact of vegetal suppression and reducing the impact to flora and fauna species)

Explique como as atividades da organização localizadas na área selecionada ou em suas proximidades podem afetar negativamente a biodiversidade, como isso foi avaliado e descreva eventuais medidas de mitigação implementadas
For the analysis of risks and impacts related to biodiversity, Vale hires a company that has the necessary experience to carry out a detailed study about the region and the environmental impact study. In addition, a bibliographic survey is carried out regarding local biodiversity to understand records and descriptions of fauna and flora. Moreover, field expeditions are scheduled before and during the implementation and operation of the project to ascertain abiotic and mainly biotic aspects. Finally, data on the main stakeholders are collected with the community relations teams in the territories, and for some studies, interviews are included with those considered a priority, within the socioeconomic studies.
The implementation of the mines in the Mariana Complex triggered habitat fragmentation due to vegetation suppression in the region that had the Atlantic Forest. The impact was characterized by environmental impact studies and scientific literature. And the species were quantified through fieldwork and scientific bibliography. In addition, the removal of vegetation cover is an impact that cannot be avoided or totally minimized. However, by following the environmental impact studies carried out, it is possible to develop conservation plans for areas with recorded occurrences or habitats for these species.
One of Vale's main initiatives to promote ecological balance and guarantee the conservation of natural resources and ecosystem services is the protection of natural areas. Therefore, the company owns some comprising Private Reserves of the Natural Heritage (RPPN), and properties for conservation with perpetual servitude conservation and future compensation. These areas are important witnesses of regional biodiversity, constituting remnants for the conservation of sensitive habitats and endangered and endemic species of flora and fauna. Currently, Vale maintains RPPNs in Minas Gerais and conservation areas with perpetual servitude, in the region of the Quadrilátero Ferrífero, protecting more than 12,800 ha of typical formations of the Atlantic Forest and transition with the Brazilian savanna. In the Mariana Complex, there are two RPPNs and compensation proposals from the enterprises with 2,610.09 ha of protected areas approved by the environmental agency. These are essential for establishing ecological corridors, improving functional connectivity and ultimately structuring metapopulations and maintaining populations of threatened species.

Classificação de área sensível para a biodiversidade
Área(s)-chave para a biodiversidade (KBAs)

País/área
Indonésia

Nome da área sensível para a biodiversidade
KBA Feruhumpenai - Matano

Proximidade
Adjacente

Descreva brevemente as atividades da organização localizadas na área selecionada ou nas suas proximidades no ano de reporte
Vale mines laterite nickel ore and processes it into the final product of nickel in matte in its operations in PTVI – PT Vale Indonesia.
Part of the mine area and the operation is adjacent (less than 5 km) to KBA Feruhumpenai – Matano and Danau Matano, a Nature Recreation Park, IUCN (International Union for Conservation of Nature) Category V. Vale uses Free IBAT Accounts and the Map Search of https://www.keybiodiversityareas.org/ to check overlap, but the company doesn't have the shapes of the KBAs, which makes it not possible to calculate the overlap area.

Indique se alguma das atividades da organização localizadas na área selecionada ou nas suas proximidades pode afetar negativamente a biodiversidade
Sim, mas foram implementadas medidas de mitigação

Medidas de mitigação implementadas na área selecionada
Controles operacionais

Explique como as atividades da organização localizadas na área selecionada ou em suas proximidades podem afetar negativamente a biodiversidade, como isso foi avaliado e descreva eventuais medidas de mitigação implementadas
The biodiversity management strategy of the PTVI project is materialized in the Environment Aspect & Impact Assessment (AMDAL).The AMDAL documents content covers all the information, guidelines and actions planned and executed required by the operations that contribute to mitigating adverse environmental impact, including the conservation of biodiversity and ecosystem services measures and it is available at the Ministry of Environment and Forestry, Provincial Environment Agency and Local Environment Agency.
To assess the biodiversity impacts with more accurate identification of the species surveyed, PTVI had the help of specialists, including botanists, mammals, herpetofauna, and avifauna expert for species identification. The field research took place both for fauna and flora. This method makes it possible to know the species of the region and to identify their respective conservation status.
Then, before vegetation suppression actions are carried out, Vale conduces seeds collection and then takes it to the nursery to produce seedlings for the subsequent recovery process of the mined areas. In this process, seedlings of various species are produced, including endemic and endangered species.
To support full-land rehabilitation activities, PT Vale has established a 2.5-hectare nursery that has been operating since April 2006, producing an average of 700,000 seedlings, and rehabilitating more than 100 ha of post-mining land per year.
PT Vale's nursery also produces various native and endemic species of plants as part of the biodiversity conservation program. Local plants include betao, bitti, nyatoh, and forest mangosteen. While for the endemic plants, there are ebony and dengen fruit. The local plant seeds are collected from the land to be mined or from cooperation with the local community.
Besides that, before mining activities were carried out, PT Vale ensured that no protected fauna or flora species were found at the mining site.
PT Vale also has a post-mining plan and biodiversity management, as an effort to conserve biodiversity, for 100% of its mining operation areas in the Sorowako block that refers to 2014 ESDM Minister Regulation No. 7 on Reclamation and Post-Mining.

Classificação de área sensível para a biodiversidade
Outra área sensível para a biodiversidade, especifique (Legally protected area)

País/área
Brasil

Nome da área sensível para a biodiversidade
Carajás National Forest

Proximidade
Sobreposição

Descreva brevemente as atividades da organização localizadas na área selecionada ou nas suas proximidades no ano de reporte
Mining in Carajás began in 1985, when the company was still owned by the Brazilian government. At the time, an advisory group of environmental specialists, formed by scientists from various areas, undertook a study that proposed to delimit an area to guarantee the development of the Mineral Province of Carajás and the protection of the forest and its resources.

The Carajás National Forest was created in 1998 with the premise of reconciling mining operations with biodiversity conservation. Its creation decree (Decree 2486 of February 2, 1998) allows mining activities within the National Forest and formalizes the partnership between Vale and the agency responsible for the protection and management of natural ecosystems. This protected area covers about 400 thousand hectares with a predominance of Open Ombrophilous Forest and Dense Ombrophilous Forest interspersed on the tops of the mountains by the ferruginous rock fields, within which part of the Carajás Mineral Complex is inserted.
The Carajás National Forest (FLONA) is one of the largest blocks of native vegetation in southeast Pará. covering the municipalities of Parauapebas, Canaã dos Carajás and Água Azul do Norte, it is managed by the Chico Mendes Institute for Biodiversity Conservation (ICMBio), with Vale's support. This region is renowned for its abundant mineral reserves and high biodiversity value and is recognized as a Key Biodiversity Area.
Vale support conservation, scientific research, inspection, and educational activities that take place within the Carajás National Forest.
The National Forest creation decree allows mining activity and brings the possibility of partnerships for the conservation of the area.
The calculation of the area affected by each Vale operation is reported annually by the operational areas directly to the Sustainability Directorate - Executive Management of Corporate Environmental Management in forms and is stored for information management, in a GIS tool. All these data and information are calculated and reported annually against the GRI indicators in the Sustainability Report, referring to biodiversity data (specifically MM1). This GIS platform also houses information about Vale's properties in its various areas of activity.

Indique se alguma das atividades da organização localizadas na área selecionada ou nas suas proximidades pode afetar negativamente a biodiversidade
Sim, mas foram implementadas medidas de mitigação

Medidas de mitigação implementadas na área selecionada
Controles operacionais

Explique como as atividades da organização localizadas na área selecionada ou em suas proximidades podem afetar negativamente a biodiversidade, como isso foi avaliado e descreva eventuais medidas de mitigação implementadas
Licensing in Carajás is a bottleneck for the company's strategic planning. The endemic/threatened species of Flora de Carajás have become a point of attention for inspection bodies and the absence of studies and conservation measures for these species may represent a reduction for future operational areas and weigh negatively on the company's environmental and sustainability agenda. ITV develops the initiative Rare, endemic and threatened plants of the Carajás FLONA: ecological and evolutionary studies applied to conservation, which investigates factors that influence the conservation of populations of rare, endemic and/or threatened plant species in the Carajás National Forest, with emphasis on potential vulnerabilities of these populations as they occur in areas under direct or indirect impact of mining to efficiently subsidize licensing processes, monitoring and management, mitigation and compensation actions. The set of accurate information on the species that will be collected in this project is generating and consolidating data on biodiversity in the company's areas of influence, aiming to understand the functioning of natural ecosystems and will feed models that inform decision makers about risks for the operation, in addition to subsidize actions aimed at managing endangered species and alternatives for conservation and restoration of priority areas. The results can contribute to cost reduction and optimization of licensing processes and compliance with conditions with Brazilian environmental agencies for the release of an area to be mined by Vale.

Classificação de área sensível para a biodiversidade
Área(s)-chave para a biodiversidade (KBAs)

País/área
Brasil

Nome da área sensível para a biodiversidade
Serra dos Carajás

Proximidade
Sobreposição

Descreva brevemente as atividades da organização localizadas na área selecionada ou nas suas proximidades no ano de reporte
The Carajás region is classified as an Important Bird Area, being classified as KBA in the World Database of Key Biodiversity Areas. The Serra dos Carajás KBA comprises a group of protected areas composed of the Tapirapé Biological Reserve and the Carajás, Itacaiúnas and Tapirapé-Aquiri National Forests, plus the Xikrin Indigenous Land of the Cateté River, all located in the Tocantins-Xingu interfluve, in central-eastern Pará. Part of the Carajás Mine Complex, which are inserted in the Carajás National Forest, have an overlap with this KBA.

Vale operations areas are reported annually by the operational areas directly to the Sustainability Directorate - Executive Management of Corporate Environmental Management in forms and is stored for information management, in a GIS tool. This information is the base to evaluate the overlap with high biodiversity value areas, together with public databases like the World Database on Protected Areas, the World Database of Key Biodiversity Areas, Ramsar Sites Information Service (RSIS) and others.

Indique se alguma das atividades da organização localizadas na área selecionada ou nas suas proximidades pode afetar negativamente a biodiversidade
Sim, mas foram implementadas medidas de mitigação

Medidas de mitigação implementadas na área selecionada
Criação do projeto

Explique como as atividades da organização localizadas na área selecionada ou em suas proximidades podem afetar negativamente a biodiversidade, como isso foi avaliado e descreva eventuais medidas de mitigação implementadas
The first stage of HMI is impact avoidance. Studying, knowing, and understanding important environmental attributes (species of interest for conservation, species and critical environments, and protected areas, among others) is the basis for assessing risks and impacts on biodiversity in areas of interest for expansions and new projects. It is essential to involve environmental teams along with engineering, planning, and project teams in short, medium, and long-term planning to avoid impacts within the scope of actions, such as "Working together with project engineering to minimize current and/or future areas of intervention" and the "Vegetation Suppression Minimization Subprogram," which are already implemented by the operational environmental teams.
Avoiding unnecessary interventions and certain impacts can directly affect licensing terms and costs with studies and programs related to licensing conditions.
Vale has been seeking to work with the Impact Mitigation Hierarchy (HMI) approach in pilot projects with the aim of developing adaptations and capturing opportunities to prevent and mitigate impacts, in addition to planning increasingly effective impact management and conservation actions for biodiversity.
Working with the biodiversity management strategy against the background of HMI is an opportunity to rethink the management process with a focus on organizing and improving performance, making it more effective and efficient to obtain a neutral or positive balance of impacts.

At the S11D Mine in Carajás, the collaboration between environmental, engineering, planning, and other agencies resulted in several changes to the master plan, which avoided impacts on over 1,100 hectares of natural habitat. The Project has made a commitment not to disturb the habitat of a key plant species within the mine footprint until research in propagation and translocation techniques are proven to enable the project to achieve no net loss for the species.
In addition, Vale's Biodiversity Management Plan in Carajás has a team dedicated to collecting seeds and propagules from Serra Norte. This team has been systematically collecting seeds (twice a month) in N3 and sending them to the “Banco Ativo de Germplasma (BAG)” from the National Center for Genetic Resources (Cenargen). This activity is expected to be continued in the N3 Plant Germplasm Saving Program.

C15.5

(C15.5) Quais ações a organização adotou no ano de reporte para progredir com seus compromissos relacionados à biodiversidade?

	A organização adotou alguma ação no período de reporte para progredir com seus compromissos relacionados à biodiversidade?	Tipo de ação adotada para o progresso dos compromissos relacionados à biodiversidade
Linha 1	Sim, estamos adotando ações para progredir com nossos compromissos relacionados à biodiversidade	Proteção do solo/água Gestão do solo/água Gestão das espécies Educação e conscientização Incentivos econômicos, de subsistência e outros

C15.6

(C15.6) A organização usa indicadores de biodiversidade para monitorar o desempenho em suas atividades?

	A organização usa indicadores para monitorar o desempenho em biodiversidade?	Indicadores utilizados para monitorar o desempenho em biodiversidade
Linha 1	Sim, utilizamos indicadores	Indicadores de estado e benefícios Indicadores de pressão Indicadores de resposta

C15.7

(C15.7) Além da resposta ao CDP, a organização publicou alguma informação sobre sua resposta a questões relacionadas à biodiversidade para este ano de reporte? Em caso afirmativo, anexe as publicações.

Tipo de reporte	Elementos do conteúdo	Anexe o documento e indique em que parte dele se encontram as informações de biodiversidade relevantes
Em um relatório de sustentabilidade voluntário ou outras comunicações voluntárias	Conteúdo dos compromissos ou das políticas relacionados à biodiversidade Governança Impactos na biodiversidade Detalhes sobre os indicadores de biodiversidade Riscos e oportunidades Estratégia de biodiversidade	Indication of the most relevant biodiversity content: Units/operations located in or adjacent to areas of high biodiversity value – page 49 Commitments – page 50 Actions – page 51 Integrated_Report_2022_Vale.pdf
Em um relatório de sustentabilidade voluntário ou outras comunicações voluntárias	Conteúdo dos compromissos ou das políticas relacionados à biodiversidade Detalhes sobre os indicadores de biodiversidade Riscos e oportunidades Estratégia de biodiversidade	Most relevant biodiversity content: “KPIs Reports”; Biodiversity strategy is in “Our Management”; Vision of Risks; Commitments are in “Voluntary Initiatives” and in “Commitments with Biodiversity Conservation”; Policies and Standards Biodiversity - ESG - Vale.pdf

C16. Aprovação

C-FI

(W-FI) Use este campo para fornecer informações ou contextos adicionais que considerar relevantes para a resposta da organização. Observe que este campo é opcional e não é pontuado.

In the absence of the CEO, the Chief Financial Officer (CFO) takes responsibility for approving Vale's CDP questionnaire responses.

C16.1

(C16.1) Dê detalhes sobre a pessoa que assinou (aprovou) a resposta sobre mudanças climáticas ao CDP.

	Cargo	Categoria de cargo correspondente
Linha 1	Executive Director of Finance and Investor Relations	Diretor Financeiro (CFO)

SC. Módulo do programa Supply Chain

SC0.0

(SC0.0) Se preferir, forneça uma introdução separada para este módulo.

Vale S.A. is one of the largest metals and mining companies in the world, based on market capitalization and one of the world's leading producers of iron ore and nickel, currently present in 18 countries and five continents. The company is headquartered in Rio de Janeiro, Brazil, has 215,000 employees (about 64,000 own and 151,000 outsourced), and also produces iron ore pellets, copper, and platinum group metals, gold, silver and cobalt as by-products of nickel and copper, besides being engaged in greenfield mineral exploration in six countries. In 2022, Vale fully divested on coal in April and on manganese (ferroalloy operations) in July. In addition, it operates large logistics systems in Brazil and other regions of the world, including railroads, maritime terminals and ports, which are integrated with its mining operations. The company has distribution centers to support the delivery of iron ore worldwide and also has investments in energy and steel businesses directly and through associates and joint ventures. Vale is a private, publicly traded organization and our purpose is "We exist to improve life and transform the future. Together". The company has the ambition to become a leader in sustainable mining and a benchmark for value creation and sharing with its shareholders, stakeholders, and society, besides being committed to improving its performance and contributing to enhancing the lives of people in the areas where it operates. Vale's Board of Directors (BD) has the role of overseeing and supporting our journey towards a more sustainable and safer mining model, allowing for the development of low-carbon solutions, combined with the creation of value for society and a focus on business discipline. Vale recognizes that climate change represents one of the greatest challenges for society and is committed to contributing to solutions that limit the increase in temperature by up to 2°C, as defined in the Paris Agreement (PA). Moreover, the company plays a fundamental role in the global energy transition, with its portfolio of high-quality iron ore products and solutions, essential for decarbonizing steelmaking, and as a producer of metals that are essential for global electrification. In this regard, Vale's BD updated the organization's net-zero strategy in 2019. Aiming to actively support the decarbonization of the steel, metallurgical and shipping chains, the company's main commitment is to become net-zero in its operations (scopes 1 & 2) by 2050, considering the target to reduce 33% of scopes 1&2 and the target to consume 100% of electricity from renewable sources by 2025 in Brazil, and globally in 2030. In addition, in 2020 Vale assumed the goal of reducing Scope 3 net emissions by 15% by 2035, compared to the base year of 2018, which is based on the development of new products, nature-based solutions, partnerships, and engagement with clients and suppliers. The reduction volume was defined based on the Science Based Target Initiative-SBTI calculation tool, Absolute Contraction Approach method. Therefore, to support these goals, an internal carbon price of USD50/tCO2e is in effect to guide Vale's capital allocation decisions aligned with the PA goals and with the 2ºC scenario, following the Carbon Pricing Leadership Coalition recommendations. In this process, the Executive Vice President for Sustainability deploys and monitor advances in the implementation of strategies and policies, and it's an agent of internal and external engagement, through actions and dialogue with stakeholders, as well as strengthening the relationship between Vale and society, being an important facilitator for the implementation of the New Pact with Society, one of Vale's strategic pillars. In addition, acting transparently and considering the expectations of its stakeholders is one of the company's pillars. One of the transparency initiatives related to climate change in which Vale participates, is the Task Force for Climate-Related Financial Disclosures (TCFD), an initiative that aims at promoting transparency regarding climate-related risks and opportunities. Some other relevant forums focused on climate change that Vale is part of are: International Council on Mining and Metals (ICMM), CDP, and the World Business Council for Sustainable Development (WBCSD). In 2020, Vale joined the CDP Supply Chain to report all actions and indicators focused on CO2e emissions in the value chain. Finally, Vale supports efforts to mitigate GHG emissions, in collaboration with peers, by promoting innovation, developing and deploying low emissions technology, and implementing projects that improve energy efficiency. The answers in the CDP questionnaire refer to 100% of Vale's operating units and to the companies over which Vale has operational control, that is, its subsidiaries in Brazil and other countries. This group of entities is called "Grupo Vale". For additional details access https://www.vale.com/web/esg/

SC0.1

(SC0.1) Qual é a receita anual da sua empresa para o período de referência declarado?

	Receita anual
Linha 1	43839000000

SC1.1

(SC1.1) Aloque as emissões da empresa para os clientes listados abaixo, de acordo com os bens e serviços que a organização vendeu para eles neste período de reporte.

Membro solicitante
Kobe Steel, Ltd.

Escopo das emissões
Escopo 1

Método de contabilização do Escopo 2
<Not Applicable>

Categoria(s) do Escopo 3
<Not Applicable>

Nível de alocação
Instalação

Detalhes do nível de alocação
Contributing emissions are tracked at the facility level to accurately reflect attribution to final products as they travel through multiple facilities.

Emissões em toneladas métricas de CO2e
28398

Incerteza (±%)
5

Principais fontes de emissões
Base Metals: Combustion fuel and reductant to the process, mobile equipment fuels.
BBC4: Combustion fuel in mobile equipment in mining operations and railway.

Verificada(s)
Sim

Método de alocação

Alocação com base na massa dos produtos adquiridos

Valor de mercado ou quantidade de bens/serviços fornecidos ao membro solicitante
969179

Unidade do valor de mercado ou da quantidade de bens/serviços fornecidos
Toneladas métricas

Explique como foi identificada a fonte de GEEs, incluindo as principais limitações a este processo e suposições adotadas
Process and utility consumption that relate to GHG emissions are tracked at the site level (e.g., fuel, electricity, explosives, process reagents). The corresponding data are input to Vale's software by nominated site contributors on a monthly basis.
• The data is then approved and locked by Vale's Climate Change Team.
• The software is configured with emissions factors relevant to each of the inputs, including but not limited to: regional electricity generation, fuel combustion for a variety of fuel blends. The emissions factors are collected and reviewed from reputable sources such as IPCC, IEA, Governmental Publications.
• Consumption quantities and emissions factors are combined to calculate the Scope 1 and 2 GHG emissions at the asset level. For example: fuel consumption at site in litres x emission factor of tonnes CO2e emitted per litre of fuel.
• Results are consolidated into annual inventories which receive third party assurance and are suited to adhere to public reporting such as Vale Integrated Reports, Climate Change Reports, GRI, SASB, TCFD, etc.

Membro solicitante
Kobe Steel, Ltd.

Escopo das emissões
Escopo 2

Método de contabilização do Escopo 2
Com base no mercado

Categoria(s) do Escopo 3
<Not Applicable>

Nível de alocação
Instalação

Detalhes do nível de alocação
Contributing emissions are tracked at the facility level to accurately reflect attribution to final products as they travel through multiple facilities.

Emissões em toneladas métricas de CO2e
290

Incerteza (±%)
5

Principais fontes de emissões
Scope 2 emissions are predominantly from purchased grid power in Japan and electricity consumption in Brazilian operations of renewable PPAs.

Verificada(s)
Sim

Método de alocação
Alocação com base na massa dos produtos adquiridos

Valor de mercado ou quantidade de bens/serviços fornecidos ao membro solicitante
969179

Unidade do valor de mercado ou da quantidade de bens/serviços fornecidos
Toneladas métricas

Explique como foi identificada a fonte de GEEs, incluindo as principais limitações a este processo e suposições adotadas
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• Consumption quantities and emissions factors are combined to calculate the Scope 1 and 2 GHG emissions at the asset level. For example: fuel consumption at site in litres x emission factor of tonnes CO2e emitted per litre of fuel.
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Membro solicitante
Kobe Steel, Ltd.

Escopo das emissões
Escopo 3

Método de contabilização do Escopo 2
<Not Applicable>

Categoria(s) do Escopo 3
Categoria 1: Bens e serviços adquiridos
Categoria 2: Bens de capital
Categoria 3: Atividades relacionadas a combustíveis e energia (não incluídas nos Escopos 1 ou 2)
Categoria 4: Transporte e distribuição upstream

Nível de alocação
Instalação

Detalhes do nível de alocação

Contributing emissions are tracked at the facility level to accurately reflect attribution to final products as they travel through multiple facilities.

Emissões em toneladas métricas de CO2e
42502

Incerteza (±%)
15

Principais fontes de emissões
Base metals: Scope 3 emissions are largely attributed to upstream fuel production (e.g., diesel, natural gas), as well as process reagent production (e.g., lime).
BBC4: Scope 3 emissions are largely attributed to upstream production of fuels (e.g. diesel) and other materials (e.g. mill balls).

Verificada(s)
Sim

Método de alocação
Alocação com base na massa dos produtos adquiridos

Valor de mercado ou quantidade de bens/serviços fornecidos ao membro solicitante
969179

Unidade do valor de mercado ou da quantidade de bens/serviços fornecidos
Toneladas métricas

Explique como foi identificada a fonte de GEEs, incluindo as principais limitações a este processo e suposições adotadas
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• The software is configured with emissions factors relevant to each of the inputs, including but not limited to: regional electricity generation, fuel combustion for a variety of fuel blends. The emissions factors are collected and reviewed from reputable sources such as IPCC, IEA, Governmental Publications.
• Consumption quantities and emissions factors are combined to calculate the GHG emissions at the asset level. For example: fuel consumption at site in litres x emission factor of tonnes CO2e emitted per litre of fuel.
• Results are consolidated into annual inventories which receive third party assurance and are suited to adhere to public reporting such as Vale Integrated Reports, Climate Change Reports, GRI, SASB, TCFD, etc.

Membro solicitante
Gerdau S/A

Escopo das emissões
Escopo 1

Método de contabilização do Escopo 2
<Not Applicable>

Categoria(s) do Escopo 3
<Not Applicable>

Nível de alocação
Instalação

Detalhes do nível de alocação
Contributing emissions are tracked at the facility level to accurately reflect attribution to final products as they travel through multiple facilities.

Emissões em toneladas métricas de CO2e
30103

Incerteza (±%)
5

Principais fontes de emissões
For ferronickel product: combustion fuel and reductant to the RKEF process, mobile equipment fuels.
For nickel rounds: mobile fuel and stationary fuel combustion for mining activities, stationary combustion for steam generation, and process and reagent emissions.
For nickel discs: process combustion (thermal) fuel, mobile fuels for mining, and process reagents.
For AF40 product: Process emissions, combustion fuel in stationary equipment and in mobile equipment in mining operations, shipping emissions.

Verificada(s)
Sim

Método de alocação
Alocação com base na massa dos produtos adquiridos

Valor de mercado ou quantidade de bens/serviços fornecidos ao membro solicitante
280999

Unidade do valor de mercado ou da quantidade de bens/serviços fornecidos
Toneladas métricas

Explique como foi identificada a fonte de GEEs, incluindo as principais limitações a este processo e suposições adotadas
• Process and utility consumption that relate to GHG emissions are tracked at the site level (e.g., fuel, electricity, explosives, process reagents). The corresponding data are input to Vale's software by nominated site contributors on a monthly basis.
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• Consumption quantities and emissions factors are combined to calculate the GHG emissions at the asset level. For example: fuel consumption at site in litres x emission factor of tonnes CO2e emitted per litre of fuel.
• Results are consolidated into annual inventories which receive third party assurance and are suited to adhere to public reporting such as Vale Integrated Reports, Climate Change Reports, GRI, SASB, TCFD, etc.

Membro solicitante
Gerdau S/A

Escopo das emissões
Escopo 2

Método de contabilização do Escopo 2
Com base no mercado

Categoria(s) do Escopo 3
<Not Applicable>

Nível de alocação
Instalação

Detalhes do nível de alocação
Contributing emissions are tracked at the facility level to accurately reflect attribution to final products as they travel through multiple facilities.

Emissões em toneladas métricas de CO2e
268

Incerteza (±%)
5

Principais fontes de emissões
Scope 2 emissions are predominantly from a relatively low-carbon Canadian electricity grid and electricity consumption in Brazilian operations of renewable PPAs.

Verificada(s)
Sim

Método de alocação
Alocação com base na massa dos produtos adquiridos

Valor de mercado ou quantidade de bens/serviços fornecidos ao membro solicitante
280999

Unidade do valor de mercado ou da quantidade de bens/serviços fornecidos
Toneladas métricas

Explique como foi identificada a fonte de GEEs, incluindo as principais limitações a este processo e suposições adotadas
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• The data is then approved and locked by Vale's Climate Change Team.
• The software is configured with emissions factors relevant to each of the inputs, including but not limited to: regional electricity generation, fuel combustion for a variety of fuel blends. The emissions factors are collected and reviewed from reputable sources such as IPCC, IEA, Governmental Publications.
• Consumption quantities and emissions factors are combined to calculate the GHG emissions at the asset level. For example: fuel consumption at site in litres x emission factor of tonnes CO2e emitted per litre of fuel.
• Results are consolidated into annual inventories which receive third party assurance and are suited to adhere to public reporting such as Vale Integrated Reports, Climate Change Reports, GRI, SASB, TCFD, etc.

Membro solicitante
Gerdau S/A

Escopo das emissões
Escopo 3

Método de contabilização do Escopo 2
<Not Applicable>

Categoria(s) do Escopo 3
Categoria 1: Bens e serviços adquiridos
Categoria 2: Bens de capital
Categoria 3: Atividades relacionadas a combustíveis e energia (não incluídas nos Escopos 1 ou 2)
Categoria 4: Transporte e distribuição upstream

Nível de alocação
Instalação

Detalhes do nível de alocação
Contributing emissions are tracked at the facility level to accurately reflect attribution to final products as they travel through multiple facilities.

Emissões em toneladas métricas de CO2e
15060

Incerteza (±%)
15

Principais fontes de emissões
Base metals: Scope 3 emissions are largely attributed to upstream fuel production (e.g., diesel, natural gas), as well as process reagent production (e.g., lime).
AF40: Scope 3 emissions are largely attributed to upstream production of fuels (e.g., anthracite, natural gas), process additives (e.g., lime) and other materials (e.g. mill balls), as well as transportation of products.

Verificada(s)
Sim

Método de alocação
Alocação com base na massa dos produtos adquiridos

Valor de mercado ou quantidade de bens/serviços fornecidos ao membro solicitante

280999

Unidade do valor de mercado ou da quantidade de bens/serviços fornecidos
Toneladas métricas

Explique como foi identificada a fonte de GEEs, incluindo as principais limitações a este processo e suposições adotadas
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• Consumption quantities and emissions factors are combined to calculate the GHG emissions at the asset level. For example: fuel consumption at site in litres x emission factor of tonnes CO2e emitted per litre of fuel.
• Results are consolidated into annual inventories which receive third party assurance and are suited to adhere to public reporting such as Vale Integrated Reports, Climate Change Reports, GRI, SASB, TCFD, etc.

Membro solicitante
Melrose PLC

Escopo das emissões
Escopo 1

Método de contabilização do Escopo 2
<Not Applicable>

Categoria(s) do Escopo 3
<Not Applicable>

Nível de alocação
Instalação

Detalhes do nível de alocação
Contributing emissions are tracked at the facility level to accurately reflect attribution to final products as they travel through multiple facilities.

Emissões em toneladas métricas de CO2e
3641

Incerteza (±%)
5

Principais fontes de emissões
Process combustion (thermal) fuel, mobile fuels for mining, and process reagents.

Verificada(s)
Sim

Método de alocação
Alocação com base na massa dos produtos adquiridos

Valor de mercado ou quantidade de bens/serviços fornecidos ao membro solicitante
743

Unidade do valor de mercado ou da quantidade de bens/serviços fornecidos
Toneladas métricas

Explique como foi identificada a fonte de GEEs, incluindo as principais limitações a este processo e suposições adotadas
• Process and utility consumption that relate to GHG emissions are tracked at the site level (e.g., fuel, electricity, explosives, process reagents). The corresponding data are input to Vale's software by nominated site contributors on a monthly basis.
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• Consumption quantities and emissions factors are combined to calculate the GHG emissions at the asset level. For example: fuel consumption at site in litres x emission factor of tonnes CO2e emitted per litre of fuel.
• Results are consolidated into annual inventories which receive third party assurance and are suited to adhere to public reporting such as Vale Integrated Reports, Climate Change Reports, GRI, SASB, TCFD, etc.

Membro solicitante
Melrose PLC

Escopo das emissões
Escopo 2

Método de contabilização do Escopo 2
Com base no mercado

Categoria(s) do Escopo 3
<Not Applicable>

Nível de alocação
Instalação

Detalhes do nível de alocação
Contributing emissions are tracked at the facility level to accurately reflect attribution to final products as they travel through multiple facilities.

Emissões em toneladas métricas de CO2e
223

Incerteza (±%)

5

Principais fontes de emissões
Scope 2 emissions are predominantly from a relatively low-carbon Canadian electricity grid.

Verificada(s)
Sim

Método de alocação
Alocação com base na massa dos produtos adquiridos

Valor de mercado ou quantidade de bens/serviços fornecidos ao membro solicitante
743

Unidade do valor de mercado ou da quantidade de bens/serviços fornecidos
Toneladas métricas

Explique como foi identificada a fonte de GEEs, incluindo as principais limitações a este processo e suposições adotadas
• Process and utility consumption that relate to GHG emissions are tracked at the site level (e.g., fuel, electricity, explosives, process reagents). The corresponding data are input to Vale's software by nominated site contributors on a monthly basis.
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• Consumption quantities and emissions factors are combined to calculate the GHG emissions at the asset level. For example: fuel consumption at site in litres x emission factor of tonnes CO2e emitted per litre of fuel.
• Results are consolidated into annual inventories which receive third party assurance and are suited to adhere to public reporting such as Vale Integrated Reports, Climate Change Reports, GRI, SASB, TCFD, etc.

Membro solicitante
Melrose PLC

Escopo das emissões
Escopo 3

Método de contabilização do Escopo 2
<Not Applicable>

Categoria(s) do Escopo 3
Categoria 1: Bens e serviços adquiridos
Categoria 3: Atividades relacionadas a combustíveis e energia (não incluídas nos Escopos 1 ou 2)

Nível de alocação
Instalação

Detalhes do nível de alocação
Contributing emissions are tracked at the facility level to accurately reflect attribution to final products as they travel through multiple facilities.

Emissões em toneladas métricas de CO2e
1412

Incerteza (±%)
15

Principais fontes de emissões
Scope 3 emissions are largely attributed to upstream fuel production (e.g., diesel, natural gas), as well as process reagent production (e.g., lime).

Verificada(s)
Sim

Método de alocação
Alocação com base na massa dos produtos adquiridos

Valor de mercado ou quantidade de bens/serviços fornecidos ao membro solicitante
743

Unidade do valor de mercado ou da quantidade de bens/serviços fornecidos
Toneladas métricas

Explique como foi identificada a fonte de GEEs, incluindo as principais limitações a este processo e suposições adotadas
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• Consumption quantities and emissions factors are combined to calculate the GHG emissions at the asset level. For example: fuel consumption at site in litres x emission factor of tonnes CO2e emitted per litre of fuel.
• Results are consolidated into annual inventories which receive third party assurance and are suited to adhere to public reporting such as Vale Integrated Reports, Climate Change Reports, GRI, SASB, TCFD, etc.

Membro solicitante
Johnson Matthey

Escopo das emissões
Escopo 1

Método de contabilização do Escopo 2
<Not Applicable>

Categoria(s) do Escopo 3
<Not Applicable>

Nível de alocação
Instalação

Detalhes do nível de alocação
Contributing emissions are tracked at the facility level to accurately reflect attribution to final products as they travel through multiple facilities.

Emissões em toneladas métricas de CO2e
1976

Incerteza (±%)
5

Principais fontes de emissões
Mobile fuel and stationary fuel combustion for mining activities, stationary combustion for steam generation, and process emissions and reagent emissions.

Verificada(s)
Sim

Método de alocação
Alocação com base na massa dos produtos adquiridos

Valor de mercado ou quantidade de bens/serviços fornecidos ao membro solicitante
520

Unidade do valor de mercado ou da quantidade de bens/serviços fornecidos
Toneladas métricas

Explique como foi identificada a fonte de GEEs, incluindo as principais limitações a este processo e suposições adotadas
• Process and utility consumption that relate to GHG emissions are tracked at the site level (e.g., fuel, electricity, explosives, process reagents). The corresponding data are input to Vale's software by nominated site contributors on a monthly basis.
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• Consumption quantities and emissions factors are combined to calculate the GHG emissions at the asset level. For example: fuel consumption at site in litres x emission factor of tonnes CO2e emitted per litre of fuel.
• Results are consolidated into annual inventories which receive third party assurance and are suited to adhere to public reporting such as Vale Integrated Reports, Climate Change Reports, GRI, SASB, TCFD, etc.

Membro solicitante
Johnson Matthey

Escopo das emissões
Escopo 2

Método de contabilização do Escopo 2
Com base no mercado

Categoria(s) do Escopo 3
<Not Applicable>

Nível de alocação
Instalação

Detalhes do nível de alocação
Contributing emissions are tracked at the facility level to accurately reflect attribution to final products as they travel through multiple facilities.

Emissões em toneladas métricas de CO2e
104

Incerteza (±%)
5

Principais fontes de emissões
Scope 2 emissions are predominantly from a relatively low-carbon Canadian electricity grid.

Verificada(s)
Sim

Método de alocação
Alocação com base na massa dos produtos adquiridos

Valor de mercado ou quantidade de bens/serviços fornecidos ao membro solicitante
520

Unidade do valor de mercado ou da quantidade de bens/serviços fornecidos
Toneladas métricas

Explique como foi identificada a fonte de GEEs, incluindo as principais limitações a este processo e suposições adotadas
• Process and utility consumption that relate to GHG emissions are tracked at the site level (e.g., fuel, electricity, explosives, process reagents). The corresponding data are input to Vale's software by nominated site contributors on a monthly basis.
• The data is then approved and locked by Vale's Climate Change Team.
• The software is configured with emissions factors relevant to each of the inputs, including but not limited to: regional electricity generation, fuel combustion for a variety of fuel blends. The emissions factors are collected and reviewed from reputable sources such as IPCC, IEA, Governmental Publications.
• Consumption quantities and emissions factors are combined to calculate the GHG emissions at the asset level. For example: fuel consumption at site in litres x emission factor of tonnes CO2e emitted per litre of fuel.
• Results are consolidated into annual inventories which receive third party assurance and are suited to adhere to public reporting such as Vale Integrated Reports, Climate

Change Reports, GRI, SASB, TCFD, etc.

Membro solicitante
Johnson Matthey

Escopo das emissões
Escopo 3

Método de contabilização do Escopo 2
<Not Applicable>

Categoria(s) do Escopo 3
Categoria 1: Bens e serviços adquiridos
Categoria 3: Atividades relacionadas a combustíveis e energia (não incluídas nos Escopos 1 ou 2)

Nível de alocação
Instalação

Detalhes do nível de alocação
Contributing emissions are tracked at the facility level to accurately reflect attribution to final products as they travel through multiple facilities.

Emissões em toneladas métricas de CO2e
1144

Incerteza (±%)
15

Principais fontes de emissões
Scope 3 emissions are largely attributed to upstream fuel production (e.g., diesel, natural gas), as well as process reagent production (e.g., lime).

Verificada(s)
Sim

Método de alocação
Alocação com base na massa dos produtos adquiridos

Valor de mercado ou quantidade de bens/serviços fornecidos ao membro solicitante
520

Unidade do valor de mercado ou da quantidade de bens/serviços fornecidos
Toneladas métricas

Explique como foi identificada a fonte de GEEs, incluindo as principais limitações a este processo e suposições adotadas
• Process and utility consumption that relate to GHG emissions are tracked at the site level (e.g., fuel, electricity, explosives, process reagents). The corresponding data are input to Vale's software by nominated site contributors on a monthly basis.
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• Consumption quantities and emissions factors are combined to calculate the GHG emissions at the asset level. For example: fuel consumption at site in litres x emission factor of tonnes CO2e emitted per litre of fuel.
• Results are consolidated into annual inventories which receive third party assurance and are suited to adhere to public reporting such as Vale Integrated Reports, Climate Change Reports, GRI, SASB, TCFD, etc.

Membro solicitante
SABIC

Escopo das emissões
Escopo 1

Método de contabilização do Escopo 2
<Not Applicable>

Categoria(s) do Escopo 3
<Not Applicable>

Nível de alocação
Instalação

Detalhes do nível de alocação
Contributing emissions are tracked at the facility level to accurately reflect attribution to final products as they travel through multiple facilities.

Emissões em toneladas métricas de CO2e
195725

Incerteza (±%)
5

Principais fontes de emissões
RM80: Process emissions, combustion fuel in stationary equipment, combustion in mobile equipment (e.g. mining operations and railways), and shipping emissions.

Verificada(s)
Sim

Método de alocação
Alocação com base na massa dos produtos adquiridos

Valor de mercado ou quantidade de bens/serviços fornecidos ao membro solicitante
2940808

Unidade do valor de mercado ou da quantidade de bens/serviços fornecidos

Toneladas métricas

Explique como foi identificada a fonte de GEEs, incluindo as principais limitações a este processo e suposições adotadas
Process and utility consumption that relate to GHG emissions are tracked at the site level (e.g., fuel, electricity, explosives, process reagents). The corresponding data are input to Vale's software by nominated site contributors on a monthly basis.
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• Consumption quantities and emissions factors are combined to calculate the Scope 1 and 2 GHG emissions at the asset level. For example: fuel consumption at site in litres x emission factor of tonnes CO2e emitted per litre of fuel.
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Membro solicitante
SABIC

Escopo das emissões
Escopo 2

Método de contabilização do Escopo 2
Com base no mercado

Categoria(s) do Escopo 3
<Not Applicable>

Nível de alocação
Instalação

Detalhes do nível de alocação
Contributing emissions are tracked at the facility level to accurately reflect attribution to final products as they travel through multiple facilities.

Emissões em toneladas métricas de CO2e
54784

Incerteza (±%)
5

Principais fontes de emissões
Scope 2 emissions are predominantly from purchased grid power in Oman.

Verificada(s)
Sim

Método de alocação
Alocação com base na massa dos produtos adquiridos

Valor de mercado ou quantidade de bens/serviços fornecidos ao membro solicitante
2940808

Unidade do valor de mercado ou da quantidade de bens/serviços fornecidos
Toneladas métricas

Explique como foi identificada a fonte de GEEs, incluindo as principais limitações a este processo e suposições adotadas
• Process and utility consumption that relate to GHG emissions are tracked at the site level (e.g., fuel, electricity, explosives, process reagents). The corresponding data are input to Vale's software by nominated site contributors on a monthly basis.
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Membro solicitante
SABIC

Escopo das emissões
Escopo 3

Método de contabilização do Escopo 2
<Not Applicable>

Categoria(s) do Escopo 3
Categoria 1: Bens e serviços adquiridos
Categoria 2: Bens de capital
Categoria 3: Atividades relacionadas a combustíveis e energia (não incluídas nos Escopos 1 ou 2)
Categoria 4: Transporte e distribuição upstream

Nível de alocação
Instalação

Detalhes do nível de alocação
Contributing emissions are tracked at the facility level to accurately reflect attribution to final products as they travel through multiple facilities.

Emissões em toneladas métricas de CO2e
178317

Incerteza (±%)

15

Principais fontes de emissões
RM80: Scope 3 emissions are largely attributed to upstream production of fuels (e.g., anthracite, natural gas), process additives (e.g., lime) and other materials (e.g. mill balls), as well as transportation of products.

Verificada(s)
Sim

Método de alocação
Alocação com base na massa dos produtos adquiridos

Valor de mercado ou quantidade de bens/serviços fornecidos ao membro solicitante
2940808

Unidade do valor de mercado ou da quantidade de bens/serviços fornecidos
Toneladas métricas

Explique como foi identificada a fonte de GEEs, incluindo as principais limitações a este processo e suposições adotadas
• Process and utility consumption that relate to GHG emissions are tracked at the site level (e.g., fuel, electricity, explosives, process reagents). The corresponding data are input to Vale's software by nominated site contributors on a monthly basis.
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• Consumption quantities and emissions factors are combined to calculate the GHG emissions at the asset level. For example: fuel consumption at site in litres x emission factor of tonnes CO2e emitted per litre of fuel.
• Results are consolidated into annual inventories which receive third party assurance and are suited to adhere to public reporting such as Vale Integrated Reports, Climate Change Reports, GRI, SASB, TCFD, etc.

Membro solicitante
TDK Corporation

Escopo das emissões
Escopo 1

Método de contabilização do Escopo 2
<Not Applicable>

Categoria(s) do Escopo 3
<Not Applicable>

Nível de alocação
Instalação

Detalhes do nível de alocação
Contributing emissions are tracked at the facility level to accurately reflect attribution to final products as they travel through multiple facilities.

Emissões em toneladas métricas de CO2e
701

Incerteza (±%)
5

Principais fontes de emissões
For nickel rounds: mobile fuel and stationary fuel combustion for mining activities, stationary combustion for steam generation, and process and reagent emissions.
For nickel pellets: process combustion (thermal) fuel, mobile fuels for mining, and process reagents.

Verificada(s)
Sim

Método de alocação
Alocação com base na massa dos produtos adquiridos

Valor de mercado ou quantidade de bens/serviços fornecidos ao membro solicitante
64

Unidade do valor de mercado ou da quantidade de bens/serviços fornecidos
Toneladas métricas

Explique como foi identificada a fonte de GEEs, incluindo as principais limitações a este processo e suposições adotadas
• Process and utility consumption that relate to GHG emissions are tracked at the site level (e.g., fuel, electricity, explosives, process reagents). The corresponding data are input to Vale's software by nominated site contributors on a monthly basis.
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• Consumption quantities and emissions factors are combined to calculate the Scope 1 and 2 GHG emissions at the asset level. For example: fuel consumption at site in litres x emission factor of tonnes CO2e emitted per litre of fuel.
• Results are consolidated into annual inventories which receive third party assurance and are suited to adhere to public reporting such as Vale Integrated Reports, Climate Change Reports, GRI, SASB, TCFD, etc.

Membro solicitante
TDK Corporation

Escopo das emissões
Escopo 2

Método de contabilização do Escopo 2
Com base no mercado

Categoria(s) do Escopo 3
<Not Applicable>

Nível de alocação
Instalação

Detalhes do nível de alocação
Contributing emissions are tracked at the facility level to accurately reflect attribution to final products as they travel through multiple facilities.

Emissões em toneladas métricas de CO2e
16

Incerteza (±%)
5

Principais fontes de emissões
Scope 2 emissions are predominantly from the electricity grid.

Verificada(s)
Sim

Método de alocação
Alocação com base na massa dos produtos adquiridos

Valor de mercado ou quantidade de bens/serviços fornecidos ao membro solicitante
64

Unidade do valor de mercado ou da quantidade de bens/serviços fornecidos
Toneladas métricas

Explique como foi identificada a fonte de GEEs, incluindo as principais limitações a este processo e suposições adotadas
• Process and utility consumption that relate to GHG emissions are tracked at the site level (e.g., fuel, electricity, explosives, process reagents). The corresponding data are input to Vale's software by nominated site contributors on a monthly basis.
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Membro solicitante
TDK Corporation

Escopo das emissões
Escopo 3

Método de contabilização do Escopo 2
<Not Applicable>

Categoria(s) do Escopo 3
Categoria 1: Bens e serviços adquiridos
Categoria 3: Atividades relacionadas a combustíveis e energia (não incluídas nos Escopos 1 ou 2)

Nível de alocação
Instalação

Detalhes do nível de alocação
Contributing emissions are tracked at the facility level to accurately reflect attribution to final products as they travel through multiple facilities.

Emissões em toneladas métricas de CO2e
197

Incerteza (±%)
15

Principais fontes de emissões
Scope 3 emissions are largely attributed to upstream fuel production (e.g., diesel, natural gas), as well as process reagent production (e.g., lime).

Verificada(s)
Sim

Método de alocação
Alocação com base na massa dos produtos adquiridos

Valor de mercado ou quantidade de bens/serviços fornecidos ao membro solicitante
64

Unidade do valor de mercado ou da quantidade de bens/serviços fornecidos
Toneladas métricas

Explique como foi identificada a fonte de GEEs, incluindo as principais limitações a este processo e suposições adotadas
• Process and utility consumption that relate to GHG emissions are tracked at the site level (e.g., fuel, electricity, explosives, process reagents). The corresponding data are input to Vale's software by nominated site contributors on a monthly basis.
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• Consumption quantities and emissions factors are combined to calculate the GHG emissions at the asset level. For example: fuel consumption at site in litres x emission factor of tonnes CO2e emitted per litre of fuel.

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Membro solicitante
Swiss Steel Holding AG

Escopo das emissões
Escopo 1

Método de contabilização do Escopo 2
<Not Applicable>

Categoria(s) do Escopo 3
<Not Applicable>

Nível de alocação
Instalação

Detalhes do nível de alocação
Contributing emissions are tracked at the facility level to accurately reflect attribution to final products as they travel through multiple facilities.

Emissões em toneladas métricas de CO2e
250

Incerteza (±%)
5

Principais fontes de emissões
For ferronickel product: combustion fuel and reductant to the RKEF process, mobile equipment fuels.

Verificada(s)
Sim

Método de alocação
Alocação com base na massa dos produtos adquiridos

Valor de mercado ou quantidade de bens/serviços fornecidos ao membro solicitante
44

Unidade do valor de mercado ou da quantidade de bens/serviços fornecidos
Toneladas métricas

Explique como foi identificada a fonte de GEEs, incluindo as principais limitações a este processo e suposições adotadas
• Process and utility consumption that relate to GHG emissions are tracked at the site level (e.g., fuel, electricity, explosives, process reagents). The corresponding data are input to Vale's software by nominated site contributors on a monthly basis.
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• Results are consolidated into annual inventories which receive third party assurance and are suited to adhere to public reporting such as Vale Integrated Reports, Climate Change Reports, GRI, SASB, TCFD, etc.

Note: The products sold by Vale to Swiss Steel Holding AG were purchased by Ascometal, which is a company belonging to the Swiss Steel group.

Membro solicitante
Swiss Steel Holding AG

Escopo das emissões
Escopo 2

Método de contabilização do Escopo 2
Com base no mercado

Categoria(s) do Escopo 3
<Not Applicable>

Nível de alocação
Instalação

Detalhes do nível de alocação
Contributing emissions are tracked at the facility level to accurately reflect attribution to final products as they travel through multiple facilities.

Emissões em toneladas métricas de CO2e
0

Incerteza (±%)
5

Principais fontes de emissões
Scope 2 emissions are predominantly from the electricity grid.

Verificada(s)
Sim

Método de alocação
Alocação com base na massa dos produtos adquiridos

Valor de mercado ou quantidade de bens/serviços fornecidos ao membro solicitante

44

Unidade do valor de mercado ou da quantidade de bens/serviços fornecidos
Toneladas métricas

Explique como foi identificada a fonte de GEEs, incluindo as principais limitações a este processo e suposições adotadas
• Process and utility consumption that relate to GHG emissions are tracked at the site level (e.g., fuel, electricity, explosives, process reagents). The corresponding data are input to Vale's software by nominated site contributors on a monthly basis.
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Note: The products sold by Vale to Swiss Steel Holding AG were purchased by Ascometal, which is a company belonging to the Swiss Steel group.

Membro solicitante
Swiss Steel Holding AG

Escopo das emissões
Escopo 3

Método de contabilização do Escopo 2
<Not Applicable>

Categoria(s) do Escopo 3
Categoria 1: Bens e serviços adquiridos
Categoria 3: Atividades relacionadas a combustíveis e energia (não incluídas nos Escopos 1 ou 2)

Nível de alocação
Instalação

Detalhes do nível de alocação
Contributing emissions are tracked at the facility level to accurately reflect attribution to final products as they travel through multiple facilities.

Emissões em toneladas métricas de CO2e
48

Incerteza (±%)
15

Principais fontes de emissões
Scope 3 emissions are largely attributed to upstream fuel production (e.g., diesel, natural gas), as well as process reagent production (e.g., lime).

Verificada(s)
Sim

Método de alocação
Alocação com base na massa dos produtos adquiridos

Valor de mercado ou quantidade de bens/serviços fornecidos ao membro solicitante
44

Unidade do valor de mercado ou da quantidade de bens/serviços fornecidos
Toneladas métricas

Explique como foi identificada a fonte de GEEs, incluindo as principais limitações a este processo e suposições adotadas
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Note: The products sold by Vale to Swiss Steel Holding AG were purchased by Ascometal, which is a company belonging to the Swiss Steel group.

Membro solicitante
Schlumberger Limited

Escopo das emissões
Escopo 1

Método de contabilização do Escopo 2
<Not Applicable>

Categoria(s) do Escopo 3
<Not Applicable>

Nível de alocação
Instalação

Detalhes do nível de alocação
Contributing emissions are tracked at the facility level to accurately reflect attribution to final products as they travel through multiple facilities.

Emissões em toneladas métricas de CO2e
539

Incerteza (±%)
5

Principais fontes de emissões
Process combustion (thermal) fuel, mobile fuels for mining, and process reagents.

Verificada(s)
Sim

Método de alocação
Alocação com base na massa dos produtos adquiridos

Valor de mercado ou quantidade de bens/serviços fornecidos ao membro solicitante
110

Unidade do valor de mercado ou da quantidade de bens/serviços fornecidos
Toneladas métricas

Explique como foi identificada a fonte de GEEs, incluindo as principais limitações a este processo e suposições adotadas
• Process and utility consumption that relate to GHG emissions are tracked at the site level (e.g., fuel, electricity, explosives, process reagents). The corresponding data are input to Vale's software by nominated site contributors on a monthly basis.
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• Results are consolidated into annual inventories which receive third party assurance and are suited to adhere to public reporting such as Vale Integrated Reports, Climate Change Reports, GRI, SASB, TCFD, etc.

Note: The products sold by Vale to Schlumberger Limited were purchased by REDA PRODUCTION SYSTEMS which is a subsidiary of Schlumberger Limited.

Membro solicitante
Schlumberger Limited

Escopo das emissões
Escopo 2

Método de contabilização do Escopo 2
Com base no mercado

Categoria(s) do Escopo 3
<Not Applicable>

Nível de alocação
Instalação

Detalhes do nível de alocação
Contributing emissions are tracked at the facility level to accurately reflect attribution to final products as they travel through multiple facilities.

Emissões em toneladas métricas de CO2e
33

Incerteza (±%)
5

Principais fontes de emissões
Scope 2 emissions are predominantly from a relatively low-carbon Canadian electricity grid.

Verificada(s)
Sim

Método de alocação
Alocação com base na massa dos produtos adquiridos

Valor de mercado ou quantidade de bens/serviços fornecidos ao membro solicitante
110

Unidade do valor de mercado ou da quantidade de bens/serviços fornecidos
Toneladas métricas

Explique como foi identificada a fonte de GEEs, incluindo as principais limitações a este processo e suposições adotadas
• Process and utility consumption that relate to GHG emissions are tracked at the site level (e.g., fuel, electricity, explosives, process reagents). The corresponding data are input to Vale's software by nominated site contributors on a monthly basis.
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• Results are consolidated into annual inventories which receive third party assurance and are suited to adhere to public reporting such as Vale Integrated Reports, Climate Change Reports, GRI, SASB, TCFD, etc.

Note: The products sold by Vale to Schlumberger Limited were purchased by REDA PRODUCTION SYSTEMS which is a subsidiary of Schlumberger Limited.

Membro solicitante
Schlumberger Limited

Escopo das emissões
Escopo 3

Método de contabilização do Escopo 2
<Not Applicable>

Categoria(s) do Escopo 3
Categoria 1: Bens e serviços adquiridos
Categoria 3: Atividades relacionadas a combustíveis e energia (não incluídas nos Escopos 1 ou 2)

Nível de alocação
Instalação

Detalhes do nível de alocação
Contributing emissions are tracked at the facility level to accurately reflect attribution to final products as they travel through multiple facilities.

Emissões em toneladas métricas de CO2e
209

Incerteza (±%)
15

Principais fontes de emissões
Scope 3 emissions are largely attributed to upstream fuel production (e.g., diesel, natural gas), as well as process reagents and consumables.

Verificada(s)
Sim

Método de alocação
Alocação com base na massa dos produtos adquiridos

Valor de mercado ou quantidade de bens/serviços fornecidos ao membro solicitante
110

Unidade do valor de mercado ou da quantidade de bens/serviços fornecidos
Toneladas métricas

Explique como foi identificada a fonte de GEEs, incluindo as principais limitações a este processo e suposições adotadas
• Process and utility consumption that relate to GHG emissions are tracked at the site level (e.g., fuel, electricity, explosives, process reagents). The corresponding data are input to Vale's software by nominated site contributors on a monthly basis.
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• Consumption quantities and emissions factors are combined to calculate the GHG emissions at the asset level. For example: fuel consumption at site in litres x emission factor of tonnes CO2e emitted per litre of fuel.
• Results are consolidated into annual inventories which receive third party assurance and are suited to adhere to public reporting such as Vale Integrated Reports, Climate Change Reports, GRI, SASB, TCFD, etc.

Note: The products sold by Vale to Schlumberger Limited were purchased by REDA PRODUCTION SYSTEMS which is a subsidiary of Schlumberger Limited.

SC1.2

(SC1.2) No caso de terem sido publicadas informações na questão SC1.1, forneça referências.

A vast collection of secondary data sources is referred to for emissions factors, as required, to estimate emissions for subsequent allocation to products. The exact sources used depend greatly on the process used, and the flow of material through a variety of facilities, which can be variable. A non-exhaustive list of references to highlight key sources of published information include:

- IPCC Guidelines for National Greenhouse Gas Inventories

- International Energy Agency (IEA) Emissions Factors Dataset

- Canada National Inventory Report

- Brazil Ministry of Science, Technology, and Innovation (MSTI) SIN Emission Factors

The only information that was used to allocate emissions and that is not published by Vale is the volume sold by customer. This information was collected from each sales department to enable the allocation of emissions to the customer.

SC1.3

(SC1.3) Quais os desafios de alocar emissões para diferentes clientes e o que ajudaria a vencer esses desafios?

Desafios de alocação	Explique o que ajudaria a superar esses desafios
Outro, especifique (Diversity of intermediate and final products and mines of origin)	The main challenges are to track the great diversity of intermediate products and the possibilities of blends to produce Vale's final products, in addition to the multiplicity of operations (mine, railway and ports) and the possibility of exchanging / mixing products from different Vale systems. This could be resolved by automatizing the carbon footprints within production systems. In 2022, we progressed in measuring the carbon footprints of Vale's products. The quantification and reporting of products' carbon footprints are based on the ISO 14067 Carbon Footprint of Products and Product Lifecycle Accounting and Reporting Standard of the GHG Protocol. The cradle-to-gate approach was used, covering emissions generated from mineral extraction, processing and internal transport, pelletizing (where applicable), as well as emissions from the production of inputs (Scope 3 Upstream). • Carbon footprints have been calculated and verified by third parties for 100% of our Class 1 nickel products, and for 75% of nickel, copper and cobalt products; • 40% of the volume of ferrous products sold in 2021 have carbon footprints calculated, of which approximately 35% have had their footprints verified by a third party. It is expected that we will have 70% of products covered and verified by the end of 2023.

SC1.4

(SC1.4) A organização planeja desenvolver suas capacidades para alocar emissões para seus clientes no futuro?

Sim

SC1.4a

(SC1.4a) Descreva como a organização planeja desenvolver suas capacidades.

Vale recognizes that climate change increasingly represents one of the greatest challenges facing society and we are firmly committed to contributing to solutions that help to limit the increase in global average temperature to be well below 2 °C, committing additional efforts to contribute to limiting this increase to 1.5 °C. We will invest USD 4-6 billion to reduce greenhouse gas emissions from our operations by 33% (Scopes 1 and 2) by 2030 and for Scope 3 emissions, we have established the goal of reducing 15% of net emissions by 2035, based on 2018 emissions. Vale is committed to contribute with its clients in this challenge of reducing carbon footprint. Several pilots are underway across our business to reduce our carbon footprint, such as the deployment of over 40 battery electric equipment in our underground mines, battery electric locomotives for our railways, battery electric truck in open-pit mining, fuel switching in mineral processing, such as from residual oil to natural gas, or from coke to biocarbon blends. In April 2022, we started the construction works of Tecnored's first commercial plant in Marabá, in the state of Pará. Tecnored is 100% owned by us and is focused on developing a low-carbon pig iron process through energy sources, such as biomass, syn-gas and hydrogen that emit less CO2 than coal and coke, the traditional ironmaking methods. Additionally, Vale is converting Tubarão pellet plants 1 and 2 to produce briquettes. Also in 2022, Vale signed agreements to establish mega hubs in Saudi Arabia, the United Arab Emirates, and Oman with the goal of developing low-carbon products for the steel industry, especially Hot Briquetted Iron (HBI) and steel products to supply local and transoceanic markets, with a significant reduction in CO2e emissions. HBI production using natural gas emits approximately 60% less CO2 e when compared to pig iron production. In the future, the replacement of natural gas with hydrogen and the use of renewable energy may reduce these emissions considerably. Under the agreements, Vale will build and operate iron ore concentration and briquetting plants at the hubs, which are intended to help ensure the supply of high-quality agglomerated products. The partners, in turn, will provide the necessary logistical infrastructure. The mega hubs should supply different markets around the world, further supporting the decarbonization of the steel industry.

In order to develop its capabilities, Vale is buying software to develop its carbon footprints in a standardized way and update them more frequently. Them, with this software we will also be able simulate and understand the impact of our emissions reduction initiatives in the carbon footprint of each product.

SC2.1

(SC2.1) Proponha algum projeto climático mutuamente benéfico no qual você possa colaborar junto com membros específicos do Supply Chain do CDP.

Membro solicitante
Kobe Steel, Ltd.

Tipo de grupo de projetos
Outro, especifique (Collaborative GHG Reduction Initiative)

Tipo de projeto
Outro, especifique (Vale's downstream Scope 3 is identified as a significant fraction of emissions to be addressed. Vale is open to all conversation about how we can collaborate to drive changes that will reduce the emissions alongside our customers.)

Metas de emissões
Ações que reduziriam nossas próprias emissões e as de nossos clientes

Prazos estimados para materializar as reduções de carbono
Outro, especifique (Vale strives to reduce its carbon emissions as soon as possible. The faster any potential collaborative emissions reductions can take place, the better.)

Duração estimada da economia de CO2e

Retorno financeiro estimado
Outro, especifique (To be determined)

Detalhes da proposta
To be determined, as 'estimated lifetime CO2e savings' too.

Membro solicitante
Gerdau S/A

Tipo de grupo de projetos
Outro, especifique (Collaborative GHG Reduction Initiative)

Tipo de projeto

Outro, especifique (Vale's downstream Scope 3 is identified as a significant fraction of emissions to be addressed. Vale is open to all conversation about how we can collaborate to drive changes that will reduce the emissions alongside our customers.)

Metas de emissões
Ações que reduziriam nossas próprias emissões e as de nossos clientes

Prazos estimados para materializar as reduções de carbono
Outro, especifique (Vale strives to reduce its carbon emissions as soon as possible. The faster any potential collaborative emissions reductions can take place, the better.)

Duração estimada da economia de CO2e

Retorno financeiro estimado
Outro, especifique (To be determined)

Detalhes da proposta
To be determined, as 'estimated lifetime CO2e savings' too.

Membro solicitante
Melrose PLC

Tipo de grupo de projetos
Outro, especifique (Collaborative GHG Reduction Initiative)

Tipo de projeto
Outro, especifique (Vale's downstream Scope 3 is identified as a significant fraction of emissions to be addressed. Vale is open to all conversation about how we can collaborate to drive changes that will reduce the emissions alongside our customers.)

Metas de emissões
Ações que reduziriam nossas próprias emissões e as de nossos clientes

Prazos estimados para materializar as reduções de carbono
Outro, especifique (Vale strives to reduce its carbon emissions as soon as possible. The faster any potential collaborative emissions reductions can take place, the better.)

Duração estimada da economia de CO2e

Retorno financeiro estimado
Outro, especifique (To be determined)

Detalhes da proposta
To be determined, as 'estimated lifetime CO2e savings' too.

Membro solicitante
Johnson Matthey

Tipo de grupo de projetos
Outro, especifique (Collaborative GHG Reduction Initiative)

Tipo de projeto
Outro, especifique (Vale's downstream Scope 3 is identified as a significant fraction of emissions to be addressed. Vale is open to all conversation about how we can collaborate to drive changes that will reduce the emissions alongside our customers.)

Metas de emissões
Ações que reduziriam nossas próprias emissões e as de nossos clientes

Prazos estimados para materializar as reduções de carbono
Outro, especifique (Vale strives to reduce its carbon emissions as soon as possible. The faster any potential collaborative emissions reductions can take place, the better.)

Duração estimada da economia de CO2e

Retorno financeiro estimado
Outro, especifique (To be determined)

Detalhes da proposta
To be determined, as 'estimated lifetime CO2e savings' too.

Membro solicitante
TDK Corporation

Tipo de grupo de projetos
Outro, especifique (Collaborative GHG Reduction Initiative)

Tipo de projeto
Outro, especifique (Vale's downstream Scope 3 is identified as a significant fraction of emissions to be addressed. Vale is open to all conversation about how we can collaborate to drive changes that will reduce the emissions alongside our customers.)

Metas de emissões
Ações que reduziriam nossas próprias emissões e as de nossos clientes

Prazos estimados para materializar as reduções de carbono
Outro, especifique (Vale strives to reduce its carbon emissions as soon as possible. The faster any potential collaborative emissions reductions can take place, the better.)

Duração estimada da economia de CO2e

Retorno financeiro estimado
Outro, especifique (To be determined)

Detalhes da proposta
To be determined, as 'estimated lifetime CO2e savings' too.

Membro solicitante
SABIC

Tipo de grupo de projetos
Outro, especifique (Collaborative GHG Reduction Initiative)

Tipo de projeto
Outro, especifique (Vale's downstream Scope 3 is identified as a significant fraction of emissions to be addressed. Vale is open to all conversation about how we can collaborate to drive changes that will reduce the emissions alongside our customers.)

Metas de emissões
Ações que reduziriam nossas próprias emissões e as de nossos clientes

Prazos estimados para materializar as reduções de carbono
Outro, especifique (Vale strives to reduce its carbon emissions as soon as possible. The faster any potential collaborative emissions reductions can take place, the better.)

Duração estimada da economia de CO2e

Retorno financeiro estimado
Outro, especifique (To be determined)

Detalhes da proposta
To be determined, as 'estimated lifetime CO2e savings' too.

Membro solicitante
Swiss Steel Holding AG

Tipo de grupo de projetos
Outro, especifique (Collaborative GHG Reduction Initiative)

Tipo de projeto
Outro, especifique (Vale's downstream Scope 3 is identified as a significant fraction of emissions to be addressed. Vale is open to all conversation about how we can collaborate to drive changes that will reduce the emissions alongside our customers.)

Metas de emissões
Ações que reduziriam nossas próprias emissões e as de nossos clientes

Prazos estimados para materializar as reduções de carbono
Outro, especifique (Vale strives to reduce its carbon emissions as soon as possible. The faster any potential collaborative emissions reductions can take place, the better.)

Duração estimada da economia de CO2e

Retorno financeiro estimado
Outro, especifique (To be determined)

Detalhes da proposta
To be determined, as 'estimated lifetime CO2e savings' too.

Note: The products sold by Vale to Swiss Steel Holding AG were purchased by Ascometal, which is a company belonging to the Swiss Steel group.

Membro solicitante
Schlumberger Limited

Tipo de grupo de projetos
Outro, especifique (Collaborative GHG Reduction Initiative)

Tipo de projeto
Outro, especifique (Vale's downstream Scope 3 is identified as a significant fraction of emissions to be addressed. Vale is open to all conversation about how we can collaborate to drive changes that will reduce the emissions alongside our customers.)

Metas de emissões
Ações que reduziriam nossas próprias emissões e as de nossos clientes

Prazos estimados para materializar as reduções de carbono
Outro, especifique (Vale strives to reduce its carbon emissions as soon as possible. The faster any potential collaborative emissions reductions can take place, the better.)

Duração estimada da economia de CO2e

Retorno financeiro estimado
Outro, especifique (To be determined)

Detalhes da proposta
To be determined

Note: The products sold by Vale to Schlumberger Limited were purchased by REDA PRODUCTION SYSTEMS which is a subsidiary of Schlumberger Limited.

SC2.2

(SC2.2) As solicitações ou iniciativas de membros do Supply Chain do CDP levaram sua organização a tomar iniciativas de redução de emissões em nível organizacional?
Não

SC4.1

(SC4.1) Estão sendo fornecidos dados no nível do produto para os bens ou serviços da organização?

Não, não forneceremos os dados

Envie sua resposta

Sua resposta está sendo enviada em qual idioma?

Inglês

Confirme como a sua resposta deve ser gerenciada pela CDP

	Compreendo que minha resposta será compartilhada com todas as partes interessadas solicitantes	Permissão da resposta
Selecione suas opções de envio	Sim	Público

Confirme abaixo

Li e aceito os Termos aplicáveis